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FROM EDITOR'S DESK

It is indeed a matter of great pleasure for me to put forward current issue of session of year 2018 before the academic fraternity. The journal contains 47 research papers on varied subjects pertaining to significant contemporary issues related to rural development. As many as 47 researches are included in the current issue. The subject matter areas related to agriculture, Home Science, Management, Veterinary and Animal Husbandry, Impact studies on development projects and rural development are included in this issue. I am highly grateful to the editorial board and executive editor Prof. Dhriti Solanki for their untiring and pains taking efforts to complete the task in time. Prof. F.L. Sharma on editorial board deserved special thanks for shouldering the responsibility of bringing this task to reality. I put on record the sincerity, hard work and initiative took by Dr. Sharma without whose help and cooperation, it would not have been possible to get this issue publish in time. We appreciate the cooperation and help extended by the president Prof. P.N. Kalla and vice-presidents Prof. Archna Raj Singh & Prof. B.S. Bhimawat in bringing out the journal. We are grateful to Prof. N.K. Panjabi, Secretary of the society for his continues help, guidance and free hand in completing the task well in time. Our contributors of research papers are precious and highly valued members of the society. We are thankful to them for their sharing and expect the similar type of cooperation in future too. We assure the contributors and members to come up to their expectations. We are also thankful to Prof. Rajshree Upadhyay, Prof. & Head, Dept. of EECM, College of Community and Applied Sciences for her help, cooperation and concern in all academic endeavour. Last but not the list Image Print Media deserves special appreciation and thanks for printing the journal in time.

Warm regards.

S.K. Sharma
Chief Editor

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INDIAN JOURNAL OF EXTENSION EDUCATION AND RURAL DEVELPMENT

CONTENTS

ADOPTION OF COWPEA PRODUCTION TECHNOLOGY AMONG FARMERS IN TARABA STATE, NIGERIA

Bashir, M.B.*, Ndaghu, A. A., Nakwe, S.H.G.*** and Abdulazeez, A. W.******

ABSTRACT

The present study was conducted by employing a multi-stage random sampling technique was used to select 150 respondents. Descriptive statistics and logit regression were used to analyze the data. Result revealed that, 84 per cent of the respondents were within a youthful age of 20-49 years. Majority (94.7%) of the respondents were male and 92 per cent were married, with 50 per cent of them having acquired one form of education or another. Mean farm size, years of farming experience and household size were 3.0 ha, 11years and 13 persons, respectively. All the respondents (100%) attested that they were never visited by extension agent. The study indicated that 99.3 per cent of the respondents adopted herbicides, while 88.4 per cent and 96.6 per cent had adopted seed treatment and mechanized farming respectively. Logit regression result revealed a significant relationship between respondent's age, marital status, level of education, farm size and farming experience. The constraints identified were inadequate fund, high cost of labour and high cost of farm inputs.

INTRODUCTION

Cowpea (*vigna unguiculata (L) walp*) is a leguminous crop grown mainly in the savanna regions of the tropics and subtropics of Africa, Asia and South America (Sani *et al*., 2014). Being a drought tolerant and warm weather crop cowpea is well adapted to the drier region of the tropics where other food legumes do not perform well. It is of major important to the livelihoods of millions of people in less developed countries of the tropics, particularly in Asia and Africa. From its production, rural families derive food, animal feed and income (IITA, 2009). Cowpea is also one of the most importance economic crops in the tropics for the fact that all of its parts are useful for human consumption and for the provision of livestock feed. The crop tolerates drought and performs well in a wide variety of soil. Similarly, the bacteria in the root nodules contribute to soil fertility through fixation of nitrogen in the soil and production of organic matter (Tijjani *et al.*, 2015).

However, with the numerous benefits derived from adopting improved cowpea production technologies, so many farmers are not aware of these technologies. Inspite of the popularity and diverse importance of cowpea, studies have reported declining production. Tijjani *et al*. (2015) revealed decline in cowpea production in cowpea producing states of Katsina, Kano, Jigawa and Borno, due to problems such as outdated farming practices, parasitic weeds, insects and diseases. In view of the declining cowpea production in Nigeria, it becomes paramount to intensify efforts towards improving its production. This study thus becomes imperative because it seeks to assess the adoption of cowpea production technologies among farmers in Taraba State, Nigeria.

RESEARCH METHODOLOGY

The state has sixteen (16) Local Government Areas and One special Development area which is divided into four agricultural zones namely Zone I, Zone II, Zone III, and Zone IV (TADP, 2016).

In this study, Purposive and multi stage random sampling techniques were adopted in the selection

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of respondents. In the first stage, three agricultural development zones in Taraba agricultural development Programme (TADP) out of four were purposely selected. This includes zing (zone 1), Wukari (zone 2) and Takum (Zones 3). In the second stage 20 per cent of the local Government Area in each of the three zones was purposely selected because of their prominence in cowpea production, this include Ardo kola, Gassol and Donga. In the third stage, one block and 20 per cent of the cells were selected from the three LGAs due to intensity of cowpea production to give a total of 10 cells. In the fourth stage snow ball technique were used to select 15 respondents from the selected cells. In all 150 respondents were selected for the study. Primary data were used for this study, the data were collected with the use of a structured questionnaire which was pre-tested using smaller group to ensure its reliability, before the full-scale administered to the respondents that were sampled in the study area on scheduled arrangement basis.

RESULTS AND DISCUSSION

Socio-economic Characteristics of the Respondents

Age of the Respondents: Farmers age is said to influence farmers' maturity and decision making ability (Sani *et al.*, 2014). Result of the study in Table 1 indicates that more than three quarters (84%) of the respondents were within the youthful age of between 20 to 49 years who are considered to be agile, more likely to adopt modern production technologies. It implied that farming was embraced by all the age group in the study area which is an advantage for increased investment. This finding is similar to that of Sani *et al;* (2014) which indicated a relatively widespread dual purpose cowpea production among age group of farmers in Bichi Local Government Area of Kano State.

Gender of the Respondents: As shown Table 1 majority (94.7%) of the respondents were male, this implies cowpea production is determinate by male in the study. This is in agreement with the finding of Ayode, (2010) which showed that male predominated in the effectiveness of information sources on improved farm practices among cowpea farmers in Oyo State, Nigeria.

Marital Status of the Respondents: Table 1 shows that majority (92%) of the respondents were married, while others were single and widow(er) respectively. This means that majority of the cowpea farmers in the zone were married. The high proportion of the respondents who were married was an indication that family labour could be available for cowpea farmers in the study area.

Educational Attainment: It is a well known fact that literacy level in rural Nigeria is low. The result obtained from this finding, therefore, is not much different from what is expected. Table 1 indicates that most of the respondents (50%) had acquired one form of education or the other. They can easily understand and adopt innovation. This finding is inconsistence with that of Onweremadu and Mathew (2007), and Sani *et al.,* (2014).

Farm Size: By classification of Shaib *et al;* (1997*)* cited in Agwu (2004*),* farm holdings in Nigeria fall into three broad categories namely: small scale, medium scale and large scale. Small Scale farmers were the majority (68 %) cultivating 0.10 – 5.99 hectares, while 8.6% were large scale cultivating 5-10 hectares. These finding differ from the finding of Agwu and Anyanwu, (1996) cited in Agwu (2004) that, cowpea farmers in south eastern Nigeria cultivated not more than 1.5 hectares. This implies that farmers in Taraba State cultivate relatively larger hectares than their counterparts in south eastern Nigeria. This may be for the fact that there is availability of land space in northern Nigeria. This is an advantage for adoption of modern cowpea production technologies.

Household Size: Most rural households in Nigeria are large because of the kinship structure and the extended family system Gbadegesin and Olorunfemi (2007). It is not surprising therefore that, more than half (56.8%) of the respondents' household had between 6 – 20 or more members with the mean household size of 13 members as show in Table 1.

Farming Experience: As indicated in Table 1, majority (53.9%) of the respondents had 6-15 years of farming experience. The mean farming experience was 11years. This indicated that, the farmers were experienced enough to be able to understand the technologies and adopt it. The length of experience in farming is probably an indicator of a farmer's commitment to agriculture. It may not necessarily pre-dispose them to adoption of new practices. It is more logical to expect veteran farmers to be less receptive to innovation. Long farming experience is an advantage for increasing farm productivity since it encourages rapid adoption of farm innovation, long experience according to Sani *et al*. (2014).

Access to Extension Service: Adoption of cowpea production technologies is highly facilitated by the efforts of extension workers in introducing and demonstrating to the farmer how to use the technologies *(*Bzugu and Gwary, 2004 cited in Tijjani *et al*., 2015). However, all (100%) respondents indicated they had no contact with the extension agents but adopt the practice on their own or with the help of fellow farmers. This lack of farmers contact with extension agents negates the theoretical role extension agencies supposed to play in technology diffusion and adoption.

Adoption of Cowpea Production Technologies

The percentage of the adoption rate of the eleven-cowpea production technologies among farmers presented in Table 2, highest (99.3%) adoption percentage was recorded for land preparation. This is not surprising as it is well known that the yields of cowpea varieties are generally decreases without proper land clearing and cultivation procedures. Hence, the high level of adoption associated with this technology implies that farmers in the study area were aware of the fact that proper land preparation in their cowpea farms provides an attractive opportunity for them to make better economic gain of recommended spacing and planting date and storage techniques recorded 98.7% and 97.3%, respectively, while seed rate and used of herbicide for weed control recorded 95.3% and 96%, respectively. For mechanized farming, use of tractor for land preparation and

Table 1: Distribution of Respondents based on Socio-economic Characteristics (n=150)

Socio-economic Variable	Frequency (f)	Percentage (%)
Age(Years)		
20 – 29	28	18.7
30 – 39	69	46.0
40 – 49	29	19.3
50 – 59	17	11.3
≥ 60	7	4.7
Gender		
Male	142	94.7
Female	8	5.3
Marital Status		
Married	138	92.0
Single	8	5.3
Widow(er)	4	2.7
Divorce	-	-
Educational Level		
Non formal Education	75	5.0
Primary Education	25	16.7
Secondary Education	33	22.0
Tertiary Education	17	11.3
Farm Size		
0.1 – 5.99	102	68.0
6 – 9.99	35	23.3
10 – 15.99	8	5.3
16 – 20	2	1.3
> 20	3	2.
Household Size		
1 – 5	56	37.8
6 – 10	64	43.2
11 – 15	16	10.7
16 – 20	6	4.1
> 20	6	4.1
Years of Farming Experience		
1 – 5	18	12.0
6 – 10	47	31.3
11 – 15	35	23.3
16 – 20	18	12.0
> 20	32	21.3
Access to Extension Service		
Yes	0	0
No	150	100

Source: Field Survey, 2016.

pesticide to control pest on cowpea farms recorded.94% and 90.4%, respectively. Field practices showed that the use of tractor for land preparation was more popular than the use of ox-drawn plough for land preparation among the respondents because tractor cultivates larger hectares within shorter period and has ability of turning soil than oxen with minimum energy required. Furthermore, fertilizer application and seed treatment recorded 69.3% and 58%, respectively. The low adoption (8%) recorded for improved seed may be associated to the low level of awareness of the technology among the respondents.

Table 2: Adoption of Cowpea Production Technologies

n = 150

Technologies	Frequencies	Percentage	Ranking
Land preparation	149	99.3	1
Spacing and Planting Date	148	98.7	2
Storage	146	97.3	3
Seed rate	143	95.3	4
Herbicide	142	94.7	5
Mechanized farming	141	94.0	6
Pesticide	136	90.7	7
Fertilizer application	104	69.3	8
Harvesting	102	68.0	9
Seed Treatment	87	58.0	10
Improved seed	12	8.0	11

Source: Field Survey, 2016.
**Multiple responses*

Extent of Adoption of Cowpea Production Technologies: This section discusses the extent of adoption of cowpea production technologies among the respondents. Using a five steps (awareness to adoption) adoption model; the technologies discussed here in the cowpea production package are used of improved seeds, herbicide, pesticide, seed treatment, mechanized farming, spacing and planting date, fertilizer application, land preparation and seed rate.

Adoption of Improved Seed: Table 3 reveals that 56.7 per cent of the respondents were aware of the improved cowpea varieties but are yet to start using it, 26.7 per cent and 5.3 per cent were at the interest and evaluation stage. About 3.3% of the respondents were at the trial stage in the adoption of this technology, while 8% of the farmers have already adopted the technology. This means that majority of the respondents were yet to adopt the use of improved cowpea varieties. Cowpea varieties introduced in the study area include, IT 94K-440-3, IT 90K-82-2, IT93- 452-1 and IT 96D-757. Here it is necessary for extension workers to improve the levels of awareness of practice this is based on the fact that when there is an increase in the awareness of these practices there will be need for more information regarding the practice by the farmers, which might further increase the adoption rate of the technology.

Adoption of Herbicides as Measures for Controlling Weeds: Table 3 also shows that majority (99.3%) of the farmers have adopted herbicide as one of the major means of controlling weeds. None of the respondents was of the awareness, interest and evaluation of these technologies. 0.7% were at the trial stage it therefore, means that majority of the respondents applied herbicides in their farms to control weeds. Insect pests and diseases are harmful to cowpea plants and the products, therefore, farmers applied chemicals on the plants and after harvest before storage (post harvest treatment). Most of the respondents reported to have adopted the use of chemicals on farms and during post harvest storage.

Adoption of Pesticide as Measure for Controlling Insect Pest: Based on the analysis in Table 3, it could be depicted that 74.7 per cent of the respondents adopted the recommended pest control measure on their farms. About 14.6% were at trial while, 6.7% were at evaluation stage those who were at the interest stage constituted 2.7% of the respondents, with 1.3% being at the awareness stage. This indicated that all farmers are in one stage or the other in the adoption of pest control measures.

Adoption of Seed Treatment: Furthermore, Table 3 indicates that majority (87.4%) of the farmers had adopted the practice, while 5.3% and 3.3% were at the stage awareness and trial. About 1.3% and 2.7% of the respondents are at the interest and evaluation stage. The reason for this level of adoption could be that the practice was simple and it is very effective in controlling insect, rodents and birds that hinders the germination of the seeds after sowing. Respondents revealed that they treated cowpea seed with chemicals such as FANASON D., Apron-Plus and Aldrex T. This is to avoid pests and diseases attack.

Adoption of Mechanized Farming: Based on the revelation from Table 3, the majority (96.6%) have adopted the technology of using tractors than oxen for land preparation which was more popular among the farmers. Thus, some (0.7%) are on awareness; interest and evaluation, while 1.3% were on trial stage of their technology. These could attributed to the fact that majority of the farmers own from 0.1 to 9.99 hectares requires tractors to cultivate within a shorter period than oxen.

Adoption of Spacing and Planting Date of Cowpea: The recommended date for planting of cowpea in the study area is early August through September. This is when the rain is relatively steady. Table 3 shows that 64 per cent of the farmers had adopted the recommended term for planting of cowpea, 4.7% were aware of the technology, 9.3% were at the interest stage, while 16.7% and 5.3% were at the evaluation and trial stage respectively. This means that majority of the respondents have adopted the term of cowpea planting in the zone. Cowpea requires a seed rate of approximately 25-30 kg/ha (viable seeds) with a spacing of 20 x 75cm for erect varieties and 50 x 75cm for the spread types at 2 seeds per hole 4-5 cm depth.

Adoption of Fertilizer Application: The recommended inorganic fertilizer rates for cowpea production are single super phosphate before planting at 200kg/ha^{-1}. Table 3 indicates that 8% of the respondents were aware of technology, 10% were at the interest stage of the adoption of inorganic fertilizer application rate for cowpea production. About 18% and 5.3% were at the evaluation and trial stage respectively, while majority (58.7%) had adopted the technology. The farmers indicated that the soil was fertile enough for cowpea production and they would use available inorganic fertilizer on their cowpea farms.

Adoption of Land Preparation: Notwithstanding, Table 3 highlights that 98.7% of the farmers had adopted land preparation. 1.3% were at trial stage, none of the respondent was at the stage of awareness, interest and evaluation of this technology. It's therefore means that majority of the respondents practice land preparation on their cowpea farm before planting. Use of tractors and OX-Plough were reported to have been used by respondents. Field clearing is done by the use of cutlasses, rakes, hoes and axes as reported by the respondents.

Adoption of Seed Rate: Finally, Table 3 shows the distribution of farmers based on the stages in the adoption of seed rate as planting material for cowpea production. The recommended seed rates are 2 to 3 seeds per hole. The table shows that 1.3% of the respondents were at the evaluation and 2% were at the trial stage. Majority of the respondents 96.5 per cent had adopted, while none of the respondents were at the awareness and interest stage.

Logit Multiple Regression Analysis: The factors influencing the adoption of cowpea production technologies were evaluated using multiple (Logit) regression analysis where four functional forms were tried and linear function gave the best fit. The result is presented in Table 4 which reveals that the coefficient of multiple determinations (R^2) was 0.79 implying that about 79% of the variations in the adoption of cowpea production technologies were explained by variables in the models. Z value was statistically significant at 1% which also showed model fit.

The coefficient for (X_1) was positive and statistically significant at 1%. The positive coefficient of age means that there is direct relationship between

Table 3: Extent of Adoption of Cowpea Production Technology

Cowpea Technologies	Stages of Adoption (in %)				
	Awareness	Interest	Evaluation	Trial	Adoption
Improved seed	56.7	26.7	5.3	3.3	8
Herbicides	0	0	0	0.7	99.3
Pesticides	1.3	2.7	6.7	14.6	74.7
Seed treatment	5.3	1.3	2.7	3.3	87.4
Mechanized farming	0.7	0.7	0.7	1.3	96.6
Spacing and Planting date	4.7	9.3	16.7	5.3	64
Fertilizer application	8	10	18	5.3	58.7
Land preparation method	0	0	0	1.3	98.7
Seed rate	0	0	1.3	2	96.7

Source: Field Survey, 2016.

adoption of cowpea production technologies and age of the farmers. Age is said to be primarily latent characteristics in adoption decisions. However, there is contention on the direction of the effect of age on adoption. Age was found to positively influence adoption of cowpea. The farmers' age can increase or decrease the probability of adopting cowpea production technologies.

The coefficient of gender was negative and not statistically significant. This implies that gender is not a factor influencing adoption of cowpea production technologies in the study area. This agrees with the appriori expectation that irrespective of one gender he or she could adopt cowpea production technologies. There was a positive significant relationship between marital status (X_3) and adoption of cowpea production technologies in the study area. This could be explained for the fact that married farmers have more responsibilities to catered for their families which could stimulate them to adopt the new technologies in order to enhance their farm yield.

The coefficient of household size was positive and statistically significant at 1% level. This agrees with the appriori expectation that the large household size could supply cheap family labour which positively enhances adoption of cowpea production technologies in the study area. The coefficient of educational level (X_5) was also found to be positive and statistically significant at 1%. The positive coefficient of educational status means that there is a direct relationship between adoption of cowpea production technologies and educational status, whereby as educational status increased adoption level also increased among farmers.

The coefficient in farm size was positive and statistically significant at 1% level. The positive coefficient implies a direct relationship that as farm size increases, adoption of cowpea production technologies increase and vice-versa. In other word, the larger the farm size the higher the potential of adoption, these agree with the appriori expectation that large farmers in comparison to small farmers adopt improved technologies at a faster rate. It will be difficult to use mechanized farming system on small and fragmented individual farms. Small scale farmers live at subsistence level which may discourage them from adopting improved technologies probably because of financial constraints.

The table further reveals that years of farming experience was found to be important in influencing the likelihood of adoption of cowpea production technologies. The variables was found to be statistically significant at 1% level and positively related with likelihood of adoption. Most of the

Table 4: Logit Multiple Regression Result of some Factors influenced Adoption of Cowpea Production Technologies

Variables	Regression Coefficient	Standard Error	Z-Statistics	Prob.
X_1(Age)	0.119036	0.234414	0.5077800	0.0016**
X_2 (Gender)	-0.023008	0.284920	-0.08752	0.1256
X_3 (Marital Status)	6.076718	0.173239	0.442848	0.6579
X_4 (Household Size)	9.019533	0.205743	0.094939	0.0004**
X_5 (Level of Education)	21.026517	0.161526	0.164168	0.0016**
X_6 (Farm Size)	10.0196631	0.082606	0.237648	0.0022**
X_7 (Farming Experience)	0.053827	0.166034	0.324189	0.0058**
C	-3.067822	6.759884	0.453828	0.0002
R – Squared	0.794265			
Adjusted R – Squared	0.782083			
F – Value	65.20157			

1% level of significance**
Source: Field Survey Data, 2016.

Table 5: Constraints experienced by the respondents in the adoption of cowpea production technologies

Constraints	Very Severe	Severe	Not Severe	Score	Ranking
Inadequate funds	127(84.6)	19(12.7)	4(2.7)	2.82	1
High cost of farm inputs	46(30.7)	98(65.3)	6(4)	2.26	3
High cost of labour	53 (35.3)	91 (60.7)	6 (4)	2.31	2
Lack of improved seed	49 (32.7)	65 (43.8)	36 (24)	2.08	5
Poor price of the product	6 (4)	87 (87.3)	13 (8.7)	1.36	11
Inadequate storage facilities	11 (7.3)	110 (73.3)	19 (12.7)	1.81	7
Pest and Disease attack	37 (24.7)	88 (58.7)	25 (16.6)	2.04	6
Inadequate transport facilities	11 (7.3)	89 (59.3)	50 (33.3)	1.74	9
Unfavourable Weather Cond.	11 (7.3)	40 (26.7)	99 (66)	1.41	10
Lack of Awareness	17 (11.3)	84 (56)	49 (32.7)	1.78	8
Harvesting Problem	18 (12)	128 (85.3)	14 (9.3)	2.16	4

Source: Field Survey, 2016.

farmers fear trying improved technology because they do not have previous experience in applying the new technology and due the possible risk of failure. Years of farming experience could enable the farmers to have courage in adopting the technology as it confirmed appriori expectation. However, the studies of Ajala (1992) and Ikini *et al*; (1998) cited in Agwu (2004) show that age, farming experience and organizational participation significantly influenced adoption. The difference might be the type of technologies studied among other factors.

Constraints Affecting the Adoption of Cowpea Production Technologies : The result in Table 5 shows that inadequate funds was the most very severe constraints encountered by cowpea farmers in the study area which ranked first with a means score of 2.82, follow by high cost of labour 2.31, high cost of farm inputs 2.26, harvesting problem 2.16, lack of improved seed 2.08, pest and disease attack 2.04, inadequate storage facilities 1.81, lack of awareness 1.78, inadequate transportation facilities 1.74 unfavourable weather condition 1.41, and poor price of the product 1.36, respectively. This implies that inadequate fund is the most severe problem encountered by cowpea producers in the study area. The result concurred with that of Ibrahim *et al.* (2016).

CONCLUSION

On the bases of the major findings it may be concluded that majority of the farmers were middle-aged and averagely literate, implying that, many of them were in a good position to be aware of understand and adopt the cowpea production technologies. They were predominantly males, with long period of farming experience. Additionally most of them were married and had average household size of seven members, which is fairly large. This is expected to serve as an incentive to continue adoption of cowpea production technologies since supply of labour is ensured. The farmers also had mostly small farm holdings and had indicated never have contact with extension. In terms of the level of awareness of the cowpea production technologies, it was concluded that majority of the farmers were aware of cowpea production technologies. With regard to the extent of adoption of cowpea production technologies majority of the farmers had adopted herbicide, pesticide, seed treatment, mechanized farming well others are at the awareness, interest, evaluation and trial stage of the technologies. The variable which significantly influenced the adoption of the cowpea production technologies were age, marital status, level of education, farms size and years of farming experiences.

REFERENCES

Agwu, A.E. 2004.Factors affecting adoption of improved cowpea production technologies in Nigeria. *J. Int. Agric. Ext. Educ*. **11**(1):81-88.

Ayoade, A.R. 2010. Effectiveness of information sources on improved farm practices among cowpea farmers in Oyo State. *Global Journal of Human Social Science* **1**(10) : 39-45.

Ibrahim, A. A., Wabab, S. Y., Mohammed, N. and Mustaphaa, S. B. (2016). Factors Influencing the Level of Adoption of Cowpea Production Technologies in Askira/Uba Local Government Area of Borno State, Nigeria. *International Academic Journal of Innovative Research* **3**(9): 15-23.

Ikini, E. I., Annatte, A. I. Umaru, M., &Jegede, O.C. (1998). Study of extent of adoption of cockeret exchange technology (CET) by rural farmers in Adamawa State of Nigeria. *Proceedings of the Siver Anniversary Conference of the Nigeria Society for Animal Production (NSAP). 21-26*

Onweremadu, E.U, and Mathew–Njoku, E.C. 2007. Adoption levels and sources of soil management practices in low input agriculture. *Nature and science* **207**(5):1.

Sani, A., Abubakar, B.Z, Yakubu, D.H., Atala, T.K. and Abubakar, L. 2014. Socio-economic factors influencing adoption of dual-purpose cowpea production technologies in Bichi Local Government Area of Kano State, Nigeria. *Asia Journal of Agricultural Extension Economics and Sociology* 258-273.

Tijjani, A. R. Nabinta, R. T. and Muntaka, M. 2015. Adoption of innovative cowpea production practices in a rural area of Katsina State, Nigeria. *Journal of Agricultural and Crop Research* **3**(4) : 53-58.

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KNOWLEDGE LEVEL OF HOMESTEAD VEGETABLE GROWERS ABOUT VEGETABLE PRODUCTION PRACTICES

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ABSTRACT

Knowledge is refers to the extent of information possessed by the vegetable growers on recommended practices. It is considered as a pre requisite for adoption by many authors. On this ground, it is imperative to examine the status of knowledge of vegetable growers about KAU recommended practices for the selected vegetables. The present investigation was therefore, carried out with an objective, to assess the extent of knowledge of homestead vegetable growers. For the study five vegetables viz. amaranths, chilli, ivy gourd, okra and bitter gourd were selected based on the maximum area under homesteads. The present study was conducted in Kollam District of Kerala. Kollam district is classified into 5 Agro Ecological Units based on their location and climate, soil and topographical features. From the 5 Agro ecological units two units having the highest vegetable cultivating area were selected. These units were AEU 9(South Central Laterites) and AEU 12(Southern and Central Foot Hills). Three panchayats with maximum vegetable cultivation were selected from each Agro Ecological Units for the present investigation. Twenty homesteads were selected randomly from each identified panchayats. Thus, the total sample size of 120 homesteads. On the analysis of the data thus collected it was found that the majority of respondents had medium level of knowledge about vegetable cultivation and few of them (39%) had high knowledge. Only 12 per cent were in the group of low knowledge level.

INTRODUCTION

Agriculture is the life blood of Indian population and it is one of the most important sectors of Indian economy. About 70 per cent of India's population is still dependent on agriculture. Indian agriculture is essentially small farm agriculture with the majority of farmers owning less than 1 ha. of land. So the farmers are facing lot of challenges and constraints in this field.

Kerala is a consumer state for vegetables and the major portion is produced in the neighbouring states. In order to increase the production of vegetables by all possible means in Kerala, considering peculiar situation of limited cultivable area can be achieved through promotion of homestead farming. This is the main reason why so much attention has been given to improve the homestead farming. A number of programmes have been introduced in Kerala by various formal institutions to improve the knowledge and thereby increase the agricultural production and income of the homestead growers. Still some homestead farmers don't have sufficient knowledge regarding various cultivation practices. On this ground, it is imperative to examine their status of knowledge about vegetable practices recommended by Kerala Agriculture University. It would help the extension workers to fill the knowledge gaps that exist, thereby improving the rate of adoption.

Knowledge refers to the extent of information possessed by the growers on recommended practices. Effective adoption process can only be achieved if farmers had sufficient awareness and knowledge on different cultivation practices. When the knowledge level of farmer is low, the rate of adoption is also low. It results in loss of benefits of sustainable practices to the cultivators and the public. Keeping all these factors in mind the present study was undertaken to assess the knowledge level of farmers in Kollam district regarding vegetable

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cultivation in the homesteads.

RESEARCH METHODOLOGY

Ex-post-facto research design was used in this study. It was conducted in Kollam District of Kerala. Kollam district is classified into 5 Agro Ecological Units of these AEU 9 (South Central Laterites) and AEU 12 (Southern and Central Foot Hills) were purposively selected for the study because it has the largest vegetable cultivation among the five AEUs. A comprehensive list of all the panchayats from the selected AEUs along with their vegetable cultivation details was prepared in consultation with the Krishi bhavan and Krishi Vigyan Kendra personnels and secondary information sources. As such three panchayats with maximum vegetable cultivation were selected from each AEUs for the present investigation. The panchayats were namely: Nedumpana, Veliyam and Ummannoor panchayath from AEU 9(South Central Laterites) and Kadakkal, Chithara and Piravanthur panchayat from AEU 12(Southern and Central Foot Hills). A comprehensive list of homestead vegetable growers having an area of 0.1-0.5 ha in each selected panchayats was prepared separately. On the basis of the lists, 20 homesteads were selected randomly from each identified panchayats. Thus, a total sample size of 120 homesteads. A teacher made knowledge test was used to measure the scale of knowledge about vegetable production practices. Five crops having higher production in homesteads of Kollam district viz, amaranths, chilli, okra, bitter gourd, and ivy gourd, were selected to study this variable. Major practices as per the package of practices recommendation of KAU were included for each crop in the knowledge test to understand the existing knowledge of the respondents about homestead vegetable cultivation. The respondents were categorized into three group based on their obtained knowledge index score (Bindu (1999). The knowledge index of each respondent was calculated by using the following formula:

$$\text{Knowledge index} = \frac{\text{Knowledge score obtained}}{\text{Maximum obtained score}} \times 100$$

RESULTS AND DISCUSSION

A. Distribution of Respondents Based on their Knowledge of Selected Practices

To get an overall view of the knowledge level, the vegetable growers were grouped into (i) low (ii) medium (iii) high knowledge level on the basis of knowledge index.

Table 1: Distribution of farmers according to their knowledge about scientific vegetable cultivation practuces

n=120

S.No.	Category	Frequency	Per cent
1	Low(50-66)	14	12
2	Medium(67-83)	59	49
3	High(84-100)	47	39
	Total	**120**	**100**

Vegetable growers according to their knowledge about vegetable cultivation practices indicated that (Table 1) the majority of respondents had medium level of knowledge about vegetable cultivation and few of them (39%) had high knowledge. Only 12 per cent were in the group of low knowledge level. The finding was similar to the results reported by Vijay Kumar et al. (2003) and Jat et al. (2011)

Hence, from the table 1 it is summarised that majority of the vegetable growers had medium level of knowledge about scientific vegetable cultivation practices. The absence of respondents with zero score indicated that all the respondents had some knowledge about any of the recommended practice. This was presumably due to the active contribution of Farming System Research Station and Krishi Vigyan Kendra in homestead farming. High level of literacy, extension orientation and social participation among the farmers also can be considered as a reason for high rate of knowledge among the farmers.

B. Knowledge of respondents about recommended practices in selected vegetables grown in the homesteads of Kollam district

Table 2: Knowledge of respondents about recommended practices in Amaranthus cultivation in homesteads

n=120

S.No.	Particulars	POP Recommendation	Number	Per cent	Rank
1	Season	Throughout the year	65	54	6
2	Varieties	Arun, Kannara local, Krishna sree, Mohini (green), Co varieties, Renu sree	102	88	2
3	Seed rate	1.5-2 kg/ha	40	33	8
4	Spacing	10 x 30 cm	92	77	5
5	Sowing	Transplanting	98	82	3
6	Irrigation	Furrow irrigation or drip / sprinkler	5	4	10
7	Manuring	FYM -50 t/ha, N:P:K -100:50:50 kg/ha	60	50	7
8	Pests and diseases	Foliar insects (leaf webber, roller), Leaf spot disease	97	80	4
9	Pesticides Doses	0.1% malathion	30	25	9
10	Harvesting	20-45 DAP	120	100	1

Table 3: Knowledge of respondents about recommended practices in chilli cultivation in homesteads

n=120

S.No.	Particulars	POP Recommendation	Number	Per cent	Rank
1	Season	May - June (rainfed crop), Sept - October (irrigated crop)	28	23	8
2	Varieties	Jwala, Jwalasakhi, Jwalamukhi Manjari, Ujwala, Anugraha, Vellayani athulya, Vellayani samrudhi	105	88	2
3	Seed rate	1 kg/ha	23	19	9
4	Spacing	45 X 45 cm (75 X45-60 cm for white kanthari)	89	67	5
5	Sowing	Seeds are sown in nursery, 1 MAS transplanted to main field	90	75	4
6	Irrigation	Furrow or drip irrigation is recommended	10	8	10
7	Manuring	FYM - 20- 25 t/ha, N:P:K - 75:40:25 kg /ha	66	47	6
8	Pests and diseases	Aphids, mite, fruit worm, nematode, mealy bug, thrips, Damping off, bacterial wilt, anthracnose, phytophthora blight , aphid transmitted viruses .	95	80	3
9	Pesticides Doses	Dichlorvos (0.02%)/ quinalphos (0.025%), dimethoate 0.05%	30	25	7
10	Harvesting	55-60 DA Flowering	120	100	1

The recommended practices of each crop were ranked based on the respondent's knowledge and its results are presented below:

The analysis of Table 2 reveal that all the respondents had knowledge about harvesting of crop i.e., 20-45 DAP. This was followed by knowledge about varieties released by KAU. About 88 per cent farmers knew about amaranthus varieties released by KAU. Knowledge related to sowing practices to be followed (82%), pest and diseases of amaranthus (80%), and spacing to be practised (77%) were ranked 3rd, 4th and 5th. The least known practices were methods of irrigation i.e, most of the farmers didn't know about furrow irrigation (4%) , application of pesticides 0.1% malathion (25%) and seed rate is 1.5 -2 kg/ha (33%). This might be due to the awareness of respondents about excessive use of chemical pesticides and interest in production of safe to eat vegetables.

From table 3 it can be seen that among the different recommended practices of chilli the most known practices were harvesting of fruits at 55-60 days after flowering (100%), followed by knowledge about varieties released by KAU (88%) and third ranked aspect was regarding pest and diseases (80%).Three fourth of the respondents had a knowledge about methods of sowing in chilli i.e., first they were sown in nursery followed by transplanting of 1 month old seedlings in main field. Sixty seven per cent of respondents had knowledge about the spacing in chilli but only 47 per cent of respondents knew about the actual fertilizer dose and manuring and 25 per cent were familiar with chemical pesticide dosage. From the selected practices, knowledge regarding cultivating season, seed rate and irrigation methods were the least known practices with a percentage of 23, 19 and 8, respectively.

In case of bitter gourd, (Table 4) cent per cent respondents had knowledge about harvesting of crop i.e., 90 DAP. The knowledge index was higher for practices like varieties of bitter gourd released by KAU (94%), knowledge about pest and diseases (92%), sowing (83%) , spacing (79%), manuaring (57%). The least known practices were knowledge

Table 4: Knowledge of respondents about recommended practices in bittergourd cultivation in homesteads

n=120

S.No.	Particulars	POP Recommendation	Number	Per cent	Rank
1	Season	Jan- march and sept- dec	24	20	8
2	Varieties	Priya, Preethi, Priyanka, Arka harit	113	94	2
3	Seed rate	5- 6 kg /ha	21	18	9
4	Spacing	2 x 2 m	95	79	5
5	Sowing	4-5 seeds /pit @ 1-2 cm depth	100	83	4
6	Irrigation	Furrow irrigation	8	7	10
7	Manuring	FYM - 20-25 t /ha, N:P:K- 70:25: 25 kg/ha	68	57	6
8	Pests and diseases	Fruit flies ,epilachna beetle, aphids, pumpkin beetle, Downy mildew, powdery mildew, mosaic	110	92	3
9	Pesticides Doses	Carbaryl 10% DP/ Carbaryl 0.2%, malathion	30	25	7
10	Harvesting	90 DAP	120	100	1

Table 5: Knowledge of respondents' about recommended practices in okra cultivation in homesteads

n=120

S.No.	Particulars	POP Recommendation	Number	Per cent	Rank
1	Season	Feb-March, June-July, October-November	22	18	8
2	Varieties	Salkeerthi, Kiran, Aruna, Susthira	108	90	5
3	Seed rate	7 -8.5 kg/ha	18	15	9
4	Spacing	60 X 30-45 cm	113	94	4
5	Sowing	Dibbling @ 1-2 cm depth @ 3-4 seeds /hole	117	98	2
6	Irrigation	Furrow irrigation method @ 2- 3 days interval	8	7	10
7	Manuring	FYM - 12 t /ha ,N : P : K - 50:8:25 kg /ha	68	57	6
8	Pests and diseases	Shoot and fruit borer, root knot nematode, leaf hopper, mites, aphids, white fly, Yellow vein mosaic, damping off, fusarium wilt, powdery mildew, leaf spot, leaf curl	115	96	3
9	Pesticides Doses	Dimethoate 0.05%, wettable sulpher 80 WP (2 g / liter), quinolphos 25 EC (2 ml/liter of water, carbaryl (4 g/ liter of water)	30	25	7
10	Harvesting	60 DAP	120	100	1

about pestiside doses (25%), growing season (20%), seed rate (18%) followed by irrigation methods (7%).

A cursory look at the table 5 reveals that every one knew about the harvesting time of okra i.e., 60 days after planting. 98 per cent of total respondent knew about dibbling of 3-4 seeds in a hole at 1-2 cm depth and 96 per cent knows about pests and disease of okra. 94 per cent knew that the spacing is 60X 30-45 cm. 90 per cent knew about the okra varieties released by KAU. More than half of the growers (57%) knew about the actual fertilizer and manure dosage. Only 25 per cent of total had the knowledge regarding pesticide doses. The percentage of knowledge about season and seed rate was 18 per cent and 15 per cent respectively. Only 7 per cent had the knowledge regarding irrigation method recommended by KAU.

In case ivy gourd (Table 6), it is clear that all the respondents had knowledge about harvesting of fruit i.e., 3 MAP. Ninety two per cent knew that propagation of ivy gourd is through stem cuttings with 3-4 nodes and of 30 - 40 cm length. Forty six per cent of growers knew that the spacing of ivy gourd is 4X 3 cm, whereas 33 per cent of total growers had knowledge about manuring of ivygourd. The knowledge about pesticide doses was limited to 25 per cent only. Only 18 per cent knew about the KAU variety 'Sulabha'. The least known practices were cultivating season (13%), followed by irrigation method (8%).

From the tables 2, 3,4,5,6 we could understand the most known and least known practices by the homestead vegetable growers. Most of the farmers' had a thorough knowledge about KAU varieties, sowing methods, spacing, pest and diseases of the particular crops, harvesting etc. Minimum knowledge was noticed in practices like seed rate, pesticide doses, and irrigation methods. This was presumably due to the high level of literacy and education among the farmers. In addition to this,

Table 6: Knowledge of respondents about recommended practices in Ivygourd cultivation in homesteads

n=120

S.No.	Particulars	POP Recommendation	Number	Per cent	Rank
1	Season	May-June, September-October	15	13	8
2	Varieties	Sulabha	22	18	7
3	Propagation	Stem cuttings with 3-4 nodes and of 30 - 40 cm length	110	92	2
4	Spacing	4 X 3 m	55	46	3
5	Irrigation	Drip irrigation	10	8	9
6	Manuring	FYM - 25 t /ha, N: P: K - 60-80 : 40-60 : 40 kg/ha	40	33	4
7	Pests and diseases	Fruit flies and gall insects, Leaf spot	35	29	5
8	Pesticides Doses	Carbaryl 10% DP/Carbaryl 0.2%, malathion	30	25	6
9	Harvesting	3 MAP	120	100	1

homestead farming oriented projects and activities of FSRS and KVK in Kollam district had a significant role on the knowledge level of farmers. The findings are in line with that of Noobiya (2016).

B. Comparison of respondent's knowledge about the KAU recommended practices in selected vegetables.

Table 7: Comparison of respondent's knowledge about the selected practices in amaranthus, chilli, bitter gourd and okra

S.	Groups	Average	F	F crit	Inference
1	Amaranthus	23.34	0.93	2.62	NS
2	Chilli	23.60			
3	Bitergourd	22.91			
4	Okra	23.15			

When we compare the knowledge about KAU recommended practices in the selected vegetables, it was clear that the cultivated F value was less than F critical value, hence there is no significant difference between the knowledge about KAU recommended practices in these four vegetables.

This result revealed that the homestead vegetable growers from Kollam district possess similar level of knowledge regarding KAU recommended practices of amaranthus, chilli, okra and bitter gourd, which indicates that the farmers give equal importance to all the four vegetables and so efforts are taken to update their knowledge in all these crops. In homestead farming emphasis is given for ensuring food security for the family and making profit by marketing the products is secondary. The selection of crops, for cultivation in homestead is a reflection of needs of the family. So the homestead vegetable growers gave equal importance to all vegetables.

The high and equal knowledge rate for all crops among farmers revealed that the extension orientation from different sources such as formal institutions like Krishi Vigyan Kendra, FSRS (Farming System Research station), Krishi Bhavan and VFPCK and various mass media sources were also giving equal priority for all vegetables. Similar result was reported by Namitha (2017)

CONCLUSION

Hence it can be summarised that majority of the vegetable growers had medium level knowledge on KAU production practices. Most of the farmers had a thorough knowledge about KAU varieties, sowing methods, spacing, pest and diseases of the particular crops, harvesting etc. Minimum knowledge was noticed in practices like seed rate, pesticide doses, irrigation methods and the farmers gave equal importance to all the vegetables. The probable reason for this is their eagerness in solving problems and better exposure with various institutes, officials and also their interest in extension activities to gather recent information and good contact with extension workers.

REFERENCES

Basheer, N. 2016. Technology utilisation of bittergourd in Thiruvananthapuram district. M.Sc. (Ag) thesis, Kerala Agricultural University, Thrissur

Jat, J. R., Singh, S., Lal, H., and Choudhary, L. R. 2011. Knowledge level of farmers about improved tomato production technology. *Raj. J. Extn. Edu.* **19**: 139-143.

Namitha, K. 2017. Sustainability of commercial vegetable cultivation in Thiruvananthapuram district: A multidimensional analysis. M.Sc.(Ag) thesis, Kerala Agricultural University, Thrissur

Vijay Kumar, K., Pochaiah, M. and Raghupathi Reddy, G. 2003. Correlates of entrepreneurial behaviour of floriculture farmers. *MANAGE Extn. Res. Rev.* **4**(1): 153-164.

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CONSTRAINTS ANALYSIS OF MAIZE GROWERS OF INTERMEDIATE ZONE OF JAMMU REGION

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ABSTRACT

The present study was conducted in purposely selected Rajouri district of Jammu and Kashmir to find out the constraints in the adoption of recommended maize production technology. There are 9 blocks in Rajouri district, out of which one block namely Rajouri was selected on the basis of maximum area under Maize cultivation. From Rajouri block, ten villages were selected on the basis of maximum area under Maize cultivation. From each selected village, 12 tribal and 12 non-tribal maize growers were selected randomly. Thus, in all 240 farmers (120 tribal and 120 non-tribal farmers) were included in the sample of the study. The analysis of information collected by personal interview method revealed that 52.00 per cent of respondents had medium level of constraints, whereas 25 per cent and 23 per cent of respondents had low and high levels of constraints respectively regarding adoption of recommended maize production technology. The calculated z-value was greater than its tabulated value at 1 percent level of significance. It means that there was a significant difference between tribal and non-tribal farmers with respect to constraints faced by them in adoption of recommended maize production technology. Age, education, size of land holding, extension personnel contact, participation in extension programme, mass media exposure and socio-economic status of the respondents were found to be positive and significantly correlated with constraints faced by the maize growers.

INTRODUCTION

Maize is the most widely distributed crop of the world being grown in tropical, sub-tropical and temperate regions up to 50^0C and from sea level to more than 300m above sea level under irrigated to semi-arid conditions. Being a versatile crop, it adopts easily to a wide range of production environments (Das *et al*. 2009). USA has the highest maize productivity (9.6 tons/ha) which is double than global maize productivity (4.9 tons/ha). In India, maize is cultivated over 8.26 million ha with a production of 19.31 million tons having an average productivity of 2.4 tons/ha contributing 8.5 per cent to the Indian food basket (Anonymous, 2009). The total maize growing area in Jammu and Kashmir state is 3.1 lakh ha. The total maize production in state is 5.12 lakh tons. The average maize production in Jammu province during 2012-13 was 2.2 tons/ha. In J&K, maize is cultivated in an area of 47815 hectares with the production of 721150 quintals. The productivity of maize crop during 2014-15 in Rajouri district was 15.08 quintals/ha (Anonymous, 2014-15).

Keeping all this in background, the present investigation was conducted to identify the constraints faced by the maize growers of intermediate zone of Jammu region in the adoption of recommended maize production technology.

RESEARCH METHODOLOGY

The present study was conducted in purposively selected Rajouri district of Jammu and Kashmir. There are 9 blocks in Rajouri district, out of which one block namely Rajouri was selected on the basis of maximum area under maize cultivation. From Rajouri block ten villages were selected on the basis of maximum area under maize cultivation. From each selected village 12 tribal and 12 non-tribal maize growers were selected randomly. Thus in all, 240 farmers (120 tribal and 120 non-tribal farmers) were included in the sample of the study. The data were collected through personally interviewing the

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respondents with the help of a pre-tested and structured interview schedule.

RESULTS AND DISCUSSION

Distribution of respondents according to the level of constraints faced by them: The data presented in Table 1 reveal that 52.00 per cent respondents faced medium level of constraints in the adoption of recommended maize production technology. While 25.00 per cent and 23.00 per cent maize growers were observed in low and high constraint groups respectively.

A close look at the data presented in Table 1 further shows that 54.00 per cent tribal and 49.00 per cent non-tribal farmers fell under the category of medium level of constraints. Similarly, 15.00 per cent tribal and 35.00 per cent non-tribal maize growers were found in low level of constraints category. However, 31.00 per cent tribal and 16.00 per cent non-tribal respondents were observed in high level of constraints group. Similar findings were reported by Singh et al. (2012).

Aspect wise constraints faced by maize growers: All the constraints expressed by maize growers were categorized into input, technical, marketing and miscellaneous constraints. The results are presented below:

Input constraints: The data incorporated in Table 2 reveal that high cost of fertilizers (MPS 86.00) was expressed as the most severe constraint by the respondents. Besides, unavailability of quality seed in time (MPS 85.00) and lack of information about the availability of inputs (MPS 83.00) were other most severe constraints faced by the maize growers. Inadequate availability of inputs (MPS 79.00), unavailability of inputs at village level (MPS 72.00), high cost of seed (MPS 71.00), unavailability of fertilizers at peak season (MPS 63.00) and adulteration of inputs (MPS 49.00) were the severe constraints expressed by the respondents and assigned IV, V, VI, VII and VIII ranks respectively. Whereas, the least felt constraints in the category of input constraints were unavailability of plant protection equipments (MPS 17.00) and unavailability of plant protection chemicals in time (MPS 10.00) and were ranked IX and X respectively by the respondents. Similar findings were reported by Intodia *et al.* (2009-2010).

Technical constraints: Table 2 reveals that high rental charges of tractor (MPS 100.00), unavailability of tractor at proper time (MPS 95.00), lack of technical knowledge regarding proper application of plant protection chemicals (MPS 86.00), high termite attack (MPS 84.00) and spurious plant protection chemicals (MPS 79.00) were expressed as the most severe constraints by the respondents and were placed at I, II, III, IV and V ranks by them in the ranking hierarchy. Lack of soil testing facilities at nearby places (MPS 66.00) and lack of knowledge of recommended package of practices (MPS 54.00) were the severe constraints encountered by the respondents and ranked VI and VII by them. However, inadequate knowledge about intercropping (MPS 13.00) was expressed as the least severe technical constraint

Table 1: Distribution of respondents according to the level of constraints faced by them

n=240

Level of constraints	Tribal Farmers		Non-Tribal Farmers		Total	
	f	%	f	%	f	%
Low (Below 53.41)	18	15.00	42	35.00	60	25.00
Medium (53.41 to 67.18)	65	54.00	59	49.00	124	52.00
High (Above 67.18)	37	31.00	19	16.00	56	23.00
Total	**120**	**100.00**	**120**	**100.00**	**240**	**100.00**

Table 2: Constraints faced by the maize growers

n=240

S.No.	Constraints	Tribal Farmers		Non-Tribal Farmers		Total	
		MPS	Rank	MPS	Rank	MPS	Rank
A.	**Input constraints**						
1.	Unavailability of quality seed in time	86.00	I	84.00	II	85.50	II
2.	High cost of seed	72.00	V	70.00	VI	71.00	VI
3.	Unavailability of fertilizers at peak season	62.00	VII	64.00	VII	63.00	VII
4.	High cost of fertilizers	85.00	II	87.00	I	86.00	I
5.	Unavailability of plant protection chemicals in time	14.00	X	6.00	X	10.00	X
6.	Unavailability of plant protection equipments	20.00	IX	14.00	IX	17.00	IX
7.	Unavailability of inputs at village level	70.00	VI	74.00	V	72.00	V
8.	Adulteration of inputs	46.00	VIII	52.00	VIII	49.00	VIII
9.	Lack of information about the availability of inputs	84.00	III	82.00	III	83.00	III
10.	Inadequate availability of inputs	78.00	IV	80.00	IV	79.00	IV
B.	**Technical constraints**						
1.	Lack of knowledge of recommended package of practices	63.00	VII	45.00	VII	54.00	VII
2.	Lack of soil testing facilities at nearby places	67.00	VI	65.00	VI	66.00	VI
3.	Spurious plant protection chemicals	80.00	V	78.00	V	79.00	V
4.	Inadequate knowledge about intercropping	14.00	VIII	12.00	VIII	13.00	VIII
5.	Unavailability of tractor at proper time	96.00	II	94.00	II	95.00	II
6.	High rental charges of tractor	100.00	I	100.00	I	100.00	I
7.	Lack of technical knowledge regarding proper application of plant protection chemicals	87.00	IV	85.00	III	86.00	III
8.	High termite attack	89.00	III	79.00	IV	84.00	IV
C.	**Marketing constraints**						
1.	Poor marketing facilities resulting high risk	88.00	II	84.00	II	86.00	II
2.	Markets are distantly located	85.00	III	81.00	III	83.00	III
3.	Non-remunerative price of produce	92.00	I	86.00	I	89.00	I
4.	Lack of knowledge of support procurement price	68.00	IV	64.00	IV	66.00	IV
5.	Poor condition of approach roads	29.00	V	27.00	V	28.00	V
6.	Inadequate transport facilities	17.00	VI	15.00	VI	16.00	VI
D.	**Miscellaneous constraints**						
1.	Inadequate and untimely rainfall	93.00	I	89.00	II	91.00	I
2.	Lack of storage facilities	29.00	VI	27.00	VI	28.00	VI
3.	Undulated topography and small land holding	59.00	V	57.00	IV	58.00	V
4.	Poor state extension facility	87.00	II	91.00	I	89.00	II
5	Lack of training facilities	85.00	III	87.00	III	86.00	III
6.	Unawareness about Kisan Credit Card (KCC)	62.00	IV	56.00	V	59.00	IV

MPS= Mean per cent Score

by the respondents and accorded VIII rank.

Marketing constraints: A perusal of data presented in Table 2 divulge that non-remunerative price of produce (MPS 89.00), poor marketing facilities resulting in high risk (MPS 86.00) and markets are distantly located (MPS 85.00) were the most severe constraints faced by the respondents and were assigned I, II and III ranks respectively in the rank hierarchy of marketing constraints. Lack of knowledge of support procurement price (MPS 66.00) was the severe constraint encountered by the respondents and assigned IV rank by them. However, poor condition of approach roads (MPS 28.00) and inadequate transport facilities (MPS 16.00) were the least severe constraints expressed by the sampled maize growers.

Miscellaneous constraints: Table 2 reveals that inadequate and untimely rainfall (MPS 91.00), poor state extension facility (MPS 89.00) and lack of training facilities (MPS 86.00) were expressed as the most severe constraints by the respondents and were placed at I, II and III ranks by them in the ranking hierarchy. Unawareness about Kisan Credit Card (MPS 59.00) and undulated topography and small land holding (MPS 58.00) were the severe constraints encountered by the respondents and ranked IV and V by them. However, lack of storage facilities (MPS 28.00) was expressed as the least severe miscellaneous constraint by the respondents and accorded VI rank.

To find out the variation or similarity in the constraints faced by tribal and non-tribal farmers, Z-test was applied. The results were presented in Table 3. Table 3 indicates that z-value was greater than its tabulated value at 1 percent level of significance. It means that there was significant difference between tribal and non-tribal farmers regarding the constraints faced by them in the adoption of recommended maize production technology.

Further analysis of table shows that mean score value of tribal farmers is more than non-tribal farmers which clearly indicates that tribal farmers had more constraints than the non-tribal farmers regarding adoption of recommended maize production technology. It might be due to the fact that tribal farmers possessed less knowledge, lower socio-economic status, less extension contacts and less social participation than non-tribal farmers.

Table 3: Comparison between tribal and non-tribal respondents about recommended maize production technology

S. No.	Category of respondents	Mean	S.D.	Z- value
1.	Tribal farmers	63.15	3.55	5.01**
2.	Non-tribal farmers	52.11	6.31	

**Significant at 1 per cent level of significance

Relationship between selected independent variables and constraints: It is evident from Table 4 that age, education, size of land holding, extension personnel contact, participation in extension programme, mass media exposure and socio-economic status of the respondents were found to be positive and significantly related with

Table 4: Correlation between selected independent variables and constraints faced by the maize growers

S. No.	Selected independent variables	'r' value
1.	Age	0.233**
2.	Education	0.211**
3.	Size of land holding	0.221**
4.	Social participation	0.012NS
5.	Extension personnel contact	0.227*
6.	Participation in extension programme	0.213*
7.	Mass media exposure	0.215*
8.	Socio-economic status	0.147**
9.	Caste	0.129NS
10.	Family size	0.053NS
11.	Family type	0.041NS
12.	Occupation	-0.211**

*Significant at 0.05 level of probability; **Significant at 0.01 level of probability

the constraints faced by them. The contacts with extension personnel who are engaged in agricultural development and participation in extension programme help an individual farmer to overcome the constraints and guide him to achieve the desired goal. The involvement of an individual in mass media programmes has shown a significant relationship. This may be owing to the fact that through radio and television, the agricultural messages can go rapidly and timely to far off and remote places. Variables like social participation, caste, family size and family type did not show any significant relationship with constraints of maize growers. Similar findings were also reported by Singh (2013).

CONCLUSION

On the basis of findings it is concluded that 52.00 per cent of respondents had medium level of constraints, whereas 25 per cent and 23 per cent of respondents had low and high levels of constraints respectively regarding recommended maize production technology. It was found that there was a significant difference between tribal and non-tribal farmers with respect to constraints faced by them in adoption of recommended maize production technology.

REFERENCES

Anonymous. 2009. Atlas of maize in India. Directorate of maize research report, New Delhi.

Anonymous. 2014-15. Regional Digest of Statistics (Jammu Division). Directorate of Economics and Statistics. Government of Jammu and Kashmir. pp: 60-65.

Dass, S., Kaul, J., Manivannam, S. A. and Chikkappa, G.K. 2009. Single cross hybrid maize- A viable solution in the changing climate scenario. *Indian Journal of Genetics* **69** (4): 331- 334.

Intodia, S.L., Kothari, G.L. and Soni, R.L. 2009 & 2010. Acceptance of agricultural university released variety of maize by the farmers of agro climatic zone IV B of Rajasthan. *Indian Journal of Extension Education and Rural Development* **17 & 18**: 79-82.

Kher, S. K. 1992. Adoption of improved Maize cultivation practices. *Indian Journal of Extension Education* **28** (1&2): 97-99.

Saxena, K. K., Jain, N.C. and Pandya, S.C. 1990. Transfer of rainfed maize technology and its adoption by the farmers in Malwa region. *Indian Journal of Extension Education* **26** (3&4): 70-73.

Singh, K., Singh, P. and Lakhera, J.P. 2012. Constraints in the adoption of maize production technology perceived by the small farmers. *Indian Journal of Extension Education and Rural Development* **20**: 112-116.

Singh, B. 2013. Adoption of improved production technology of rabi crops in arid zone. *Indian Journal of Extension Education and Rural Development* **21**: 10-14.

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ADOPTION OF ECO-FRIENDLY MANAGEMENT PRACTICES BY MANGO ORCHARDISTS

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ABSTRACT

The present study was conducted in Ratanagiri and Sindhudurg districts of South Konkan in Maharashtra to study the adoption level of the mango growers about eco-friendly management practices by interviewing 200 mango orchardists.The study results indicated that 75 per cent of the total respondents were in the 'medium' adoption group. It was further revealed that big orchardists had more adoption level than small one. It visualized that high adoption of lay out and planting was possessed by both the category of orchardists and was accorded 1st rank. Storage and transportation was accorded 2nd rank with little more difference between two categories.There was a significant correlation between small and big respondents with regard to ranks assigned to different aspects of adoption of eco-friendly management practices of mango. Findings indicated that there was a significant difference in level of adoption between small and big respondents about eco-friendly management practices of mango.

INTRODUCTION

Need based and location specific eco-friendly management practices and their full use at client system is of vital importance for maximization of agricultural production. Still there exists a wide gap between the technology available at the research stations and its adoption at the farmers level. Keeping this view in mind, an effort has been made to find out the extent of adoption of eco-friendly management practices of mango growers in Konkan region. Hence, it was imperative to examine the extent of adoption of small and big orchardists about eco-friendly management practices of mango with following specific objectives.

1. To study the extent of adoption of eco-friendly management practices by mango orchardists.
2. To study the aspect-wise adoption of mango orchardists about eco-friendly management practices of mango.
3. To study the comparison of adoption between small and big orchardists about eco-friendly management practices of mango

RESEARCH METHODOLOGY

The present study was conducted in Ratnagiri & Sindhudurg districts of south Konkan in Maharashtra. These districts were selected purposively on the basis of maximum area under mango cultivation in the Southern Konkan. For the selection of tehsils, a complete list of all the tehsils of both the identified districts where the mango fruit is being grown extensively was prepared.

From the list so prepared, Ratnagiri and Rajapur tehsils of Ratnagiri district and Deogad and Malvan tehsils of Sindhudurg district were selected on the basis of maximum area under mango cultivation. For selection of villages, five villages having maximum area under mango cultivation were selected from each identified tehsil. Thus, in all twenty villages were selected. To select the respondents, a category-wise comprehensive list of small and big orchardists of respective villages was prepared with the help of revenue officials and officials of State Agriculture Department. From the list so prepared, five small and five big orchardists were selected randomly from each identified village. Thus, in all 200 farmers (100

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small and 100 big orchardists) were included in the sample study. The percentages, mean, standard deviation, z test and rank correlation etc. were used for the statistical tools.

RESULT AND DISCUSSION

The results are presented herewith as below:

1. Extent of adoption of eco-friendly management practices by mango orchardists

To get an overall view of adoption level, the respondents were categorized into three groups on the basis of calculated mean and standard deviation of the adoption score obtained by the respondents. The results are presented in Table 1.

Data presented in Table 1 depict that three fourth (75%) of the total respondents were in the 'medium' adoption group, whereas 12 per cent respondents were in 'high' adoption group and remaining 13 per cent mango growers observed in the 'low' level of adoption group about eco-friendly management practices of mango. The average score of adoption i.e. 187.34 also indicates the medium level of adoption.

In case of small orchardists 72 per cent respondents were having 'medium' level of adoption while, 21 per cent and 7 per cent of respondents were having 'low' and 'high' adoption, respectively. In case of big orchardists 78 per cent, 17 per cent and 5 per cent respondents were having 'medium', 'high' and 'low' adoption level, respectively. From the above results it can be concluded that big orchardists had more level of adoption of eco-friendly management practices of mango than small orchardists. Higher adoption of eco-friendly management practices by big orchardists may be attributed to high knowledge, more scientific orientation, and high information seeking behaviour possessed by them in comparison to small orchardists.

These findings are similar in line with the findings of Singh (2010) who found that 63.75 per cent, 18.75 per cent and 17.50 per cent of mango orchardist had adopted recommended cultivation practices of mango to 'medium', 'low' and 'high' level, respectively.

2. Aspect-wise adoption of eco-friendly management practices by mango orchardists

In order to know the aspect wise adoption of mango cultivation technology by the respondents, eleven major practices have been identified. The mean per cent scores were calculated for each practice and then the results about the same have been presented in Table 2.

A perusal of data in Table 2 clearly visualizes that high adoption of lay out and planting was possessed by both the category of orchardists and was accorded 1st rank. Storage and transportation

Table 1: Distribution of the respondents on the basis of adoption of eco-friendly management practices of mango

S. No.	Level of Adoption	Small mango growers		Big mango growers		Total	
		F	%	F	%	F	%
1.	Low (< 166)	21	21.00	5	5.00	26	13.00
2.	Medium (166 to 208)	72	72.00	78	78.00	150	75.00
3.	High (>208)	7	7.00	17	17.00	24	12.00
	Total	**100**	**100.00**	**100**	**100.00**	**200**	**100.00**
	Average (score)	**181.86**		**192.82**		**187.34**	

F = Frequency,% = Percentage

Table 2: Adoption of eco-friendly management practices of mango among the respondents

S.No.	Practices	Small orchardists		Big orchardists		Total	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Soil and climate	65.89	6	70.89	8	68.39	6
2.	Lay out and planting	85.33	1	89.22	1	87.28	1
3.	After care and intercultural operations	45.63	11	76.79	5	61.21	9
4.	Irrigation and intercropping	51.17	10	64.33	10	57.75	11
5.	Manures and fertilizers application	60.11	7	74.37	6	67.24	7
6.	Plant protection measures (Insect pests)	54.18	9	62.20	11	58.19	10
7.	Plant protection measures (Diseases)	75.18	4	78.18	4	76.68	4
8.	Physiological disorder and nutritional deficiency management	59.76	8	65.52	9	62.64	8
9.	Harvesting, washing, drying and grading	75.73	3	78.90	3	77.32	3
10.	Post-harvest management	33.33	12	33.33	12	33.33	12
11.	Packaging	68.26	5	72.04	7	70.15	5
12.	Storage and transportation	77.58	2	80.50	2	79.04	2

rs = 0.8251**

MPS= Mean per cent score

** = Significant at 1% level of significance

was accorded 2nd rank with little more difference between two categories. Similarly harvesting, washing, drying and grading, plant protection measures (diseases), packaging, were accorded third, fourth and fifth rank in the order with MPS of more than 70 per cent. Unfortunately, the adoption about soil and climate, manures & fertilizers application, physiological disorder & nutritional deficiency management, after care & intercultural operations, plant protection measures (insect pest) were reported with lower ranks from sixth to tenth, which in turn indicates the adoption gap among the orchardists regarding these important eco-friendly management practices.

With the results at hand, it can be concluded that the practices like irrigation & intercropping, post-harvest management are the areas where maximum gap exists which needs to be bridged by suitable efforts of concerned agencies.

To find out the correlation if existed between rank accorded by two category of orchardists for the listed practices was worked out. It was found the rank correlation value 0.8251 is significant at 1 per cent level. Thus, it was inferred that there was a significant correlation between small and big respondents with regard to ranks assigned to different aspects of adoption of eco-friendly management practices of mango.

The findings are in line with findings of Singh (2010) who found that adoption of improved practices of mango ranges from 47.06 per cent to 61.87 per cent. The findings are also similar with

findings of Anonymous (2008a) who found that adoption of 'Banavali' variety (100%), plant distance (42%), planting (16 to 58%), fertilizer application (12 to 13%), water management (12 to 40%), inter and mix cropping (12 to 71%), plant protection (3 to 30%) and harvesting (67 to 97%).

3. Comparison of adoption between small and big orchardists about eco-friendly management practices of mango

To find out the difference in the adoption of small and big orchardists about eco-friendly management practices of mango, 'Z' test was applied. The results are presented in table 3.

Table 3: Comparison between small and big orchardists about adoption of eco-friendly management practices of mango

S. No.	Category of farmers	Mean	S.D.	'Z' Value
1.	Small orchardists	181.86	23.16	3.83**
2.	Big orchardists	192.82	16.80	

** Significant at 1 per cent level of significance

The data in Table 3 indicate that calculated 'Z' value was greater than its tabulated value (1.75) at 1 per cent level of significance which leads to the conclusion that there had been significant difference in level of adoption between small and big orchardists regarding eco-friendly management practices of mango.

Further analysis of table shows that mean score value of small orchardists in almost all of the practices is less than big orchardists, which clearly indicates that big orchardists had more adoption level than the small orchardists about eco-friendly management practices of mango.

CONCLUSION

It is encouraging to note that majority of orchardists possess medium level of adoption of eco-friendly management practices. The other face of the coin is that only 12 per cent respondents had high adoption of practices. It may be due to the average knowledge of practices possessed by respondents. It is therefore recommended that the extensive training programme, especially on practices where the adoption was poor may be conducted. In this connection post-harvest management for pest and disease management, irrigation, intercropping, plant protection measures be given due focus by the concerned agencies.

REFERENCES

Anonymous, 2006. Study of non-cash (non-monetary) inputs adopted by farmers for rice and mango crops. A sub-committee report of Department of Extension Education, College of Agriculture, Dapoli submitted to Dr. B.S.K.K.V., Dapoli, Dist. Ratnagiri (M.S).

Anonymous, 2008a. Adoption gap in coconut cultivation. A sub-committee report of Department of Extension Education, College of Agriculture, Dapoli submitted to Dr. B.S.K.K.V., Dapoli, Dist. Ratnagiri (M.S).

Borate, H.V., Mahadik, R.P. and Kokate, K.D. 2010. Entrepreneurial behaviourof mango growers. *Journal of Community Mobilization and Sustainable Development* **5**(2): 69-73.

Borate, H.V., Mahadik, R.P., Hake, A.D. and Sawant, P.A. 2012. Knowledge and adoption of sapota growers in Thane district. *International Research Journal of Agricultural Economics and Statistics* **3**(1): 159-161

Singh, K. 2010. Problems and prospects of mango cultivation in tribal district of Southern Rajasthan. Ph.D.(Ag) thesis submitted to Maharana Pratap University of Agriculture and Technology, Udaipur.

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ANALYSIS OF PREVAILING DAIRY FARMING PRACTICES OF BHEEL TRIBES OF WESTERN RAJASTHAN

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ABSTRACT

The Present study was conducted to identify the existing dairy farming practices of Bheel tribes of Jodhpur district of Rajasthan state, taking into account of 50 tribal respondents selected from ICAR-CAZRIs adapted village Ujaliya of Baori block/tahsil. The data were collected through a well-structured interview schedule and the results were interpreted with the help of tabular analysis. It was observed that the majority dispose placenta through deep burial and fed colostrum to their new borne calves. They also practiced natural means of naval separation and mostly they covered their animals with jute bags during winter and provided water two times a day. It was also found that they never dewormed, groomed or castrated their animals. Stall feeding is the most common practice among them for feeding, preferred non-bushy grazing land and feed fodders for increasing the milk production. The results also reflects that they isolate their animal when it fall sick, applied turmeric paste for small wounds, use sap of Aloe Vera for burns to get cooling sensation, contact a veterinarian for its treatment and never get their animal vaccinated on time. Findings of the study also indicated that the respondents tied their animals below the tree shade, practiced knuckling method of milking and milked two times in a day. After milking, mostly they boil it and prepared curd & ghee for home consumption. Animal carcasses are buried after their death.

INTRODUCTION

The majority of the tribal households in India depends on agriculture and animal husbandry for their livelihood.The hot western region of Rajasthan distributed in the above 9 districts of the state have livestock wealth of more than 26 million, which is about 50 per cent of the total population of the state reflects the immense importance of livestock. So livestock farming including small ruminant production system is considered to be an effective instrument to combat drought proofing. Even though it is being a complementary enterprise, the statistics of this region reflects the milk production and productivity per animal is less compared to its maximum production potential.

Limitations in area expansion, scattered land holdings, low soil fertility, rain dependent agriculture, shortage of fodder during winter, low milk production per animal and the attack from wild animals are considered to be the major limiting factors for tribal households affecting agriculture & animal husbandry. Over the years the central and state government have been taking various initiatives to uplift the tribal population in our country. India witnessed several changes over the years in its emphasis, approaches, strategies and programmes. The scientific dairy innovations, interventions, technologies and practices focused towards tribal households brought some advancement but still there are considerable gaps for improvement. In order to bring a change in their dairy farming practices it is essential for the policy maker to understand and analyze their prevailing practices to provide better solution for their welfare and economic upliftment in the future.

RESEARCH METHODOLOGY

The main objective of this study is to analyze the prevailing dairy farming practices of Bheel tribes. Both conventional and participatory methods have been used to document the local knowledge in

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general and dairy farming in particular. The present study was conducted in Jodhpur district (having considerable population of Bheel Tribe) of Rajasthan state. A total of 50 tribal households were selected from ICAR-CAZRIs adapted village Ujaliya of Baori block/tahsil. The data were collected through a pre-tested and well-structured interview schedule and the results were interpreted with the help of tabular analysis under five heads viz., Conventional practices, Breeding practices, Feeding practices, Healthcare practices and Management practices.

RESULTS AND DISCUSSION

An attempt has been made in order to understand the existing dairy farming practices of Bheel tribes and the results were presented as follows.

Conventional Practices

Calving, the process of giving birth to a calf is a complex process and is considered to be a critical time for both mother and the calf. Usually no assistance is needed at the time of calving. However, during calving difficulty the tribals usually seek the assistance from knowledgeable neighbour, friend, para veterinarians / stockman if available in the nearby vicinity. As observed from Table 1, 76 per cent of tribal households generally don't practice naval cutting and let to fall off naturally (Khatik, 1994 and Avinashilingam, 2005) but about one fourth (24.00%) of the tribal households reported that the umbilical cord was cut by using new shaving blade or surgical instruments.

After calving, disposing placenta was mostly done by deep burial (68.00 %) followed by throw off (32.00%) (Avinashilingam, 2005). The tribal households believed that colostrum feeding will prevent the bad spirits from attacking the young calves and increase immunity to the new borne calf. About 62.00 per cent of respondents supported colostrum feeding to newborn calves followed by 38.00 per cent respondents did not allow feeding colostrum to the newborn calves (Avinashilingam, 2005). Regarding the watering of animals, majority of respondents (58.00%) offered water to their animals two times a day. This was followed by 42.00 per cent of respondents, who offered water only once. Most of the tribal household (88.00%) provided gunny bags or hard blankets to protect calves from cold, whereas 12.00 per cent of respondents don't provide any bedding material to their animals.

After rearing the major part of the calf feeding is through grazing. More than 60 per cent of dairy farmers allowed calves of two to four months for grazing(Srivastava, 1982; Kokate, 1984 and Khatik, 1994), whereas, 32.00 per cent of respondents allowed their animals at the age of four to six months followed by only 6 per cent of respondents allowed their calves within less than two months. It was also found during the study that the bheel tribal households never dewormed, groomed or castrated their animals. The above findings indicates that the tribal households still following conventional practices viz. letting the umbilical cord to fall of naturally, disposing placenta by deep burial, feeding colostrum and provide blankets and gunny bags to the newborn.

Breeding Practices

Breeding practices of Bheel tribes reflects that they are not far in identifying their heifer is matured for service. Perlustration of Table 2 reveals that majority of tribal households (80.00%) identified could identify their heifer is mature for service by observing the primary symptoms like cows stand to be mounted by other cows, mucus discharge, swelling and reddening of vulva, bellowing, restlessness and trailing and urinates frequently. Only in some cases (20.00 %) with silent exhibitors, these signs were not marked. Mostly they never provide any special ration to induce heat in heifers/buffaloes/ cows with a few exceptions. Traditionally, tribals believed in natural breeding practice. The Table 2 shows that only a few individuals (18.00 %) got their cows/ buffaloes artificially inseminated. More than three fourth of the households (78 %) diagnosed pregnancy of animal only after three months. They explained that there was an increase belly and pelvic regions in the latter stage of

Table 1: Conventional Practices in Dairy Farming

n=50

S.No.	Practices	Frequency (%)
a.	Which practice you follow for naval separation in the calf?	
	Surgical instruments used	12 (24.00)
	Natural	38 (76.00)
b.	How do you dispose off placenta?	
	Burried	34 (68.00)
	Thrown away	16 (32.00)
c.	Are you feeding colostrum to newborn calves?	
	Yes	31 (62.00)
	No	19 (38.00)
d.	Frequency of watering to the animals	
	2times / day	29 (58.00)
	1time/day	21 (42.00)
e.	Do you provide bedding material to protect calves from cold	
	Yes	44 (88.00)
	No	6 (12.00)
f.	Do you get your calves dewormed?	
	Yes	-
	No	50 (100.00)
g.	At what age you allow the calf for grazing?	
	4-6 months	16 (32.00)
	2 - 4 months	31 (62.00)
	<2 months	3 (6.00)
h.	Do you prefer to castrate the male calves?	
	Yes	0 (0.0)
	No	50 (100.0)
i.	Do you groom your calves?	
	No	50 (100.0)
	Yes	-

Note: Figures in parenthesis indicates percentage in their respective category.

pregnancy (Khatik, 1994 and Avinashilingam, 2005).

The methods tribals used for identifying their heifer for service exhibits their sound knowledge in dairy farming.The reasons for not getting their cows & buffaloes inseminated by the superior semen available at local veterinary hospitals was due to their orientation towards natural service for breeding. They also reported that urine turns whitish during pregnancy.

Feeding Practices

Feeding and nutrition are important to maintain the animal body functioning properly, replacing worn out tissues, maintaining body temperatures and

supplying energy for muscular activity. It is a major factor to determine how well our cows will perform in terms of milk production, growth, body condition and overall health. A perusal at Table 3 indicates that the majority of the respondents (66.00%) practice stall feeding of animals followed by almost an equal percentage of respondents practiced grazing alone and grazing along with stall feeding. Almost all the tribals(98.00%) offered feeds and fodders to animals mainly for more milk production, whereas only 2.00 per cent of tribal households offered feeds and fodders for increasing fat content (Khatik, 1994).

Most of the tribal households (82.00%) preferred non-bushy type of grazing land for calves followed by succulent (16.00%) and near to water resources (2.00%). Grazing was the preferred ration schedule followed by weaned calves after three months. Due to the non-availability of fodder during winter months was the main reason for the tribal households for allowing the animals for open grazing.

Healthcare Practices

A well managed health care system in livestock produce good animals with good health. Whereas in bheel tribes it is upside down. The Table 4 data depicts that more than fifty per cent of the respondents (58.00%) got their animals treated by their native medicines and a substantial percentage (36.00%) took help from their relatives and friends. It was also noted that there are very few, who took help from practicing veterinarian (6.00%). This findings are in line with Nagaraju, (2001) and Md Shahid Eqbal, (2013).

The findings from Table 4 reveals that the majority of the respondents (98.00%) segregate / separate their animal during illness (Khatik, 1994). The tribes who do the animal separation also sanitize the shed, applied turmeric paste for small wounds, use aloe vera sap for burns to get cooling sensation as well as clean the utensils regularly.More than three fourth of the tribals won't vaccinate their animals at all. Only 18.00 per cent of tribal dairy farmers vaccinated their animal at proper time. This might be due to the fact that most of the tribal dairy farmers were illiterate and possess high religious belief and faith towards god. Besides the above, unavailability of veterinarians and the vaccines at village / cluster level are may be the possible reasons for the tribals for not vaccinating their animals at proper time.

Table 2: Breeding Practices in Dairy Farming

n=50

S.No.	Practices	Frequency (%)
a.	Do you identify that your heifer is mature for service?	
	Yes	38 (80.00)
	No	12 (20.00)
b.	Do you provide any special ration to induce heat in your heifers &cows/buffaloes?	
	Yes	6 (12.00)
	No	44 (88.00)
c.	Do you get your cows/buffaloes artificially inseminated?	
	Yes	9 (18.00)
	No	41 (82.00)
d.	Within what period do you identify that your animal is pregnant?	
	1 - 6 months	39 (78.00)
	> 6 months	11 (22.00)

Note: Figures in parenthesis indicates percentage in their respective category.

Table 3: Feeding Practices in Dairy Farming

n=50

S.No.	Practices	Frequency (%)
a.	Indicate the feeding practices followed?	
	Grazing	8 (16.00)
	Stall feeding	13 (66.00)
	Grazing and Stall feeding	9 (18.00)
b.	Why do you offer feeds and fodders to animals?	
	To increase milk yield	49 (98.00)
	To increase fat content	1 (2.00)
c.	Type of grazing land preferred for calves?	
	Succulent	8 (16.00)
	Non-Bushy	41 (82.00)
	Near to water sources	1 (2.00)
d.	What ration schedule do weaned calves follow after 3 months?	
	Only grazing	50 (100.00)
	Grazing and dry fodder	-
	Grazing, dry fodder and concentrate	-

Note: Figures in parenthesis indicates percentage in their respective category.

Table 4: Healthcare practices in Dairy Farming

n=50

S.No.	Practices	Frequency (%)
a.	Whom you contact when your animal fall sick?	
	Veterinarian	3 (6.00)
	Self-treatment	29 (58.00)
	Relatives and friends	18 (36.00)
b.	What general precautions you take when your animal is sick?	
	Isolate	49 (98.00)
	Nothing	1 (2.00)
c.	Do you get your animals vaccinated at proper time?	
	Yes	9 (18.00)
	No	41 (82.00)

Note: Figures in parenthesis indicates percentage in their respective category.

Management Practices

A look at Table 5 makes it clear that majority of the tribal dairy farmers (68.00%) have separate animal shed for their animals (Pandey, 1989)

Table 5: Management practices in Dairy Farming

n=50

S.No.	Practices	Frequency (%)
a.	Housing arrangements	
	Separate animal shed	34(68.00)
	No separate shed, open areas	16 (32.00)
b.	What is the frequency of milking in your buffalo/ cow?	
	1time/day	3 (6.00)
	2times/day	47 (94.00)
c.	Method of Milking	
	Full Hand	8 (16.00)
	Knuckling	40 (80.00)
	Stripping	2 (4.00)
d.	Do you wash the udder before milking?	
	Yes	44 (88.00)
	No	6 (12.00)
e.	Do you let out calf for suckling before actual milking starts?	
	Yes	45 (90.00)
	No	5 (10.00)
f.	How milk is kept after milking? (Do you boil the milk)	
	Yes	42 (84.00)
	No	8 (16.00)
g.	Do you prepare the following	
	Curd	6 (12.00)
	Ghee	2 (4.00)
	Lassi	3 (6.00)
	All the above	39 (78.00)
h.	Do you sell milk?	
	Yes	39 (78.00)
	No	11 (22.00)
i.	How the carcasses are disposed of?	
	Hand over to the cobbler	40 (80.00)
	Buried	6 (12.00)
	Thrown out in the field	4 (8.00)

Note: Figures in parenthesis indicates percentage in their respective category.

followed by 32.00 per cent of tribal households who doesn't have any shed allocated for their animals and kept their animals in open space (Khatik, 1994, Selvaraj, 2002 & Avinashilingam, 2005).

Milking twice a day is the normal practice for most of the tribal households (94.00 %) followed by 6.00 per cent who milks only once. Knuckling is the preferred method of milking practiced by about

80 per cent followed by full hand (16.00%) and stripping (4.00 %). It is almost customary to all the tribals households i.e. 90 per cent to wash the udder before milking and let out calf for suckling before milking. Majority of respondents (84.00%) did not boil the milk after milking and majority of tribal households (78.00%) prepared Curd, Ghee and Lassi. The tribal households sold the milk mostly (78.00%) leaving 22.00 per cent who kept for home consumption. Majority of the respondents (79.08%) were selling milk whatever they produced. More than 80 per cent of the respondents replied that their animal carcasses were hand over to the cobbler, whereas 12 per cent buried it and very few thrown out open in the field.

The above findings show that the Bheel tribal groups are managing their animals in separate cattle sheds and wash their animal's udder before milking. Selling of milk within the village is a positive and appreciative attempt by the tribal households towards income generation and economic independence. But their inefficiency reflects by not producing consistent amount of milk and supplying regularly to the nearby cooperatives.

CONCLUSION

On the basis of above, it could be concluded that the Bheel tribes of Rajasthan are still practicing their conventional dairy farming practices, whereas a small number had taken initiative to move towards scientific dairying.

REFERENCES

Economic Survey, 2003-2004. Government of India, Ministry of Finance and Company Affairs, Economic Division, New Delhi.

Khatik, G.L. 1994. A study on training needs of tribal dairy farmers of Rajasthan. Ph.D. Thesis, NDRI, Karnal (Haryana).

Marimuthu, P. 2001. Indigenous tribal wisdom for rural development: A multi-dimensional analysis. Ph.D. Thesis, TNAU, Coimbatore.

Md Shahid Eqbal, Manish Kumar Singh, Nizam Khan & Kamala Kant, 2013. Dairy Farming Practices Followed by Tribal Dairy Farmers of Chotanagpur Region, India. *Environment & Ecology* **31**(31A): 1409 - 1413

Pandey, A.K. 1989. Impact of Animal husbandry programmes in adopted villages of Birsa Agricultural University, Ranchi. M.Sc. Thesis, Birsa Agricultural University, Ranchi.

Selvaraj 2002. Dairying amongst Todas of Nilgiris. Ph.D. Thesis, NDRI, Karnal (Haryana).

Sivanarayana, G. 1993. Indigenous technical knowledge and communication systems. Ph.D. Thesis, Banaras Hindu University, Varanasi.

Vijay Avinashilingam, N.A. 2005. Knowledge level of tribal households and their decision making pattern in dairy farming - A study in Nilgiris district of Tamil Nadu. Ph.D.Thesis, NDRI, Karnal.

http://farmech.gov.in/06035-04-ACZ14-15052006.pdf accessed on 8.9.2017

http://vikaspedia.in/agriculture/livestock/role-of-livestock-in-indian-economy accessed on 9.8.2017

http://vikaspedia.in/agriculture/crop-production/weather-information/agro-climatic-zones-in-india accessed on 8.9.2017

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ECONOMIC EMPOWERMENT OF FARMERS THROUGH HONEY BEE FARMING IN HADOTI REGION OF RAJASTHAN

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ABSTRACT

This study was undertaken with the objective to study the socio-personal profile of the successful bee-keepers and the economic analysis of stationary and migratory apiculture in the Hadauti region of Rajasthan. The average size of migratory apiary units was found to be 192 hives and in case of stationary apiary units on an average there were 78 hives. The analysis of the socio-personal characteristics of the respondents revealed that the majority of the successful bee-keepers were in young age group, farming as major occupation along with bee keeping, high level of extension contact and maximum bee keepers were from other backward category background. The results depicted that the majority of bee keepers were from farming background and they took beekeeping as subsidairy occupation. However, unemployed youth were engaged with migratory apiculture and they adopt bee keeping as their main occupation. The five year average of honey production from migratory apiary units was 40.97 kg/ hive, whreras it was only 28.33 kg/ hive for stationary apiary units. The cost-benefit of both migratory and stationary apiary units was found to be 2.61 and 4.00 in the year 2014-15 respectively. Overall, five year average, cost benefit ratio was workout 2.34 for stationary and 3.36 for migratory bee keeping entreprise during the year 2011-2015. It was evident from the results that the net return of bee keepers increased with the increase in the number of colonies.

INTRODUCTION

Beekeeping plays a crucial role in the present context of commercialization of agriculture and liberalization of economy. It covers entire scope of honey bee resources, bee products, beekeeping practices, pollination services and their interface with business systems and environment integrity. The profession of bee-keeping offers an immense potential for providing employment to rural masses in India where many crops, vegetables, evergreen trees, forests etc. provide required flora. The distinctive feature of beekeeping is the small capital investment required as compared to other industries. Furthermore, it does not need raw material in usual sense as nature provides the same in the form of nectar and pollen. It can be carried out by all age groups, i.e. by men, women, grown- up children and even by physically handicapped and retired person (Monga and Manocha, 2011). It produces honey, beeswax, pollen, propolis from the flowers which can be sold out to earn income. If conditions are favourable, level of bee-keeping can be increased to semi-commercial or commercial level. KVK, Anta is only one first line extension institute in the Baran District which established by the Indian Agricultural Research Council, New Delhi to promote farmers, women, and youth to adoption of latest agricultural technologies and establish their own enterprise related to agriculture & allied sectors. The Kendra since its establishment has directed its efforts towards agricultural development in the district and bringing about entrepreneurship and skills among practitioners of agriculture and rural youth with a view to ensure livelihood security. The Krishi Vigyan Kendra, Anta -Baran are providing vocational trainings on beekeeping for generating employment among unemployed rural youth. However, for the effective popularization of apiculture in the farming communities, it was necessary to identify the socio-personal profile of

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successful beekeepers and the cost and return of bee-keeping to understand the profitability of the bee-keeping enterprise. This type of investigation was also important in context of policy making regarding bee-keeping. Therefore, the present study was undertaken with the objective to study the socio-personal profile of the successful bee-keepers and the economic analysis of apiculture enterprise in the Hadauti region of Rajasthan.

RESEARCH METHODOLOGY

Present investigation was conducted in Baran district of Hadauti region of Rajasthan. Krishi Vigyan Kendra, Anta-Baran was conducted a total 8 training programmes on bee-keeping during the years 2010-11 to 2015-16 and total 232 rural youth/ farmers were trained. Out of these, 56 continuous adopters of bee-keeping were selected for the present study. They were grouped in to two categories i.e. Migratory units (38) and Stationary units (18). Further, three sub-categories of these selected bee keepers were prepared on the basis of number of colonies i.e. small scale enterprise <100 hives), medium scale enterprise (between 100-200 hives) and large scale enterprise (> 200 hives). An interview schedule was developed to collect the data regarding socio-personal profile of the respondents and economic analysis of beekeeping enterprise.The data collected from the respondents were tabulated and analysed by using frequency and percentage. The cost and benefit sides were separately computed and the cost side divided the benefit side to compute the BC ratio. The cost items were grouped into two categories, i.e., i) non-recurring costs and ii) recurring costs. Total non-recurring cost includes cost on hives, bee hives, honey extractor, bee keeping kit and other miscellaneous items. The total recurring included, migration charges, labour cost, empty hive cost, other miscellaneous costs including depreciation as well as interest on non-recurring cost. The benefit cost ratio was computed by using the following formula:

$$B : C = \frac{\text{Total returns}}{\text{Total recurring cost}}$$

RESULTS AND DISCUSSION

Socio-personal profile of the beekeepers: The socio-personal profile of the bee keepers with respect to age, level of education, occupation, caste, land holdings and extension contact is shown in Table 1. It was found that majority of stationary bee keepers were in young age group (55.56%) followed by middle age group (44.44%) and none stationary bee keepers were in old age group. In case of migratory bee keepers, the majority of respondents were also in young age group (73.68%) followed by middle age group (23.68%) and old age group (2.64%) respectively. Overall, same trend was found that the majority of the successful bee-keepers were in young age group (67.86%) and remainings were in the middle age (30.36%) and old age group (1.78%), respectively. This shows that bee-keeping enterprise can be successfully promoted in rural areas for creating self-employment among rural youth and also practising farmers. These results were in line with the findings of the Moniruzzaman and Rahman (2009). The Maximum number (44.44%) of the stationary bee-keepers were having education upto metriculation (10+2 level), followed by middle level (33.34%), graduation level (22.22%) and none of the stationary bee keepers were post graduation level. In case of migratory bee keepers, the maximum number of respondents (42.10%) were having education upto metriculation (10+2 level), followed by middle level (34.22%), graduation level (15.79%) and post graduation level (7.89%), respectively. Overall, same trend was found that the maximum number of respondents (42.86%) were having education upto metriculation (10+2 level), followed by middle level (33.93%), graduation level (17.85%) and post graduation level (5.36%), respectively. These results were in accordance with the study conducted by Lal *et al*. (2012) and Mujuni *et al*. (2012). This is supports the idea that in rural areas where youth does not have requisite education for gaining employment can be engaged in the bee-keeping enterprise. Further, the Table 1 shows that the majority of the stationary beekeepers (88.89%) were having farming as major occupation along with

bee keeping. Only, few (11.11%) stationary bee keeper were from farming+ buisness cadre and none of the stationary beekeepers were without farming or buisness cadre. In case of migratory units, the majority (60.53%) was also having farming as major occupation along with bee keeping followed by only bee keeping (34.21%) and farming + buisness + beekeeping (5.26%) respectively. It might be due to unempoloyed youth were engaged with migratory units and they had adopted bee keeping as their main ocuupation. Overall, it was found that the majority of the beekeepers (69.65 %) were having farming as major occupation along with bee keeping and about 23.21 per cent had adopted bee keeping as main occupation. Only 7.14 per cent of the bee-keepers were from the business cadre. The results depicted that majority of the bee-keepers had farming background and they took the bee-keeping as subsidiary occupation due to availability of bee flora around their locality and positive outcome of bee-keeping on crop yields. Data (Table 1) reveals that maximum of the bee keepers (41.07%) were from other backward category background followed by scheduled tribe (26.78%), general category (19.65%) and scheduled caste (12.50%), respectively.

The Table 1 also depicts that about half (48.21%) of bee-keepers were having small size of land holding (1.0-2.0 ha), followed by medium size (23.21%) of land holding (2.0-10.0 ha), large size (16.08%) of land holding (>10 ha) and marginal size (12.50%) of land holding (less than 1.0 ha), respectively. It was observed that the majority of the stationary bee-keepers (66.67%) were having moderate level of extension contact followed by high level of extension contact (22.22%) and low level of extension contact (11.11%) respectively. In case of migratory, the majority of the bee-keepers (81.58%) were having high level of extension contact followed by moderate level of extension contact (13.16%) and low level of extension contact (5.26%) respectively. The overall, majority of the bee-keepers (58.93%) were having high level of extension contact followed by moderate level of extension contact (30.35%) and low level of extension contact (10.72%) with the experts and line departments, respectively. This might be due to the fact that the beekeepers were continue contact with KVK scientists, Department of Horticulture officials and other stakeholders for gaining recent knowledge and other requirements regarding enhancing the profitability in bee-keeping. This indicates that the economic status of the farmers can be improved by motivating them to adopt bee-keeping enterprise.

Economy of bee-keeping enterprise:

Bee-keepers got income from sale of honey, wax and pollen. Major expenditure was initial cost on the purchase of bee boxes, colonies, honey extracting machine, gloves, veil and other tools. While, calculating cost, all fixed and variable costs were included in the study. The details of the total cost and gross returns of different bee-keepers based on the information collected from individual bee-keepers have been calculated. The net returns were calculated by subtracting total cost from gross returns. The economics of individual beekeeper was calculated based on the information provided by bee-keepers.

Economy of stationary apiary units: The five year average cost and return was showns in Table 2 depicts that total nine stationary bee-keepers were practising bee-keeping on small scale followed by medium scale (06) and large scale (03) bee keeping entreprise, respectively. The average honey production was work out 28.33 kg/colony and sale rate was Rs.127.17/kg during the year 2011-2015. The average net returns were around 0.83 lacs for small scale, 2.70 lacs for medium scale and 5.19 lacs for the large scale stationory bee keeping entreprise, respectively. The cost benefit ratio was 2.54 for large scale followed by 2.16 for medium scale and 2.08 of small scale, respectively. Overall average, cost benefit ratio was workout 2.34 for stationary bee keeping entreprise during the year 2011-2015. It was found that the net retrun of bee keepers increased with the increase in the number of hives. The economic analysis of 18 selected stationary apiary units during the year 2014-15 was

Table 1: Socio-personal characteristics of the bee keepers

Parameters	Category	Stationary		Migratory		Total	
		No.	Per cent	No.	Per cent	No.	Per cent
Age	Young age (18-35 year)	10	55.56	28	73.68	38	67.86
	Middle age (36-49 year)	08	44.44	09	23.68	17	30.36
	Old age (50 year and above)	00	00.00	01	02.64	01	1.78
	Total	**18**	**100**	**38**	**100**	**56**	**100**
Level of Education	Upto Middle	06	33.34	13	34.22	19	33.93
	Matriculation (10+2)	08	44.44	16	42.10	24	42.86
	Graduation	04	22.22	06	15.79	10	17.85
	Post Graduation	00	00.00	03	07.89	03	5.36
	Total	**18**	**100**	**38**	**100**	**56**	**100**
Occupational	Farming+ Beekeeping	16	88.89	23	60.53	39	69.65
	Farming +Business+Beekeeping	02	11.11	02	05.26	04	7.14
	Only Beekeeping	00	00.00	13	34.21	13	23.21
	Total	**18**	**100**	**38**	**100**	**56**	**100**
Caste	Schedualed Caste	04	22.22	03	07.89	07	12.50
	Schedualed Tribe	03	16.67	12	31.58	15	26.78
	Other backword Class	08	44.44	16	42.10	23	41.07
	Genral Caste	03	16.67	07	18.43	11	19.65
	Total	**18**	**100**	**38**	**100**	**56**	**100**
Land holding	Marginal (<1.0 ha)	04	22.22	03	07.89	07	12.50
	Small (1.0-2.0 ha)	07	38.89	20	52.63	27	48.21
	Medium (2.0-10 ha)	06	33.33	07	18.43	13	23.21
	Large (>10 ha)	01	05.56	08	21.05	09	16.08
	Total	**18**	**100**	**38**	**100**	**56**	**100**
Extension contact	Low	04	22.22	02	5.26	06	10.72
	Moderate	12	66.67	05	13.16	17	30.35
	High	02	11.11	31	81.58	33	58.93
	Total	**18**	**100**	**38**	**100**	**56**	**100**

presented in Table 3. The data reveal that on an average there were 78 bee-keeping colonies per bee keeper for which total average non-recurring cost was found to be Rs. 2, 82,030. The average total recurring cost which includes cost for interest on non-recurring cost, depreciation, annual labour charges and other miscellaneous charges was found to be Rs. 88,218. The findings further shows that on an average 28 kg of honey was produced from a single hive and total average honey production from single stationary unit was found to be 2,184 kg. From the sale of this honey @Rs. 132/kg the single respondent has earned average Rs. 2, 92,656. In addition to honey there was average ten per cent increase in honey bees population (60 hives) worth Rs. 15000 and an on an average 0.8 per cent

Table 2: Five year average cost and net returns for stationary apiary units during 2011-2015

Sub-categoeries	No.of bee-keeper	Average honey produce (kg/colony)	Average sale/kg	Gross returns (Rs.)	Cost (Rs.)	Net returns (Rs.)	B:C ratio
Small scale	9	28.56	126.67	160653	77418	83235	2.08
Medium scale	6	28.33	128.33	539940	249658	270282	2.16
Large scale	3	27.67	126.33	856160	336667	519493	2.54
Total	**18**	**28.33**	**127.17**	**416333**	**178039**	**218294**	**2.34**

increase in wax production (175kg) from which additional income from sale of wax i.e. Rs. 10920. A net average return from a stationary apiary unit was found to be Rs. 2, 30,358 and the benefit cost analysis of stationary units was found to be 3.61.

Economy of migratory apiary units: Table 3 depicts that the five year average cost and return of migratory apiray. It was found that total 16 bee-keepers were practising bee-keeping on medium scale and the equal number of migratory beekeepers was practising small scale (11) and large scale (11). The average honey production was work out 40.97 kg/colony and average sale rate was Rs. 130.82 per kilogram of honey during the year 2011-2015. The average net returns were around 2.50 lacs for small scale, 6.23 lacs for medium scale and 11.45 lacs for the large scale migratory bee keeping entreprise, respectively. The cost benefit ratio was 3.44 for large scale followed by 3.36 for medium scale and 3.08 of small scale, respectively. Overall average, cost benefit ratio was workout 3.36 for migratory bee keeping entreprise during the year 2011-15. This might be due to the fact that the year round honey productuion and fatching good market price from migratory units as compaired to stationary units. It was also evident from the results that the net return of bee keepers increased with the increase in the number of colonies. Kumar (2012) also observed that returns from bee-keeping increases with increase in number of colonies. The economic analysis of 38 selected migratory bee keeping units was presented in Table 5. The data revealed that on an average there were 192 bee-keeping colonies per respondent for which total average non recurring cost was found to be Rs. 6, 83,270. Total average recurring cost which includes cost for interest on non-recurring cost, depreciation, annual migration charges, annual labour charges and other miscellaneous charges was found to be 3, 35,866. The findings further show that on an average 48 kg of honey was produced from a single hive and total average honey production from migratory apiary unit (192 hives) was found to be 9,216 kg. From the sale of this honey @Rs. 136/kg the single respondent has earned average Rs.12, 53,376. In addition to honey there was average ten per cent increase in honey bees population (60 hives) worth Rs. 46,550 and an on an average 0.8 per cent increase in wax production (175kg) from which additional income from sale of wax i.e. Rs. 43,680. A net average return from a migratory apiary unit was found to be Rs.10, 07,740. The benefit cost analysis of migratory units was found to be 4.00. Gurdeep *et al*. (2016) has reported cost benefit ratio of 1.44 in with 170 colonies in Pakistan and 2.77 in with 65 colonies in Panjab (India).

CONCLUSION

It may be concluded that bee keeping can be successfully promoted in rural area for creating self-employment among rural youth and practising farmers. Krishi Vigyan Kendras are playing a pivotal role in providing vocational trainings for generating employment to the rural youth. The majority of bee keepers were in young age group, it is a good sign for generating self employment for rural youth.

The study concluded that the net return increases as number of colonies increases. Further, the profits

Table 3: Economy of stationary apiary units (78 hives) during Year 2014-2015

(n=18)

S.No.	Items	No. Items	Cost(Rs)
A	Non-recurring costs		
1	Bee Boxes (hives @ Rs.850 hives-1	78	66300
2	Bee colonies @ 10 frame @ Rs 250 hive-1	78	195000
3	Honey Extractor	1	4500
4	Iron stand	78	4680
5	Bee veil	5 pairs	350
6	Tool Kit	1	500
7	Brush	2	100
8	Hand gloves	5 pairs	400
9	Nylon net	1	1200
10	Tent , Utensils etc	-	5000
11	Other miscellaneous items	-	4000
	Total Non-recurring cost		**282030**
B	**Recurring Cost**		
1	Empty Boxes (25%)	20	17000
2	Iron stand	20	1200
3	Wax sheets (Rs. 25 sheet-1)	156	3900
4	Sulphur dust (10gm/box)	2 kg	500
5	Sugar (3kg/box)	234 kg	6552
6	Migration Charges/year	00	00
7	Labour charges	00	00
8	Other miscellaneous items, formic acid etc.	-	10000
	Interest and Depreciation		
9	Interest on Non-recurring cost@ 14%		37846
10	Interest on recurring cost@ 14% of 6 months		2517
11	Depreciation cost @ 10 % (excluding Bee colonies)		8703
	Total Recurring cost		**88218**
C	**Economic returns**		
1	Production of honey (@ 28 kg hive-1) sold at Rs.132 kg-1)	2184 kg	292656
2	Sale of bee wax(@ 0.8 kg hive-1) 38.4 sold at Rs. 175 kg-1	62.4	10920
3	Sale of 60 honey bee frames @ 230 frame-1	60	15000
	Total Returns		**318576**
	Net Return (C-B)		230358
	BC Ratio (C/B)		3.61

Table 4: Five year average cost and net returns for migratory apiary units during 2011-2015

Sub-categoeries	No.of bee-keeper	Average honey produce (kg/colony)	Average sale/kg	Gross returns (Rs.)	Cost (Rs.)	Net returns (Rs.)	B:C ratio
Small scale	11	39.82	131.91	370490	120260	250230	3.08
Medium scale	16	42.19	129.50	885150	263130	623535	3.36
Large scale	11	40.36	131.64	1609538	468360	1145782	3.44
Total	**38**	**40.97**	**130.82**	**945861**	**281182**	**666650**	**3.36**

Table 5. Economy of migratory apiary units (192 hives) during Year 2014-2015

(n=38)

S.No.	Items	No. Items	Cost(Rs)
A	Non-recurring costs		
1	Bee Boxes (hives @ Rs.850 hives-1	192	163200
2	Bee colonies @ 10 frame @ Rs 250 hive-1	192	480000
3	Honey Extractor	1	6000
4	Iron stand	192	11520
5	Bee veil	5 pairs	350
6	Tool Kit	1	500
7	Brush	2	100
8	Hand gloves	5 pairs	400
9	Nylon net	1	1200
10	Tent , Utensils etc	-	10000
11	Other miscellaneous items	-	10000
	Total Non-recurring cost		**683270**
B	**Recurring Cost**		
1	Empty Boxes (25%)	38	32300
2	Iron stand	38	2280
3	Wax sheets (Rs. 25 sheet-1)	380	9500
4	Sulphur dust (10gm/box)	4.5 kg	1150
5	Sugar (3kg/box)	800 kg	22400
6	Migration Charges/year	2	144000
7	Labour charges	48	40800
8	Other miscellaneous items, formic acid etc.	-	10000
	Interest and Depreciation		
9	Interest on Non-recurring cost@ 14%		35178
10	Interest on recurring cost@ 14% of 6 months		17931
11	Depreciation cost @ 10 % (excluding Bee colonies)		20327
	Total Recurring cost		**335866**
C	**Economic returns**		
1	Production of honey (@ 48 kg hive-1) sold at Rs.136 kg-1)	9216 kg	1253376
2	Sale of bee wax(@ 0.8 kg hive-1) 38.4 sold at Rs. 175 kg-1	249.6	43680
3	Sale of 60 honey bee frames @ 230 frame-1	190	46550
	Total Returns		**1343606**
	Net Return (C-B)		1007740
	BC Ratio (C/B)		4.00

can be enhanced further by involving the beekeepers in processing and self direct marketing to consumers.

REFERENCES

Ajao, A.M and Oladimeji, Y.U. 2013. Assessment of contribution of Apicultural practices to Household income and poverty alleviation in Kwara State, Nigeria; *International Journal of Science and Nature* **4**(4): 687-698

Ali, Syed and Jabeen, Urooj Afshan 2015. An assessment of contribution of beekeeping activities to household food scurity. I*nternational Journal of Research in Economics and Social Sciences* **5**(5) :17-26

Monga, K. and Manocha, A. 2011. Adoption and constraints of beekeeping in district Panchkula (Haryana). Livestock Research For Rural Development. Volume 23 (5), Article #103. Retrieved August 22, 2016, from http://www.lrrd.org/lrrd23/5/mong23103.htm

Quiser, T; Ali, M; Taj, S. and Akmal, N. 2013. Impact assessment of beekeeping in sustainable rural livelihood. *COES and RJ-Journal of Social Science* **2**(2): 82-90.

Ramesh, L; Sharma, S.D; Sharma, J.K; Sharma, V. and Singh, D. 2012. Impact of bee-keeping training on socio-economic status of farmers and rural youths in Kullu and Mandi districts of Himachal Pradesh. *J Hum Ecol.* **39**(3): 205-08

Sharam, Karamjit and Dhaliwal, N.S. 2014. Socio-economic profile of successful beekeepers and profitability of bee keeping in Muktsar district of Punjab. *J. Krishi Vigyan* **2**(2): 69-73

Singh, K; Peshin, R. and Saini, S.K. 2010. Evaluation of agricultural vocational training programmes conducted by Krishi Vigyan Kendras in Indian Punjab. *J. Agri. and Rural Dev. in Tropics and Subtropics* **111**: 65-77

Singh, G., Tiwari, Devinder and Yadav, S.P. 2016. Income enhancement and employment generation through apiculture enterprise for rural youth in Punjab. *Indian Res. J. Ext. Edu.* **16** (1):112-115.

Yirga, G. and Ftwi, K. 2010. Beekeeping for rural development, its potentiality and constraints in eastern Tigray, Northern Ethiopia. *Agricultural journal* **5**(3): 201-204

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ECONOMIC EMPOWERMENT OF TRIBAL WOMEN THROUGH ANIMAL HUSBANDRY BASED ENTERPRISES

Vandana Joshi* and Dhirti Solanki**

ABSTRACT

The study was conducted in six villages of Kherwada panchayat samiti of Udaipur District in Rajasthan covering 90 tribal women. Personal interview technique was used for collecting data from the respondents. Findings reveal that dairy, poultry and goat rearing enterprises were adopted by 8.89, 78.89 and 96.67 per cent women, respectively. The net profit earned from dairy, poultry and goat enterprises was Rs. 6560, 9550, 6987.5 to 2572.5 per year, respectively.

INTRODUCTION

The economy of India is predominantly agrarian with more than 70 per cent of its population living in villages and depending on agriculture and allied activities for their livelihood. India has the largest livestock population in the world and ranks first in cattle (with a population of 204.57 million) and buffaloes (84.21million) and second in goat population (124.36 million). The poultry population in the country is 489 million as per the **livestock census, 2011**. Indian livestock plays a vital role in improving socio- economic condition of rural masses. The livestock sector alone contributes nearly 25.6% of Value of Output at current prices of total value of output in Agriculture, Fishing & Forestry sector. The overall contribution of Livestock Sector in total GDP is nearly 4.11% at current prices during 2012-13. Animal husbandry constitutes about 30 per cent of the agriculture output of the country (Indian economy, 2007). Livestock sector provide regular employment to 11 million people in principal status and 9 million people in subsidiary status. In India socio-economic condition of tribal people is not good as they leave in remote areas. They are depended on only livestock because they don't have enough agriculture land. So, livestock is the main occupation of tribal people.

The women have major contribution in economy of tribal community. The tribal women are involved in income generating activities viz. goat rearing, collection of non forest timber products, dairy, poultry etc. However, lack of scientific knowledge and limited exposure to mass media inhibits the women to contribute fully in the economic sector. Hence, there is a need to provide adequate opportunities to the tribal women so that the significant work force of the country may be fully utilized in economic development. The National Agricultural Innovation Project was taken up by MPUAT, Udaipur in the year 2007 for development of entrepreneurial skill among tribal women so that they can improve their skill in the specific vocation and can contribute to the family income. The study was undertaken with an objective to study economic empowerment of tribal women through animal husbandry based enterprises promoted under the project.

RESEARCH METHODOLOGY

The study was conducted in Udaipur district of Rajasthan State. In Udaipur District the NAIP is implemented by KVK *Badgoan* in six villages of *Kherwara* panchayat samiti viz. *Mahuwada, Amarpura, Shampura, Dholpura, Katev (Upali) and Katev (nichli)* and all these villages were taken for the purpose of the study. For sample selection, a village wise list of tribal women who have been covered under animal husbandry activities of the project was obtained from KVK Badgoan. From the list, 15 women from each village were selected randomly to form a total sample of 90 tribal women. Personal interview technique was used for data

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collection. The income from the enterprise was measured on the basis of responses received from women beneficiaries regarding the net profit (in terms of rupees) from a particular enterprise, after deducting all the expenses. The following formula was used to calculate the net profit earned in each enterprise:

Net Profit = Gross Income - Expenditure

RESULTS & DISCUSSION

Background information: Findings of the study reveals that majority of the beneficiaries and non beneficiaries were from 31-45 years of age, were married and illiterate. All the respondents belonged to scheduled tribe category and adopted agriculture as a main occupation and rearing of cattle, goat and poultry as a subsidiary occupation. Majority of the respondents were from nuclear family, owners of small herd size livestock and belonged to low socio-economic status.

Income from animal husbandry enterprises: An effort was made in the project to promote various animal husbandry based enterprises viz. dairy, goat rearing and poultry rearing enterprises among the women. In order to know how far the project has been able to promote these enterprises, a thorough study was conducted in the identified area. Result reveals dairy, goat rearing and poultry rearing enterprises were adopted by 8.89, 96.67 and 78.89 per cent women , respectively. The income from these enterprises as perceived by the women is given as under:

a) Income from dairy enterprise: Income from dairy enterprise largely depends on herd size and number of milch animals at a given time, the breed of the animal, feeding practices, management and health care, milk yield and prevailing rate of milk and marketing facilities. Dairy enterprise was adopted by 8 women out of the total 90 women. The average annual income as perceived by the beneficiaries is given as under in Table 1.

Perusal of the table reveals that an average herd size consisted of three cows. All the milch animals were of desi breed. The average milk production in case of cow (per animal per day) was only 2 litres. Therefore, the total milk production per lactation was 480 liters. The average annual income from the enterprise was Rs. 10560/- with an expenditure of Rs. 4000/-. Hence, the net profit from the enterprise was Rs. 6560/- per year.

Rathore (2000) studied diffusion of dairy and livestock enterprises through Swarn Jayanti Gram Swarozgar Yojana (SGSY) and concluded that SGSY increased the family income of the beneficiaries. The average economic contribution from dairy and livestock enterprises was 84.88 per cent of the gross income from all sources.

b) Income from goat rearing enterprise: Income from goat enterprise largely depends on flock size, the breed of the animals, feeding practices, management and health care, milk yield and prevailing rate of milk and marketing facilities. Goat rearing enterprise was adopted by 87 women out of the total 90 women. The average annual income as perceived by the beneficiaries is given in Table 2.

Perusal of the Table clearly shows that majority of the women (64) had flock size of 3 to 5 goats, whereas 11 and 12 women had flock size upto two

Table 1 : Income Generation from dairy enterprise

S.No.	Category	Average no. of milch animals	Average milk production/ animal/lit/day	Total milk production (per lactation in liters)	Gross average income @ Rs. 22kg of milk	Average annual expenditure (Rs./ lactation)	Net profit (Rs.)
1.	Cow	3	2	480	10560	4000	6560

goats and more than five goats, respectively. Critical examination of the data reveal that average number of milking goats possessed by those women who had flock size of upto two goats was found to be one goat. The average milk production per animal per day was recorded to be 750 ml with the total milk production of 112.5 liter per lactation period of 150 days. The milk was sold @ Rs. 15 per liter with an annual income of Rs. 1687.5. There was average annual expenditure of Rs. 600. Hence, the net profit earned by the goat rearers of flock size upto two goats was recorded to be Rs. 1087.5.

Table further reveals that average number of milking goats possessed by women who had flock size of 3 to 5 goats was found to be three goat. The average milk production per animal per day was recorded to be 2250 ml with the total milk production of 337.5 liter per lactation period of 150 days. The milk was sold @ Rs. 15 per liter with an annual income of Rs. 5062.5. There was average annual expenditure of Rs. 1800, hence, the net profit earned by the goat rearers of flock size 3 to 5 goats was recorded to be Rs. 3267.5.

Table portraits that average number of milking goats possessed by those women who had flock size of more than 5 goats was found to be 6 goat. The average milk production per animal per day was recorded to be 4550 ml with the total milk production of 675 liter per lactation period of 150 days. The milk was sold @ Rs. 15 per liter with an annual income of Rs. 10125. There was average annual expenditure of Rs. 3600, hence, the net profit earned by the goat rearers of flock size more than 5 goats was recorded to be Rs. 6525.

Apart from selling of milk, the goat rearers earned money by selling of bucks. Table 3 reveals that average number of animals sold by the women who had the flock size of upto 2, 3 to 5 and more than 5

Table 2: Income generation from goat rearing enterprise

n = 87

S. No.	Flock Size (Goat)	No. of women	Average no. of milking goats	Average milk production lit animal/day	Total milk production (per lactation period of 150 days) liter	Average annual income @ Rs. 15 / liter of milk	Average annual expenditure (Rs.)	Net profit (Rs.)
1.	Upto 2	11	1	750ml	112.5	1687.5	600	1087.5
2.	3 to 5	64	3	2250ml	337.5	5062.5	1800	3262.5
3.	More than 5	12	6	4500ml	675	10125	3600	6525

Table 3 : Income from selling of buck

S. No.	Flock Size (For meat Purpose)	Average no. of animal sold per year	Annual Income @ Rs. 3500 per animal	Annual expenditure (Rs.)	Net profit (Rs.)
1.	Upto 2	2	7000	1100	5900
2.	3 to 5	4	14000	4400	9600
3.	More than 5	8	28000	8800	19200

Table 4 : Total income earned by women from goat rearing enterprise

S.No.	Herd size	Selling of milk (Rs.)	Selling of buck (Rs.)	Total income (Rs.)
1.	Upto 2 goat	1087.5	5900	6987.5
2.	3 to 5 goat	3262.5	9600	12862.5
3.	More than 5	6525	19200	25725

bucks was found to be 2, 4 and 8 bucks, respectively. The animals were sold @ Rs. 3500 per animal and the annual income ranged from Rs. 7000 to 28000. The annual expenditure incurred on feeding, health care and other management aspects was recorded to be from Rs. 1100 to 8800. Thus the profit earned by the women having flock size of 2 goats was observed to be Rs. 5900. Similarly the women having flock size of 3 to 5 goats earned a net profit of Rs. 9600 and those having more than five animals earned Rs. 19200 per year.

Table 4 depicts that the total annual income earned by the women by goat rearing enterprise including selling of milk and buck ranged from Rs. 6987.5 to 2572.5. A comparative look to data reveal that those women who had the flock size of more than 5 animals earned maximum profit while those having the flock size of upto two goats earned minimum profit.

A study conducted by Kumar and Sager (2009) on 262 goat keeping households of South Western Semi Arid zone of U.P. and Eastern Semi Arid zone of Rajasthan and revealed that goat rearing was adopted as a subsidiary or main enterprise to utilize the family labour. Goat keepers earned a net annual income of Rs. 1302 to Rs. 1873 per goat in different categories. The goat rearing was a major source of employment for women, especially for a women with small size land holding.

c) Income from poultry rearing enterprise: For income generation at household level, *Nirbheek* poultry birds were distributed among tribal families under NAIP. Each unit comprised of 20 birds (15 female and 5 male). *Nirbheek* poultry is well suited for back yard farming. These birds produce more eggs and meat as compared to non-descript coloured birds. Income from poultry enterprise largely depends on number of birds and egg produced from them. The income generation from the enterprise is given in Table 5.

Table 5 : Income generation from selling of eggs

S. No.	Particular	No. of birdsper unit	No. of eggs produced (per bird for a duration of 1 ½ year)	Total no. of eggs produced per unit	Gross average income (@ Rs. 3 per egg)	Expenditure/ unit (Rs.)	Net Profit/ unit (Rs.)
1.	Selling of eggs	15 Female + 5 male	210	3150	9450	5400	4050

Table 6 : Income from selling of cock and old birds

S.No.	Particulars	Average no. of birds sold/ unit/year	Rate at which sold (Rs.)	Income (Rs.)
1.	Selling of cock	5	500	2500
2.	Selling of old birds	15	200	3000

The table shows that number of birds per unit were 15 female and 5 male. Number of eggs produced per bird for a duration of 1 ½ year was calculated to be 210, thus the total number of eggs produced per unit was found to be 3150. The eggs were sold @ Rs. 3 per egg thus the total income amounts to Rs. 9450. The calculated expenditure per unit on rearing of poultry birds including cost of chicks, feeding, health care etc. was found to be Rs. 5400/-. Hence, the net profit per unit by selling of eggs earned by the women was Rs. 4050.

Table 7: Total income from poultry rearing enterprise

S.No.	Particular	Net Profit (Rs.)
1.	Selling of eggs	4050
2.	Selling of cock	2500
3.	Selling of old birds	3000
	Total	**9550**

Apart from selling of eggs, the women also earned money by selling of cock and old birds. The income earned is presented in Table 6 .

Perusal of Table 6 reveals that average number of cock and old birds sold per unit per year were found to be 5 and 15, respectively. The cock was sold at the rate of Rs. 500 and old birds @ Rs. 200 per bird. Thus, the total income earned by selling of cock and old bird was calculated as Rs. 2500 and 3000, respectively.

Singh *et al* (2003) concluded that backyard poultry is an profitable enterprise for the farm families.They reported that the overall benefit cost ratio from a poultry unit of *Cari Nirbheek, Carishyama, Hitcari, Upkari* was found to be 3.1:1 with the economic return of Rs. 100 to 360 per month.

Table 8 clearly shows that the per unit total income earned by the women from poultry rearing enterprise deducting all the expensive was found to be Rs. 9550.

CONCLUSION

Based on the results it can be concluded that animal husbandry enterprises proved to be a good source of income for tribal women. The women earned maximum profit by goat rearing enterprise followed by poultry and dairy. Hence, efforts can be made to promote such enterprises among tribal women for economic empowerment.

REFERENCES

http://ahd.aponline.gov.in/LiveStockCensus/PDF/4_Instruction%20Mannual_%2020th%20LC%202017.pdf

http://vikaspedia.in/agriculture/livestock/role-of-livestock-in-indian-economy

India 2011, A Reference Annual , Complied by Research, Reference and Training Division, Ministry of information and Broadcasting, Government of India.

Kumar, S. and Sager, R.L. 2009. Economic of Goat Breeding and its constraints in semi arid parts of Utterpredesh and Rajasthan. VIII *National conference on Animal GU.P. genetic and Breeding*, March 8-10 CIRG. Makhdoom, Mathura, U.P.: 213.

Rathore, G.S. 2000. Diffusion of dairy and livestock enterprises through Swarn Jayanti Gram Swarozgar Yojana in Girwa P.S. of Udaipur, Raj. M.Sc. thesis, Rajasthan Agriculture University Bikaner.

Singh, D.P., Johri, T.S., Singh, U.B., Narayan, R., Singh, D. and Saran, S. 2003. Implemented integrated approach for traditional village poultry production. *Bhartiya krishi Anusandhan Patrika* **18**: 93-101.

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INDUSTRIAL DEVELOPMENT OF RAJASTHAN: AN INTER-TEMPORAL ANALYSIS

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ABSTRACT

The present study was conducted for three points of time i.e. year 1980-81, 1990-91 and 1996-97. The district was considered as the unit of analysis and twenty six districts as existed in the year 1980-81 were included in the study which covered the entire geographical area of the state. For measuring industrial development, 8 indicators were used to construct the composite indices of development for each district of Rajasthan. The values of mean composite index for the year 1980-81, 1990-91 and 1996-97 were obtained as 0.745, 0.735 and 0.713, respectively. The level of industrial development was observed to be equal over three points of time. Mean values of composite indices indicated slight improvement in the industrial sector from the year 1980-81 to 1990-91 and 1990-91 to 1996-97 which is not significant.

INTRODUCTION

The state of Rajasthan is situated in the north western part of the Indian Union. It is the largest state with a geographical area of 3.42 lakh sq. kms. The shape of Rajasthan is like an irregular rhomboid, covering a distance of 869 kilometers from west to east and 826 kilometers from north to south. It shares its geographical boundaries with the states of Punjab, Haryana,Uttar Pradesh, Madhya Pradesh and Gujarat. It also has a long international border with Pakistan. It is a diverse state. The region to the west and north-west spreading in 61.11 per cent of the total area is either desert or semi-desert which forms the Great Indian 'Thar' desert. The Aravali range of Hills-one of the oldest mountain ranges-runs through the heart of the state, extending to 69.2 kms and dividing into two portions. The north-western portion is almost entirely a vast expanse of desert. On the other side, the south-eastern region has a varied terrain of extensive hill ranges, fertile table-land and dense forest. Rajasthan is well connected by air, rail and road with all the major cities of the country. In India, Rajasthan is considered as an economically backward state. However, all the districts of the state are not at the same level of underdevelopment. Some districts are more developed while other are less developed or underdeveloped.

The state of Rajasthan has made concerted efforts in promoting industrial growth during different plan periods. The state has a good number of small scale industries, cottage industries, Handloom industries and Khadi and village industries. These industries have played a key role in shaping a self-reliant rural economy through creation of massive gainful employment for the rural poor. Industrial development cannot be fully measured by any single indicator. Moreover, a number of indicators when analyzed individually do not provide an integrated and comprehensible picture of reality. Hence there is need for building up of a composite index of industrial development based on various indicators combined in an optimum manner. The present paper attempts to construct the various indices of industrial development for each district of Rajasthan and examine the significance of overall change in industrial development indices over three points of time.

RESEARCH METHODOLOGY

In order to assess the industrial development of Rajasthan state, the study was carried out for three points of time i.e. 1980-81, 1990-91 and 1996-97 with the purpose of examining the significance of change and variability in development. The study is based on the data gathered for 26 districts of Rajasthan as existed in the year 1980-81 inspite of

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separate information for 32 districts existing in 1997. The information of newly formed districts have been included in the original districts from which they have been bifurcated, since the data related to new districts were not available for all the three selected points of time. To measure the industrial development, 8 indicators were identified after reviewing the literature as under:

i) Number of workers employed in working factories
ii) Number of workers per lakh population in working factories
iii) Per capita value added by manufacturing in Rs.
iv) Percentage of manufacturing industry workers to the total work force
v) Gross output in industry per capita
vi) Industrial consumption of electricity per capita (kwh)
vii) Percentage of people who got industrial loan
viii) Percentage amount disbursed as industrial loan

The composite indices for various districts for industrial development were obtained through the formula suggested by Narain *et al*. (1991). The value of composite index is non-negative and it lies between 0 and 1. The value of index closer to zero indicates the higher level of development, while the value of index closer to 1 indicates the lower level of development. In order to examine the significance of overall change in industrial development indices over three selected points of time, slippage test proposed by Rai (1987) was utilized.

RESULTS AND DISCUSSION

I. Construction of composite indices of industrial development for each district of Rajasthan: This section describes the construction of indices of industrial development for each district of Rajasthan. To construct composite indices of development, variables were standardised. The best district for each indicator (with maximum/ minimum standardised value depending upon the direction of the indicator) was identified and the deviations of different indicators from their best value were obtained for each district. The districts were ranked on the basis of industrial development indices.

The indices of development for each district in industrial sector were computed on the basis of 8 indicators depicting the industrial development. Data in Table 1 reveals that of the 26 districts included in the analysis for the year 1980-81, the district Jaipur ranked first followed by Kota, Ajmer, Bhilwara and Udaipur. Dungarpur, Jalore, Sirohi, Jaisalmer and Nagaur districts obtained the last ranks on the basis of their industrial development. Composite indices varied from 0.306 to 0.891 during this period with mean index 0.745 and CV 18.921 per cent.

For the year 1990-91, data in Table 1 indicate that district Jaipur again ranked first followed by Alwar, Ajmer, Udaipur and Kota. The districts namely Jalore, Dungarpur, Churu, Sawaimadhopur and Jaisalmer were found to be least developed in industrial development. Close observation of the table 1 reveals that Sirohi and Pali districts have depicted major improvements in their ranking this year while Sawai Madhopur district had declined in the ranking from thirteenth to twenty fifth place. The values of composite indices varied from 0.414 to 0.913 with mean index 0.735 and CV 18.375 per cent.

It is evident from the table that the value of composite indices of industrial sector varied from 0.450 to 0.890 with mean index 0.713 and CV 20.519 per cent during the period 1996-97. The table reveals that the district Ajmer ranked first followed by Jaipur, Alwar, Bhilwara and Ganganagar. Districts namely Barmer, Jaisalmer, Sikar, Churu and Sawai Madhopur were placed at last five places respectively in the ranking of industrial development. Major change was observed in the ranking of district Ganganagar which moved from thirteenth rank in 1990-91 to fifth position in this year.

II. Significance of overall change in industrial development indices over three points of time: Having obtained the measure of industrial development (composite index) for each district over different points of time, attempt was made to examine the significance of change in development indices over time.

Table 1 : Composite indices of industrial development of each district for three points of time

District		1980-81		1990-91		1996-97	
	CI	**Rank**	**CI**	**Rank**	**CI**	**Rank**	
1.	Ajmer	0.545	3	0.533	3	0.450	1
2.	Alwar	0.688	7	0.509	2	0.477	3
3.	Banswara	0.804	16	0.806	16	0.781	13
4.	Barmer	0.792	14	0.822	20	0.845	22
5.	Bharatpur	0.780	11	0.814	18	0.828	18
6.	Bhilwara	0.627	4	0.689	8	0.486	4
7.	Bikaner	0.733	10	0.741	11	0.727	12
8.	Bundi	0.795	15	0.820	19	0.830	19
9.	Chittorgarh	0.783	12	0.739	10	0.647	10
10.	Churu	0.812	18	0.884	24	0.890	25
11.	Dungarpur	0.864	22	0.877	23	0.837	21
12.	Ganganagar	0.715	9	0.770	13	0.542	5
13.	Jaipur	0.306	1	0.414	1	0.476	2
14.	Jaisalmer	0.888	25	0.913	26	0.855	23
15.	Jalore	0.883	23	0.861	22	0.835	20
16.	Jhalawar	0.830	20	0.791	15	0.810	17
17.	Jhunjhunu	0.707	8	0.758	12	0.808	16
18.	Jodhpur	0.670	6	0.673	7	0.551	6
19.	Kota	0.459	2	0.561	5	0.656	11
20.	Nagaur	0.891	26	0.772	14	0.785	14
21.	Pali	0.809	17	0.723	9	0.642	9
22.	Sawai Madhopur	0.792	13	0.894	25	0.891	26
23.	Sikar	0.827	19	0.824	21	0.856	24
24.	Sirohi	0.887	24	0.582	6	0.636	8
25.	Tonk	0.863	21	0.811	17	0.803	15
26.	Udaipur	0.634	5	0.535	4	0.596	7
	Mean	**0.745**		**0.735**		**0.713**	
	S.D.	**0.141**		**0.135**		**0.146**	
	CV	**18.921**		**18.375**		**20.519**	

CI = Composite index

Data in Table 2 depicts the composite indices of industrial development of each district and their ranking over three points of time. The rankings over different points of time has been examined and the test statistic M was worked out to be 1.46 which comes out to be non-significant at 5 per cent level of significance. This indicates the acceptance of null hypothesis of no change in development in districts over time. From this, it can be concluded that the level of industrial development is equal over three points of time. The perusal of the table further shows that the level of industrial development from 1980-81 to 1996-97 has gone up to some extent which is non-significant. The mean index values i.e. 0.745, 0.735 and 0.713 for the three successive periods indicates slight improvement in the industrial sector.

CONCLUSION

It may be concluded that for the selected points of time, Jaipur, Alwar, Kota, Ajmer and Bhilwara were found to be better developed in comparison with other districts. Nagaur, Jaisalmer, Sawai-madhopur, Churu and Sikar were identified as poorly developed districts in industrial sector.

Table 2: Ranking of composite indices of industrial development of each district over three points of time

Districts	1980-81		1990-91		1996-97	
	Composite index	Rank	Composite index	Rank	Composite index	Rank
Ajmer	0.545	3	0.533	2	0.450	1
Alwar	0.688	3	0.509	2	0.477	1
Banswara	0.804	2	0.806	3	0.781	1
Barmer	0.792	1	0.822	2	0.845	3
Bharatpur	0.780	1	0.814	2	0.828	3
Bhilwara	0.627	2	0.689	3	0.486	1
Bikaner	0.733	2	0.741	3	0.727	1
Bundi	0.795	1	0.820	2	0.830	3
Chittorgarh	0.783	3	0.739	2	0.647	1
Churu	0.812	1	0.884	2	0.890	3
Dungarpur	0.864	2	0.877	3	0.837	1
Ganganagar	0.715	2	0.770	3	0.542	1
Jaipur	0.306	1	0.414	2	0.476	3
Jaisalmer	0.888	2	0.913	3	0.855	1
Jalore	0.883	3	0.861	2	0.835	1
Jhalawar	0.830	3	0.791	1	0.810	2
Jhunjhunu	0.707	1	0.758	2	0.808	3
Jodhpur	0.670	2	0.673	3	0.551	1
Kota	0.459	1	0.561	2	0.656	3
Nagaur	0.891	3	0.772	1	0.785	2
Pali	0.809	3	0.723	2	0.642	1
Sawai Madhopur	0.792	1	0.894	3	0.891	2
Sikar	0.827	2	0.824	1	0.856	3
Sirohi	0.887	3	0.582	1	0.636	2
Tonk	0.863	3	0.811	2	0.803	1
Udaipur	0.634	3	0.535	1	0.596	2
Rank Total (R_i)		54		55		47
Mean	0.475		0.735		0.713	

It was further found that the level of industrial development was observed to be equal over three points of time. Mean values of composite indices indicated slight improvement in the industrial sector from the year 1980-81 to 1990-91 and 1990-91 to 1996-97 which is not significant.

REFERENCES

Narain, P., Rai, S.C. and Sarup, S. 1991. Statistical Evaluation of Development on Socio-economic Front. *Jour. Ind. Soc. Ag. Statistics* **43**(3): 329-345.

Rai, S.C. 1987. Multi-sample Slippage Test for Ordered Observations, *Biom. J.* **29**(4): 449-454.

Upadhyay, B. 2001. Statistical Assessment of Development in Rajasthan – a Spatial and Inter-temporal Analysis. An unpublished Ph.D. Thesis submitted to MPUAT, Udaipur, Raj.

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KNOWLEDGE OF EXTENSION FUNCTIONARIES ABOUT ICT TOOLS IN BIKANER DISTRICT OF RAJASTHAN

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ABSTRACT

The present study has been aimed to find out the present status of knowledge of extension functionaries about selected information and communication technologies. The present study was conducted in Bikaner district of Rajasthan. Bikaner district was selected purposively on the basis of maximum number of extension functionaries are working in the state department of agriculture and a large number of NGOs in the district. For the purpose of study Government Organization (GO) and Non-Government Organisations (NGOs) actively involved in the transfer of agricultural technology were selected. Consequently, a total of 120 extension functionaries (60 from GO & 60 from NGOs) were included in the study. Majority of the total extension functionaries 69.17 per cent had medium level of knowledge about information and communication technologies, further indicates that 60.00 per cent extension functionaries of GO and 78.33 per cent of NGOs extension functionaries had medium level of knowledge about ICTs. However, 10.00 and 16.67 per cent extension functionaries from GO and NGOs were reported in the high level of knowledge regarding ICTs.

INTRODUCTION

Information and Communication Technology are famously called as ICT. In the era of digitalization disseminating any information demands technology with proper, reliable communication channel. Dominance of information is a reality of our day-today lives in information revolution era. The application of Information and Communication Technologies (ICTs) influencing all spheres of human life.

Role of ICT in agricultural development, ICTs can give a new shape to the social organizations and productive activities of agriculture which, if nurtured effectively, can become transformational factors. With the help of ICTs, the traditional knowledge itself can be able to bring forth a new technology for overall agricultural development.

The present study has been aimed to find out the present status of knowledge of extension functionaries about selected information and communication technologies. ICTs are thus emerging as very important tools for agricultural extension and it is now essential for every extension worker to have working knowledge of computers, smart phones, internet, e-mails, expert systems, touch screen systems, agricultural websites, information kiosks, mobile telephony and World Wide Web.

RESEARCH METHODOLOGY

The present study was conducted in Bikaner district of Rajasthan. Bikaner district was selected purposively on the basis of maximum number of extension functionaries are working in the state department of agriculture and a large number of NGOs in the district. For the purpose of study Government Organization (GO) and Non-Government Organisations (NGOs) actively involved in the transfer of agricultural technology were selected. The transfer of agricultural technology in the selected district is being carried out by state department of agriculture as Government Organization, so the state department of agriculture

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was selected purposively as Government Organisation (GO). To select the NGOs, a complete list of all the NGOs using ICTs in the transfer of agricultural technology among the farming community was prepared. From the list so confirmed six NGOs with more use of ICTs were selected.

To select a sample of extension functionaries from the GO, a preliminary list of all those extension functionaries who are engaged in transfer of agricultural technology and using ICTs was prepared with the help of officials of the department. From the list, so prepared 60 extension functionaries were selected from 161 extension functionaries on the basis of proportionate random sampling technique. Likewise, for the selection of extension functionaries from Non-Government Organizations, a preliminary NGO wise list of all those field level extension functionaries who are engaged in transfer of agricultural technology were prepared with the help of officials of the selected NGOs. In all, 97 extension functionaries working in six selected NGOs in the districts out of these, 60 extension functionaries were selected on the basis of proportionate random sampling procedure. Consequently, a total of 120 extension functionaries (60 from GO & 60 from NGOs) were included in the study.

For the purpose of study ICT tools namely Smart phone, Internet, Agricultural Websites, were taken for the study. It has been observed that these identified tools are commonly used by both GOs and NGOs extension functionaries for transfer of technology.

RESULTS AND DISCUSSION

1. Distribution of Extension Functionaries on the basis of Level of Knowledge about information and Communication Technology: A perusal of data in Table 1 fact that a majority of the total extension functionaries 69.17 per cent had medium level of knowledge about information and communication technologies whereas, 17.50 per cent extension functionaries were observed in low level of knowledge group. It was further noted that only 13.33 per cent of the total extension functionaries possessed high level of knowledge regarding information and communication technologies in the study area.

The analyzed data contained in a Table 1 further indicate that 60.00 per cent extension functionaries of GO and 78.33 per cent of NGOs extension functionaries had medium level of knowledge about ICTs. The difference between the GO and NGOs extension functionaries under medium level of knowledge category indicates that knowledge level of NGOs personnel were higher as compared to GO personnel, on the other hand 30.00 per cent of GO extension functionaries and only 05.00 per cent of NGOs extension functionaries belonged to low

Table 1: Distribution of Extension Functionaries on the basis of Level of Knowledge regarding Information and Communication Technologies

S.No.	Level of Knowledge	GO Personnel (n=60)		NGOs personnel (n=60)		Total (n=120)	
		F	%	F	%	F	%
1.	Low (below 86.90)	18	30.00	03	5.00	21	17.50
2.	Medium (86.90 to 103.26)	36	60.00	47	78.33	83	69.17
3.	High (above 103.26)	06	10.00	10	16.67	16	13.33
	Total	**60**	**100**	**60**	**100**	**120**	**100**

F = Frequency, % = Per cent, X -95.01 & SD-8.11

knowledge group. It clearly shows that extension functionaries under GO have low level of knowledge about information and communication technologies.

However, 10.00 and 16.67 per cent extension functionaries from GO and NGOs were reported in the high level of knowledge regarding ICTs. Thus, it can be concluded that majority of GO and NGOs personnel had medium level of knowledge about ICT. It was further inferred that the existing knowledge of NGO extension functionaries about ICTs was comparatively higher then GO extension functionaries.

The results of the study are similar to the results of Verma *et al*. (2009) who concluded that majority of mobile users and non-users possessed medium level of knowledge whereas, more than 40.00 per cent mobile users and only 5.33 per cent non-users were reported to have high level of knowledge about scientific crop management practices.

2. ICTs tool wise Extent of Knowledge among Extension Functionaries: ICT tools identified for the present study were, Smart phone, Internet, and Agricultural Websites. Therefore, an effort was made to find out the tools wise extent of knowledge among the extension functionaries. The results of the same have been presented in the subsequent tables.

Knowledge of Extension Functionaries regarding Smart phone: Table 2 reveals that 100 per cent field functionaries of GO and NGOs were acquainted with Smart phone and it was ranked first by both the categories of the extension functionaries. This may be due to the fact that almost all the extension functionaries had Smart phone or cell phone. In the case of the extent of knowledge about major manufacturer companies of cell phone it was noted that GO and NGOs personnel had knowledge level of 76.67 and 83.33 MPS respectively. Majority of extension functionaries knew that NOKIA, SAMSUNG, MI, SPICE, OPPO, VIVO etc. are the important manufacturers of Smart phone.

The extent of knowledge about sim card, basic requirement to buy a sim card, memory card, advantages of Smart phone and names of Smart phone service providers were observed to be 91.67, 86.67, 83.33, 75.00 and 80.00 MPS among GO personnel respectively. In case of NGOs personnel, the extent of knowledge about these aspects were 90.00, 73.33, 88.33, 80.00 and 81.67 MPS respectively. Further it was found that extension functionaries of GO and NGOs possessed equal level of knowledge (66.67 MPS) about type of Smart phone compatible for internet browsing and this aspect was ranked tenth by both of the categories of the extension functionaries.

In the case of the knowledge about uses of Smart phone, it was recorded that extension functionaries of GO and NGOs had knowledge level of 70.00 and 76.67 MPS respectively. Most of the extension functionaries of both the organizations knew that Smart phone can be used for voice communication, SMS and internet browsing for e-mails. It is interesting to note that NGOs personnel had more knowledge than GO personnel about various type of agricultural information can be accessed through Smart phone.

Further analysis of table shows that 73.33 and 70.00 MPS knowledge possessed by extension functionaries of GO and NGOs respectively about types of agricultural information accessed through Smart phone. This aspect was ranked eighth by the GO extension functionaries and ninth by NGOs extension functionaries.

Table also shows that the extent of knowledge about 4-G services was 56.67 MPS among GO extension functionaries whereas, in case of NGOs extension functionaries it was 60.00 MPS. This aspect was ranked eleventh by GO extension functionaries and last by NGOs extension functionaries. It indicates that NGOs extension functionaries had more knowledge than GO extension functionaries about 4-G service. It may be because of the fact that NGOs personnel prefer to have Hi-Fi multimedia cell phones with high speed internet connection so that internet application can be accessed through Smart phone.

Table 2: Knowledge of Extension Functionaries regarding Smart phone

S.No.	Aspects	GO Personnel (n=60)		NGOs personnel (n=60)		Total (n=120)	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Acquaintance with Smart phone	100	1	100	1	100	1
2.	Major manufacturer companies of Smart phone	76.67	6	83.33	4	80.00	5
3.	Acquaintance with sim card	91.67	2	90.00	2	90.83	2
4.	Basic requirements to buy a sim card	86.67	3	73.33	8	79.83	6
5.	Understanding about memory card	83.33	4	88.33	3	85.83	3
6.	Advantages of Smart Phone	75.00	7	80.00	6	77.50	7
7.	Name of Smart phone service providers	80.00	5	81.67	5	80.83	4
8.	Type of Smart phone compatible for internet browsing	66.67	10	66.67	10	66.67	10
9.	Uses of Smart phone	70.00	9	76.67	7	73.33	8
10.	Meaning of GPRS service	33.33	12	63.33	11	48.33	12
11.	Type of agricultural information accessed through Smart phone	73.33	8	70.00	9	71.66	9
12.	Knowledge of 4-G service	56.67	11	60.00	12	58.33	11

MPS = Mean per cent score

rs= Rank order correlation

** = Significant at 1% level of significance

rs=0.87 t = 5.51**

It was also noted from the data shown in the table that extension functionaries of GO and NGOs had idea about meaning of GPRS (General Packet Radio Service) with the extent of 33.33 and 63.33 MPS respectively. This aspect was ranked last by GO extension functionaries and eleventh by NGOs extension functionaries.

An effort was also made to determine the relationship between the ranks assigned by GO and NGOs extension functionaries by applying rank order correlation test. The value of rank order correlation (rs) was 0.87 which shows positive correlation, the significance of rs was tested by 't' test and it was observed that calculated 't' value (5.51) was higher than its tabulated value. This leads to conclusion that there was a similarity in the rank assignment pattern of knowledge possessed by GO and NGOs about Smart phone, though there was difference in magnitude of Mean Percent Score of GO and NGOs extension functionaries.

The present findings are in accordance with the findings of Verma *et al*. (2009) who reported that the extent of knowledge of mobile users vary from 64.03 to 88.23 per cent, while in case of non-users it was found 44.76 to 56.05 per cent in all major scientific crop management practices.

2.2 Knowledge of Extension Functionaries regarding Internet technology: A perusal of data

presented in Table 3 reveal that the extent of knowledge about meaning of Internet among extension functionaries of GO and NGOs were 83.33 and 90.00 MPS respectively. This aspect was ranked first by both the categories of extension functionaries. Further, it was reported that majority of extension functionaries were acquainted with e-mail ID. Out of total 120 extension functionaries, 73.33 per cent GO extension personnel and 80.00 per cent NGOs extension personnel reported that e-mail ID is a personal account on Internet for sending and receiving electronic mails and this aspect was ranked third by both of the categories of the extension functionaries.

The extent of knowledge about popular Internet service providers (like BSNL, Airtel, Idea, Jio and Vodafone) was 75.00 and 73.33 MPS among GO and NGOs extension functionaries respectively. The knowledge level about high speed Internet services (Broadband & 4G) was recorded to be 56.67 and 86.67 MPS in extension functionaries of GO and NGOs respectively. This aspect was ranked sixth by GO extension functionaries and second by NGOs extension functionaries. Likewise, the extent of knowledge regarding WWW (World Wide Web) was 60.00 in GO extension functionaries and 70.00 MPS in NGOs extension functionaries.

The knowledge level of GO and NGOs extension functionaries about advantages of Internet was 66.67 and 63.33 MPS respectively. This aspect was ranked fourth by GO extension functionaries and sixth by NGOs extension functionaries. It was observed that extension functionaries were aware that Internet can reduce communication cost, accelerate information sharing and provide quick access to agricultural information.

Further analysis of table shows that extension

Table 3: Knowledge of Extension Functionaries regarding Internet technology:

S.No.	Aspects	GO Personnel (n=60)		NGOs personnel (n=60)		Total (n=120)	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Meaning of Internet	83.33	1	90.00	1	86.66	1
2.	Major Internet service providers	75.00	2	73.33	4	74.16	3
3.	Advantages of Internet	66.67	4	63.33	6	64.83	6
4.	Meaning of WWW	60.00	5	70.00	5	65.00	5
5.	High speed Internet services	56.67	6	86.67	2	71.67	4
6.	Meaning of Wi-Fi	43.33	8	60.00	7	51.66	7
7.	Familiarity with data card	30.00	10	33.33	10	31.66	10
8.	Common uses of Internet	40.00	9	58.33	8	49.16	9
9.	Meaning of e-mail ID	73.33	3	80.00	3	76.66	2
10.	Major search engines for searching desired information	50.00	7	53.33	9	51.00	8
11.	Knowledge about http	26.67	11	28.33	11	27.50	11

MPS = Mean per cent score

rs= Rank order correlation

** = Significant at 1% level of significance

rs=0.86 t = 5.14**

Table 4: Knowledge of Extension Functionaries regarding Agricultural Websites

S.No.	Aspects	GO Personnel (n=60)		NGOs personnel (n=60)		Total (n=120)	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Use of www.raubikaner.org	79.44	2	81.11	3	80.27	2
2.	Use of www.icar.org.in as an Indian website	82.22	1	86.67	1	84.44	1
3.	Use of www.fao.org as an foreign website	75.56	3	78.89	4	77.25	4
4.	Use of WWW(World Wide Web)	73.33	4	82.22	2	77.77	3
5.	Use of Google search engine	72.78	5	74.44	5	73.61	5

MPS = Mean per cent score

rs= Rank order correlation

Non-Significant rs=0.70 t = 1.7**

functionaries of GO and NGOs had knowledge about the device used for accessing Internet i.e. data card was 30.00 and 33.33 MPS respectively. This aspect was ranked tenth by both of the categories of the extension functionaries.

It was also noted that the knowledge level about major search engines among GO and NGOs extension functionaries were 50.00 and 53.33 MPS respectively. It is a matter of concern that only 40.00 MPS of GO extension functionaries and 58.33 MPS of NGOs extension functionaries knew common uses of Internet. This aspect was ranked ninth by the GO extension functionaries and eighth by NGOs extension functionaries.

Further analysis of data exhibits that the extent of knowledge about Wi-Fi technology was 43.33 and 60.00 MPS among GO and NGOs extension functionaries respectively. It means that majority of extension functionaries of NGOs knew the technology which automatically connects the Internet in the defined locality. Similarly the knowledge about Hyper Text Transfer Protocol (HTTP) was found 26.67 and 28.33 MPS among GO and NGOs extension functionaries respectively. Consequently this aspect was ranked last by both of the categories of the extension functionaries.

An effort was also made to determine the relationship between the ranks assigned by GO and NGOs extension functionaries by applying rank order correlation test. The value of rank order correlation (rs) was 0.86 which shows positive correlation, the significance of rs was tested by 't' test and it was observed that calculated 't' value (5.14) was higher than its tabulated value. This leads to conclusion that there was a similarity in the rank assignment pattern of knowledge possessed by GO and NGOs extension functionaries about Internet, though there was difference in magnitude of Mean Percent Score of GO and NGOs extension functionaries.

2.3 Knowledge of Extension Functionaries regarding Agricultural Websites: Table 4 indicates that the extent of knowledge about use of www.icar.org.in was 82.22 and 86.67 MPS among the extension functionaries of GO and NGOs respectively. This aspect was ranked first by both the categories of the extension functionaries. The extent of knowledge about use of

www.raubikaner.org was noticed to be 79.44 and 81.11 MPS in GO and NGOs extension functionaries respectively. It means that majority of extension functionaries knew the use of www.raubikaner.org .Similarly, the knowledge about use of WWW (World Wide Web) was reported to be 73.33 and 82.22 MPS among GO and NGOs extension functionaries respectively. This aspect was ranked fourth by GO extension functionaries and second by the NGOs extension functionaries.

The table further depicts the extent of knowledge regarding use of www.fao.org as a foreign website, it was found that extension functionaries of GO and NGOs had knowledge level of 75.56 and 78.89 MPS respectively. It was ranked third by GO extension functionaries and fourth by NGOs extension functionaries.

Regarding knowledge about use of google search engine, it was found that 72.78 and 74.44 MPS in GO and NGOs extension functionaries knew about it and this aspect was ranked last by both the categories of extension functionaries.

The value of rank order correlation (rs) was 0.70 and the calculated value of 't' was less than its tabulated, which leads to the conclusion that there is no association in realization of different categories of knowledge between GO and NGOs extension functionaries regarding agricultural websites.

The present findings are supported by the findings of Adebayo and Adesope (2007) and Mathews *et al*. (2007).

CONCLUSION

It may be concluded that majority of the total extension functionaries 69.17 per cent had medium level of knowledge about Information and Communication Technologies whereas, 17.50 per cent extension functionaries were observed in low level knowledge group. It was further noted that only 13.33 per cent of the total extension functionaries had high level of knowledge regarding ICTs in the study area. The results of the study also revealed that the extent of knowledge of GO extension functionaries was from 33.33 to 100 MPS, whereas in case of NGOs extension functionaries the extent of knowledge was observed to be 60.00 to 100 MPS in all aspect of Smart phone. It was further found that the extent of knowledge among GO extension functionaries was 26.67 to 83.33 MPS, whereas in case of NGOs extension functionaries extent of knowledge was observed to be from 28.33 to 90.00 MPS in all the aspects of Internet technology. It can be concluded that the extent of knowledge of GO extension functionaries was 72.78 to 82.22 MPS, whereas, extent of knowledge of NGOs extension functionaries was reported to be 74.44 to 86.67 MPS in all aspects of Agricultural Websites.

REFERENCES

Adebaya, E.L. and Adesope, O.M. 2007. Awareness, access and uses of information and communication technologies between female researchers and extensionists. *International Journal of Education and Development using Information and Communication Technologies* **3**(1): 55-69.

Matthews, N., Edna, C. and Adesope, O.M. 2007. Effect of training on ICT on utilization among Extension management in the Niger delta area of Nigeria. *Asian Journal of Information Technology* **6**(1):34-37.

Verma, S.R., Singh, N. and Sharma, F.L. 2009. Impact of mobile enabled information services on crop management: A case of IKSL (IFFCO Kisan Sanchar Limited). In: Proceeding of National Seminar on ICT for Agriculture and Rural Development, organized at Pasighat, Arunachal Pradesh from September 9 to 11. P. 91.

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LAND USE PATTERN, CROPPING PATTERN AND RESOURCE USE EFFICIENCY IN ARID WESTERN PLAIN ZONE OF RAJASTHAN

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ABSTRACT

The present study was undertaken to analyze the land use pattern and cropping pattern over time and resource use efficiency of major crops in Arid Western Plain zone of Rajasthan state. The study was based on secondary data of land use and cropping pattern from 1991-95 to 2011-14 from various published sources of Government of Rajasthan and plot level secondary data of major crops during TE 2013-14 were collected from Cost of Cultivation Scheme, MPUAT, Udaipur (Raj.) for the present study. There has been considerable increase in concentration of net sown area (location coefficient 0.84 to 0.93) due to the decline in concentration in current fallow and fallow lands other than current fallow. This zone has also shown an increase in concentration of land under non agriculture uses and decrease in concentration of land under fallow lands other than current fallow, culturable waste land and land under miscellaneous tree crops and groves. Area under pulses cultivation as a share of gross cropped area has increased by about 4.0 per cent from 18.51 per cent to 22.36 per cent during the study period. The percentage share of gross cropped area under total foodgrains has shown the remarkable decrease from 62.46 per cent to 52.16 per cent. The total oilseed crops has shown remarkable increase in share of gross cropped area from 4.10 per cent to 8.22 per cent. Cropping intensity had increased during the study period from 103 per cent to 120 per cent. Arid western plain zone showed high crop diversification index during the study period from 0.75 to 0.80. All the three measures of efficiency i.e. technical, allocative and cost efficiency was found highest in sorghum cultivation i.e. 94.0 per cent, 75.0 per cent and 69.0 per cent followed by barley cultivation (0.91, 0.73 and 0.66) respectively.

INTRODUCTION

Rajasthan with its huge geographical area of 342.7 lakh hectares is the largest state of India. The state is predominantly an agriculture state with 75 per cent population living in rural areas. Agriculture and allied activities contributed 21.71 per cent of Net State Domestic Product at constant price 2004-05, while its share in Gross State Domestic Product is 20.27 per cent during 2013-14 (Statistical Abstract, 2014). Agriculture is the single largest sector of the state economy employing 70 per cent labour force directly and indirectly. Agriculture and animal husbandry forms the mainstay of the state's economy. Irrigation is an essential input for agriculture production in the state.

The Arid Western Plain Zone covers the five districts of Rajasthan namely Barmer, Bikaner, Churu, Jaisalmer and Jodhpur. The climatic conditions are extremely arid. Rainfall received across the different districts of the zone within a year and across years within the same districts, quite often erratic, so much so, that the entire rainfall of the year may fall on a single day and the rest of the year may be dry. It ranges from a high of 370mm in Jodhpur to a low of just 100mm in Jaisalmer. Desert soil, vast sandy plains with sand dunes, loamy coarse

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sand texture and some places calcareous soils are found in this region. It has a geographical area of 12367 thousand hectares which is 36.13 per cent of states geographical area. In the zone, 13.56 per cent share of gross cropped area is irrigated.Mostly rainfed crops are grown during kharif season i.e. bajra, clusterbean, groundnut and kharif pulses. In rabi season, wheat, gram, rapeseed & mustard and cumin are grown only in areas where irrigation water are available.In various regions of the state, cropping pattern is inefficient in terms of resource use and unsustainable from natural resource use point of view. This leads to serious misallocation of resources, efficiency loss, indiscriminate use of land and water resources, and it adversely affecting long term production prospects. Crop selection at regional level is one such challenge which can be addressed using optimum crop planning.Keeping in view the above considerations, a research study entitled "Land Use Pattern, Cropping Pattern and Resource Use Efficiency in Arid Western Plain Zone of Rajasthan" was conducted.

RESEARCH METHODOLOGY

The study was conducted based on primary and secondary data. The primary data were collected from the 600 representative households of 60 cluster villages during each year of the block period (2011-12 to 2013-14) from the Cost of Cultivation Scheme, Rajasthan. The secondary data were collected from various published records and reports of Government of Rajasthan and Government of India. Data of land use pattern and cropping pattern were collected from the year 1990-91 to 2013-14. Thereafter, data were analysed, tabulated and results were interpreted in light of the objectives of the study.

RESULTS AND DISCUSSION

Changes in Land Use Pattern : The changes in land use pattern in Arid Western Plain Zone were analyzed and presented in Table 1. In the year 1991-95, the location coefficient was highest in culturable waste land (1.99) and it was lowest in forests (0.14). In three categories of land i.e. culturable waste land (1.99), fallow lands other than current fallow (1.33) and current fallow (1.12), the location coefficient was observed more than one which indicated higher concentration of land in these categories while it was less than one observed in six categories of land namely forests (0.14), area under non-agricultural uses (0.82), barren & unculturable land (0.64), permanent pastures & other grazing land (0.80), land under miscellaneous tree crops & groves (0.25) and net sown area (0.84) indicated lower concentration of land. Thus during the year 1991-95 most of the culturable land was lying either as wasteland or fallow land due to lack of water. The crop diversification index was observed 0.75 confirming to mixed-cropping of several crops prevalent in this zone (Table 4.2). Over a period of 24 years from 1991-95 to 2011-14, the location coefficient remains highest in culturable waste land (1.96) and lowest in forests (0.17). However, over this period, the location coefficient of forests has meagerly increased (0.14 to 0.17) while there was meager decrease in culturable waste land (1.99 to 1.96). Overall the land concentration in different categories of land has not changed much during the study period.Between the time period from 1991-95 in 2011-14, the increase in location coefficient was observed in forests (0.14 to 0.17), land under non-agricultural uses (0.82 to 0.90), barren &unculturable land (0.64 to 0.69), land under miscellaneous tree crops & groves (0.25 to 0.36), current fallow (1.12 to 1.28) and net sown area (0.84 to 0.93), The decrease in location coefficient was seen in permanent pastures & other grazing land (0.80 to 0.79), culturable waste land (1.99 to 1.96) and fallow lands other than current fallow (1.33 to 1.25). The permanent pasture and grazing land which were the main strength of livestock based economy of arid zone were slightly declining over the study period. Thus, decreasing location coefficient has shown that the area has been diverted in to forests, area under non-agricultural uses, barren & unculturable land, land under miscellaneous tree crops & groves, current fallow and net sown area.

Changes in Cropping Pattern : The changes in cropping pattern during the period from 1991-95 to 2011-14 in Arid Western Plain Zone showed

Table 1: Land Use Pattern during 1990-91 to 2011-14

S. No.	Particulars	Location Coefficient				
		1991-95	1996-2000	2001-05	2006-10	2011-14
1	Forest	0.14	0.14	0.15	0.16	0.17
2	Area under Non-Agricultural Uses	0.82	0.84	0.86	0.94	0.90
3	Barren and Unculturable Land	0.64	0.67	0.69	0.64	0.69
4	Permanent Pastures & Other Grazing Lands	0.80	0.79	0.78	0.78	0.79
5	Land under Misc. Tree Crops and Groves	0.25	0.11	0.13	0.30	0.36
6	Culturable Waste Land	1.99	1.98	1.96	1.98	1.96
7	Fallow Lands Other than Current Fallow	1.33	1.38	1.28	1.29	1.25
8	Current Fallows	1.12	1.23	1.10	1.18	1.28
9	Net Area Sown	0.84	0.84	0.83	0.90	0.93
10	Total Geographical Area	1.00	1.00	1.00	1.00	1.00

Source: Various Issues of Statistical Abstract of Rajasthan, Agricultural Statistics of Rajasthan, Government of Rajasthan

that there was a sharp decline in share of gross cropped area by 14.15 per cent in total cereals from 43.95 per cent in the year 1991-95 to 29.80 per cent in the year 2011-14 because of remarkable decline in area under bajra from 41.93 per cent to 26.09 per cent (approximately 16%). There was an increase in share of pulses in gross cropped area from the year 1991-95 to 2011-14, it was 18.51 per cent in 1991-95 which has increased to 22.36 per cent in 2011-14, the increase about 4.0 per cent was observed in total pulses area. This increase was due to greengram (1.5%) and gram (4.0%).The share of the total foodgrains was 62.46 per cent in 1991-95 which has continuously decreased in different periods and reached to 52.16 per cent of gross cropped area in 2011-14 due to decrease in the share of cereals area by 14.15 per cent.

The area under clusterbean was 14.72 per cent in 1991-95 which has shown an increase in each subsequent study period and shared 33.06 per cent in 2011-14 showing an increase about 18 per cent during the study period. Bajra has shown the remarkable decrease in percentage share of area i.e.about 16 per cent in gross cropped area due to the significant increase in area of clusterbean because of abrupt increase the market price and the commercial use of clusterbean.The percentage share of total oilseed crops was 4.10 per cent in the year 1991-95 which has increased by 4.0 per cent over the study period and reached to 8.22 per cent of gross cropped area during the period 2011-14. The total spices has also shown an increase in their share of gross cropped area from 0.71 per cent in 1991-95 to 3.70 per cent in 2011-14 which has shown an increase about 3.0 per cent. The crops like garlic, onion and isabgol has shown increase while chillies has shown a decline in the share of area in gross cropped area during the period from 1991-95 to 2011-14. The cropping intensity increased significantly from 103 per cent in the year 1991-95 to 120 per cent in the year 2011-14. The crop diversification index has also shown increased by 0.05 (0.75 to 0.80) indicated that there was more diversification of crops from sowing of traditional crops like bajra, kharif pulses, wheat, barley, gram, groundnut and sesamum towards the high value crops i.e. gram, clusterbean, castorseed, cumin, isabgol, mehandi, vegetables and fruit plants etc.Thus, it can be concluded that pulses, oilseeds, spices, garlic, onion, isabgol and clusterbean has shown an increase while the cereals, total foodgrains, chillies and other crops has shown a decrease and there was no change in tobacco and cotton in percentage share in gross cropped area

Table 2: Changes in Cropping Pattern during 1990-91 to 2011-14

(per cent of GCA)

Crops	1991-95	1996-2000	2001-05	2006-10	2011-14
Bajra	41.93	37.10	37.99	34.70	26.09
Sorghum	0.59	0.54	0.62	0.76	0.84
Wheat	1.41	2.19	2.03	1.69	2.73
Barley	0.02	0.05	0.09	0.09	0.14
Total Cereals	**43.95**	**39.88**	**40.74**	**37.25**	**29.80**
Greengram	1.21	2.20	2.72	2.78	2.67
Blackgram	0.00	0.06	0.00	0.00	0.00
Mothbean	13.41	14.02	15.41	13.15	11.83
Gram	3.89	6.51	3.42	5.24	7.85
Cowpea	0.00	0.02	0.02	0.01	0.01
Total Pulses	**18.51**	**22.81**	**21.57**	**21.18**	**22.36**
Total Foodgrains	**62.46**	**62.69**	**62.31**	**58.43**	**52.16**
Sesamum	1.76	1.40	0.78	0.53	0.71
Groundnut	0.43	0.70	0.84	1.72	2.89
Castorseed	0.02	0.08	0.27	0.54	0.98
Rapeseed & Mustard	1.74	3.26	2.21	3.06	3.11
Taramira	0.15	1.11	0.44	0.21	0.54
Total Oilseeds	**4.10**	**6.56**	**4.54**	**6.06**	**8.22**
Cumin	0.71	1.22	2.38	1.14	3.34
Fenugreek	0.00	0.01	0.08	0.09	0.32
Fennel	0.00	0.01	0.01	0.01	0.03
Total Spices	**0.71**	**1.24**	**2.49**	**1.24**	**3.70**
Garlic	0.01	0.02	0.07	0.04	0.05
Onion	0.04	0.06	0.13	0.17	0.19
Chillies	0.23	0.21	0.10	0.02	0.02
Isabgol	0.00	0.52	0.86	1.02	1.55
Tobacco	0.02	0.02	0.03	0.01	0.00
Cotton	0.31	0.73	0.47	0.20	0.32
Clusterbean	14.72	20.03	20.51	27.41	33.06
Other Crops	**17.40**	**7.92**	**8.49**	**5.41**	**0.72**
GCA ('000 ha)	**5577 (100.00)**	**5822 (100.00)**	**5531 (100.00)**	**6653 (100.00)**	**7696 (100.00)**
Cropping Intensity (%)	**103**	**108**	**109**	**113**	**120**
Crop Diversification Index	**0.75**	**0.79**	**0.77**	**0.78**	**0.80**

Source: Various Issues of Statistical Abstract of Rajasthan, Agricultural Statistics of Rajasthan, Government of Rajasthan

from the period of 1991-95 to 2011-14.

Resource Use Efficiency of Major Crops: Results of Arid Western Plain Zone during TE 2013-14 showed in Table 3 that among the cereals, technical, allocative and cost efficiency of sorghum was the highest i.e. 94.0 per cent, 75.0 per cent and 69.0 per cent, respectively. This implied that an average farmer is efficient in allocation of resources as well as conversion of inputs into output. Barley was also the highly efficient crop in this zone which showed that technical, allocative and cost efficiencies as 0.91, 0.73 and 0.66, respectively.Among all crops in kharif and rabi season, technical efficiency was found highest in sorghum i.e. 94 per cent followed by barley (91%), gram (78%) and fenugreek (70%). This indicated that average farmers were producing potential output level and there was no more scope to increase the production level with given bundle of inputs. The technical inefficiency mean score was also found highest in groundnut i.e. 97 per cent followed by mothbean (73%) and onion (64%) indicated that average farmers can produce the maximum feasible output from a given bundle of input or uses the minimum feasible amount of inputs to produce a given level of output. The result of allocative efficiency was observed more efficient among all crops except wheat and mothbean, the

Table 3: Resource Use Efficiency of Major Crops

S. No.	Crops	Sample Size (Numbers)	Resource Use Efficiency		
			Technical Efficiency	Allocative Efficiency	Cost Efficiency
A	**Cereals**				
1	Bajra	126	0.53	0.75	0.38
2	Sorghum	7	0.94	0.75	0.69
3	Wheat	57	0.57	0.27	0.16
4	Barley	15	0.91	0.73	0.66
B	**Pulses**				
5	Gram	12	0.78	0.66	0.54
6	Greengram	8	0.74	0.73	0.53
7	Mothbean	34	0.27	0.37	0.08
C	**Oilseeds**				
8	Groundnut	50	0.03	0.78	0.03
9	Sesamum	11	0.41	0.70	0.28
9	Castorseed	20	0.61	0.70	0.42
10	Rapeseed & Mustard	17	0.57	0.82	0.48
D	**Spices**				
11	Cumin	23	0.52	0.74	0.38
12	Fenugreek	4	0.70	0.86	0.62
13	Garlic	21	0.66	0.73	0.46
E	**Other Crops**				
14	Onion	7	0.36	0.68	0.21
15	Cotton	8	0.53	0.87	0.46
16	Clusterbean	140	0.42	0.60	0.24

Source: Plot Level Cost of Cultivation Data of Rajasthan (TE 2013-14),

Note: Working hours of human labour/ha, machine labour/ha, quantity of seed (kg/ha) and quantity of fertilizers (kg/ha) with their unit prices and output produces per hectare

allocative inefficiency of wheat and mothbean was 73 per cent and 63 per cent, respectively can be attributed to overuse of labour, untimely rainfall and fertilizer pointing towards a disguised unemployment problem.

The result of cost efficiency indicated that there was a noticeable level of cost inefficiencies in the production process of groundnut, mothbean, wheat, onion, clusterbean and sesamum i.e. a sample farmer could reduce the current average cost of production by 97 per cent, 92 per cent, 84 per cent, 79 per cent, 76 per cent and 72 per cent, respectively to achieve the potential minimum cost level without reducing output level. The wide variation in the technical efficiency, allocative efficiency and cost efficiency implies that all the farmers are not fully aware about right production techniques.Therefore, to raise the level of technical, allocative and cost efficiency of sample farmers in the Arid Western Plain Zone of Rajasthan, there is a need to improve the farmers' knowledge, skill and awareness about production process.

CONCLUSION

Finally, it can be concluded that there has been considerable increase in concentration of net sown area (location coefficient 0.84 to 0.93) due to the decline in concentration in current fallow and fallow lands other than current fallow. This zone has also shown an increase in concentration of land under non agriculture uses and decrease in concentration of land under fallow lands other than current fallow, culturable waste land and land under miscellaneous tree crops and groves. Area under pulses cultivation as a share of gross cropped area has increased by about 4.0 per cent from 18.51 per cent to 22.36 per cent during the study period. The percentage share of gross cropped area under total foodgrains has shown the remarkable decrease from 62.46 per cent to 52.16 per cent. The total oilseed crops has shown remarkable increase in share of gross cropped area from 4.10 per cent to 8.22 per cent which could be mainly due to Technology Mission on Oil and Oil Palm Scheme (TMOP) for enhancing the oilseeds production in the country initiated by the government. Cropping intensity had increased during the study period from 103 per cent to 120 per cent. Arid western plain zone showed high crop diversification index during the study period from 0.75 to 0.80 in the study area. This zone has showed that all the three measures of efficiency i.e.technical, allocative and cost efficiency was found highest in sorghum cultivation i.e. 94.0 per cent, 75.0 per cent and 69.0 per cent followed by barley cultivation (0.91, 0.73 and 0.66) respectively. This implied that an average farmer is efficient in allocation of resources as well as conversion of inputs into output.

REFERENCES

Agriculture Statistics at a Glance (Various Issues), Government of Rajasthan. Available at: http://www.krishi.rajasthan.gov.in.

Coelli, T., Rahman, S. and Thirtle, C. 2002. Technical, Allocative, Cost and Scale Efficiencies in Bangladesh Rice Cultivation: A Non-parametric Approach. *Journal of Agricultural Economics* **53**(3): 607-626.

Pal, S. and Kar, S. 2012. Implications of the Methods of Agricultural Diversification in Reference with Malda district: Drawback and Rationale. *International Journal of Food, Agriculture and Veterinary Sciences* **2** (2): 97-105.

Ramasamy, C., Balasubramanian, R. and Sivakumar, S. D. 2005. Dynamics of land use pattern with special reference to fallow lands - An empirical investigation in Tamil Nadu. *Indian Journal of Agricultural Economics* **60**(4): 629-643.

Sinha, D.K., Ahmad, N. and Singh, K.M. 2017. Changes in Land Use Pattern in Bihar: A Zone-wise Analysis. *Agricultural Situation in India* **73**(12): 28-34.

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INFORMATION NEEDS OF FARM FAMILIES FOR DIGITAL AND PRINT MEDIA

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ABSTRACT

ICTs in agriculture have the potential to facilitate greater access to information that drive or support knowledge sharing. ICTs essentially facilitate the creation, management, storage, retrieval, and dissemination of relevant agriculture data, knowledge, and information that many have already been processed and adapted (Rao 2007; Heeks 2002). The way in which ICT projects access, assess, apply, and deliver content may increase the likelihood of ICT use by farmers and thus may become an important factor in a project's success. Content assessment assumes paramount importance in assessing the digital and print media information needs of the farmers. The extent to which content is customized and localized to a farmer's condition influences its relevance. A study was conducted on identification of information needs in digital and print media of farmers of ICAR-CAZRI's adopted village Ujaliya of Jodhpur district of Rajasthan. A total of 30 respondents were selected randomly from the above village. Semi structured interview schedule was prepared and used for data collection. It was found that the majority of the farmers belonged to middle age group and had their education up to secondary level. Most of the farmer's primary occupation is farming, possessing 10 - 20 bighas land and belonged to nuclear family. Data collected on the subject of the interest in digital and print media shows that religion is the most preferred area followed by science & technology, literature, politics, games and business. Agriculture related information ranked first in order of preference for the majority of farmers on the basis of information needs. This was followed by health related information and credit related information (like how to get loan from banks). It was also found that the majority of respondents hardly read for 1-2 hours a week. Therefore, it is suggested to the media personnel's to design, develop and disseminate messages based on the information needs expressed by the farm families in digital and print media.

INTRODUCTION

Nowadays, conventional methods used for technology transfer is proving insufficient and becoming obsolete in today's context (Rivera and Zijp, 2002). Efforts are being made from extension point of view to focus more on innovations in communication as well as to have better coordination between research, extension and farmers to encourage a greater sharing of information. Growth in agriculture has slackened due to the successive years of less-than normal monsoon rains but still agriculture is considered to be the mainstay of the Indian economy due to its high share (approx. 58 per cent) of the population's dependency on agriculture for their livelihood and employment (Economic Survey, 2013). Agriculture sector remains the backbone of country's development and lifeline for over 65 per cent of the population based in rural areas.

The initiation as well as application of agricultural knowledge is important for small and marginal farmers for improving sustaining and diversifying their farm enterprises. In India, ICT's (Information and Communication Technologies) can directly support farmer's access to timely and relevant information, good agricultural practices, market prices of commodities as well as empower the creation and sharing of knowledge within the farming

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community itself. ICTs in agriculture have the potential to facilitate greater access to information that drive or support knowledge sharing. ICTs essentially facilitate the creation, management, storage, retrieval, and dissemination of relevant agriculture data, knowledge, and information that many have already been processed and adapted (Rao 2007; Heeks 2002).

In the past, television and radio were the main electronic broadcast media's used to reach rural communities; however, in the past two decades, Internet- and mobile-based channels have emerged as a powerful tools for quicker technology dissemination. Digital media now includes computer-based applications and such communication tools as social media, digital information repositories (online or offline), and digital photography and video, as well as mobile phones (Balaji, Meera, and Dixit 2007). However, in agriculture, despite the rapid spread and potential of digital media to facilitate farmer's access to information, many of the initiatives face common challenges, such as issues of sustainability, affordability, ease of use, accessibility, scalability, and availability of relevant and localized content in an appropriate language (Saravanan, 2010). The way in which ICT projects access, assess, apply, and deliver content may increase the likelihood of ICT use by farmers and thus may become an important factor in a project's success. Content assessment assumes paramount importance in assessing the digital and print media information needs of the farmers. The extent to which content is customized and localized to a farmer's condition influences its relevance. Thus, for rapid adoption of improved practices by the farmers, it is utmost important for the researcher to assess the need of digital and print media. The present paper attempts to identify the information needs of farming community.

RESEARCH METHODOLOGY

The present study was conducted in one of the purposively selected village viz., Ujaliya in Baori taluk of Jodhpur district of Rajasthan. A total of 30 respondents were selected randomly from the above village.Semi structured interview schedule was prepared for the data collection. Farmer's responses were documented through interview method. The collected data were analyzed with descriptive statistics, percentage and frequency.

RESULTS AND DISCUSSION

The data collected from respondents through personal interview method were analyzed and result of the same is discussed and presented in Table 1.

Age: The data collected reveal that most of the respondents (40 %) belong to middle age group (36 - 50 years) and 36.67 per cent of them belong to old age group (above 50 years). Among the respondents, it was found that only 23.33 per cent of the farmers are young (<35 years).

Education: About 36.67 per cent of the respondents were had their education up to secondary school level followed by primary (23.33 %) and illiterate level (20 %), respectively. Whereas it was found that 10 per cent each of the respondents had their education up to graduation and others (B.Ed., PG, Ph.D., M.Phil.)

Size of land holding: It is evident from the data in Table 1 that majority of the farmers had land area between 10 to 20 bighas (33.33 %). About one third of the respondents had land area greater than 40 bighas (30.00 %) followed by 20 per cent of the respondents having land less than 10 bighas and 16.66 per cent of farmers with land size between 20 to 40 bighas.

Occupation: It is very clear from the Table 1 that invariably major portion of the farmers (76.7 per cent) were fulltime farmers, while 16.66 per cent of the farmers engaged in farming as well as business activities and only 6.66 per cent belonged to farming and services.

Family type: Based on the number of the family members, the families were categorized. It was observed that majority of the farmers (63.33 per cent) belonged to the nuclear family followed by 36.67 per cent of respondents having joint family.

The data presented in Table 2 shows that less

Table 1: Socio-personal profile of the respondents

(n=30)

Sr. No.	Characteristics	No. of Respondents (f)	Percentage (%)
1	**Age**		
	A. Below 35 years	7	23.33
	B. 36-50 years	12	40.00
	C. 50 years and above	11	36.67
2	**Education**		
	A. Illiterate	6	20.00
	B. Primary	7	23.33
	C. Secondary	11	36.67
	D. Graduation	4	10.00
	E. Others (B.Ed., PG, Ph.D., M.Phil.)	3	10.00
3	**Size of land holding**		
	A. Up to 10 bighas	6	20.00
	B. 10- 20 bighas	10	33.33
	C. 20- 40 bighas	5	16.66
	D. More than 40 bighas	9	30.00
4	**Occupation**		
	A. Fulltime farmer	23	76.66
	B. Farming and business	5	16.66
	C. Farming and services	2	6.66
5	**Family type**		
	A. Joint	11	36.67
	B. Nuclear	19	63.33

than one third of the respondents (30.00 per cent) were having the religion as their subject of interest followed by 20 per cent respondents with science & technology. About 16.66 per cent each of the respondents had literature and politics as their subject of interest followed by 6.66 per cent each with games & sports and business. From the results it is very clear that the villagers are more oriented towards religion and being busy in farming throughout the year.

Table 2: Classification of respondents on the basis of subject of interest

(n=30)

S. No.	Subject of interest	Frequency (f)	Percentage (%)
1	Politics	5	16.66
2	Religion	9	30.00
3	Science and technology	6	20.00
4	Games and sports	2	6.66
5	Literature	5	16.66
6	Business	2	6.66
7	Others (GK)	1	3.33

Table 3: Classification of respondents on the basis of information needs

(n=30)

Sr.	Information needs	MPS	Rank
1	Agricultural related information	96.14	I
2	Animal husbandry related information	74.38	IV
3	Health related information	89.24	II
4	Skill development	59.16	VI
5	Credit related	77.68	III
6	Education related	61.37	V
7	Political information	47.13	VII
8	Sports related information	41.95	IX
9	Competitive exam related information	37.83	X
10	Government policies related information like subsidy etc.	45.84	VIII

The data presented in Table 3 indicates the ranking order of respondents by their information needs. The study shows that the majority of the farmers ranked first the information relating to agriculture followed by health related information. Credit related information (like how to get loan from banks) ranked third by the respondents followed by animal husbandry related information as fourth and education related information at fifth. They were least interested for information on competitive exams, politics, sports and skill development probably owing to paucity of time.

Table 4: Classification of respondents on the basis of time spent in a week on reading / searching for information

(n=30)

S. No.	Time spent	Frequency (f)	Percentage (%)
1	1 - 2 hours	9	30.00
2	2 - 4 hours	8	26.66
3	4 - 6 hours	6	20.00
4	>6 hours	4	13.33
5	<1 hour	3	10.00

It is evident from Table 4 that the average time spent in a week by the respondents on reading or searching for information in the subject of their interest. It shows that 30 per cent of the respondents read for 1-2 hours a week followed by 26.6 per cent read for 8 hours and 20 per cent read for 4 - 6 hours a week. However, 13.33 per cent of the respondents read for more than 6 hours a week in their respective subject fields or specialisation and only 10 per cent read for less than an hour.

CONCLUSION

It may be concluded that ICT provides the service of online service of education, training, monitoring and consultation. Data collected on the subject of the interest in digital and print media shows that religion is the most preferred area followed by science & technology, literature, politics, games and business. The study shows that the majority of the farmers need information relating to agriculture followed by health related information and credit related information (like how to get loan from banks). It was also found that the respondents hardly spent any time for reading.

REFERENCES

Balaji, V., Meera, S. N. and Dixit, X. 2007. ICT-Enabled Knowledge Sharing in Support of Extension: Addressing the Agrarian Challenges of the Developing World Threatened by Climate Change, with a Case Study of India. *SAT e-Journal* **4**(1): 18.

Hasan S. and Sharma A. 2011. Print Media Utilization Pattern among home makers. Global Media Journal-Indian Edition/Summer Issue/ June 2011. http//www.gbpuat.ac.in

Heeks. 2002. Information Systems and Developing Countries: Failure, Success and Local Improvisations.*The Information Society* **18**: 101-112.

Munyua, H. 2007. ICTs and small-scale agriculture in Africa: a scoping study. Final Report to International Development Research Centre (IDRC)

Rao, N. H. 2007. A Framework for Implementing Information and Communication Technologies in Agricultural Development in India. *Technological Forecasting and Social Change* **74**: 491-518.

Rivera, W. M. and Zijp, W. 2002. Contracting for agricultural extension: International case studies and emerging practices. CABI Publishing, Wallingford, UK.

Saravanan, R. 2010. India- In ICTs for Agricultural Extension. Global Experiments, Innovations and Experiences. New Delhi: New India Publishing Agency.

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SUGGESTIONS OF STUDENTS TO IMPROVE RURAL AGRICULTURE WORK EXPERIENCE PROGRAMME

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ABSTRACT

The present study was conducted in the State Agriculture Universities of Rajasthan. There are 3 Agriculture colleges viz. S.K.N. College of Agriculture, Jobner (SKNAU, Jobner), Rajasthan College of Agriculture, Udaipur (MPUAT, Udaipur) and College of Agriculture, Bikaner (SKRAU, Bikaner) where the PG degree in agriculture is offered and RAWE programme is being conducted for last 10 years. Hence, only these three colleges have been selected for the study. Total 90 students were selected for the study randomly. The study shows that "Duration of village attachment programme in RAWE to be increased" (85.55 MPS) was perceived as the major suggestion with high intensity given by students followed by "Students to be placed in ideally functioning institutions only" and "Students should be allowed to take up individual projects in their areas of interest in RAWE" both (81.11 MPS) in village attachment. "More orientation to be given to students in areas of post harvest operations and marketing aspects" was most important suggestion with 81.11 MPS given by respondents in skill training. In educational tour "Tour should be on the basis of all India" (86.93 MPS) was perceived as major suggestion, followed by "All the major agricultural institutes of India should be visited" (86.03 MPS) as suggested by the students.

INTRODUCTION

Agriculture is the backbone of the Indian economy on which majority of rural population depends for their income and livelihood security. Agricultural education is an important tool in ensuring increased agricultural productivity, sustainability, environmental and ecological security, profitability, job security and equity. Different committees (ICAR Review Committee 1979; Deans Committee 1981) recommended for strong linkage of agricultural education with actual farming situation through the programme. Considering the importance of agricultural knowledge on socio-economic behaviour of the farmers, Agricultural Graduates during internship have to work and study in rural areas as per university norms. In India, Randhawa Committee (1992) recommended the Rural Agriculture Work Experience (RAWE) Programme for imparting quality, practical oriented education for the agriculture degree programme. It is a course offered by SAUs normally in the final year (VII or VIII semester) of undergraduate degree programme. It is divided in to three parts viz. (i) village attachment, (ii) skill training and (iii) educational tour. In 12th plan, Rural Agriculture Work Experience (RAWE) Programme has been reconstructed & proposed as 'Rural Entrepreneurship and Awareness Development Yojana' (READY). The programme aims at entrepreneurship development among the youth.

RESEARCH METHODOLOGY

The present study was conducted in the State Agriculture Universities of Rajasthan. There were 5 SAUs namely, SKRAU Bikaner and MPUAT Udaipur, SKNAU Jobner, AU Kota and AU Jodhpur. Out of the 5 universities, 3 universities were having UG and PG degree programmes. So these universities have been selected for the study. There are 3 Agriculture colleges Viz. S.K.N. College of Agriculture, Jobner (SKNAU, Jobner), Rajasthan College of Agriculture, Udaipur (MPUAT, Udaipur) and College of Agriculture, Bikaner (SKRAU, Bikaner) where the PG degree in agriculture is

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offered and RAWE programme is being conducted for last 10 years. Other colleges affiliated by the SAUs do not offer post graduate degree in Agriculture. Hence only these three colleges have been selected for the study. 30 students from each college selected randomly. Thus, the sample was comprised of 90 students.

The data were collected with the help of questionnaire consisting of measuring devices of variables along with face to face contact from the respondents. In formulating the questions and statements for the questionnaire, the investigator has taken opinion and guidance of the experts and other extension personnel. Collected data were tabulated and analyzed by using mean percent score, standard deviation, percentage and rank.

RESULTS AND DISCUSSION

The data given in Table 1 reveal that "Duration of village attachment programme in RAWE to be increased" (85.55 MPS), was perceived as the most important suggestion with high intensity given by students indicated by first rank assigned to it. This was followed by "Students to be placed in ideally functioning institutions only" and "Students should be allowed to take up individual projects in their areas of interest in RAWE" (81.11 MPS), "Convenience and time availability of farmers to be taken care of" (80.37 MPS), "Teachers should always act as role models" and "Experts may visit other universities to get an empirical experience" (78.88 MPS) and "University should increase its credibility and accessibility among farmers" (78.51 MPS) with II, III, IV, and V ranks assigned in order of village attachment suggestions given by overall students respectively.

The data given in Table also reveal that students have moderate suggestions for improvement of village attachment in RAWE programme like "Should be for one entire cropping season rather than for one semester" and "Students should keep away from politics and groupism at least in RAWE", "Activities on practical problem solving in field to be encouraged", "RAWE Programme should be implementing in 3rd year of UG degree programme", "Proper planning by teachers required before each module" and "More exposure to transfer of technology programmes is required" both, "Give opportunities to all students equally in RAWE", "Teacher's involvement with students is must when students interact with farmers", "Selection of village requires involvement of teachers and students both" and "Students should stay in village during RAWE" both with score 77.77, 77.03, 75.55, 75.18, 74.07, 73.70 and 73.33 mean per cent score (MPS) respectively. The last suggetion was "The experimental plot should be provided to each student at village level" (71.48 MPS) in the study area.

The data given in Table 2 show that "More orientation to be given to students in areas of post harvest operations and marketing aspects" was most important suggestion with 81.11 MPS given by respondents and it was ranked first. Whereas, "Proper planning by teachers required before skill training", "Duration of skill training in RAWE programme to be increased" and "Skill training should be job oriented" both, "Proper training should be provided to students in a particular area", "Skill training should be implementing in 3rd year of UG degree programme" and "Company attachment should be an alternate for skill training" with the extent of 80.37, 78.88, 77.03, 75.92 and 74.44 MPS and ranked second, third, fourth, fifth and sixth respectively. This might be due to the facts that students possessed less orientation on post harvest operations and marketing aspects by the state agricultural universities in RAWE programme.

The data given in Table 3 indicate that "Tour should be on the basis of all India" (86.93 MPS), was perceived as major suggestion and assigned first rank by respondents. This was followed by the other suggestions like "All the major agricultural institutes of India should be visited" (86.03 MPS), "Financial help should be provided to each student at the time of tour" (81.53 MPS) and "Tour should be implemented in third year of UG degree programme" (81.08 MPS) which were accorded II, III and IV ranks in order of suggestions related to educational tour in RAWE programme

Table 1: Suggestions offered by students towards village attachment

n=90

S.No.	Suggestions	MPS	Rank
1.	Duration of village attachment programme in RAWE to be increased	85.55	I
2.	Should be for one entire cropping season rather than for one semester	77.77	VI
3.	Students should keep away from politics and groupism at least in RAWE	77.77	VI
4.	University should increase its credibility and accessibility among farmers.	78.51	V
5.	Proper planning by teachers required before each module	75.18	IX
6.	Give opportunities to all students equally in RAWE	74.07	X
7.	Convenience and time availability of farmers to be taken care of	80.37	III
8.	Choose areas where majority of people are engaged in agriculture	72.96	XIII
9.	A mini RAWE of 1 -2 weeks to be done before actual RAWE to understand farmers' problems and plan for the original RAWE	71.85	XV
10.	Adequate publicity to be given prior to each programme	71.85	XV
11.	Students to be placed in ideally functioning institutions only	81.11	II
12.	Teachers should always act as role models	78.88	IV
13.	Students should be allowed to take up individual projects in their areas of interest in RAWE	81.11	II
14.	Activities on practical problem solving in field to be encouraged	77.03	VII
15.	More collaboration with NGOs and line departments	72.96	XIII
16.	More exposure to transfer of technology programmes is required	75.18	IX
17.	Teacher's involvement with students is must when students interact with farmers	73.70	XI
18.	Time for interaction with farmers should be in the evening	71.85	XV
19.	Selection of village requires involvement of teachers and students both	73.33	XII
20.	Every teacher should know the objective of RAWE Programme	72.96	XIII
21.	Students should stay in village during RAWE	73.33	XII
22.	Day to day student evaluation is necessary	72.22	XIV
23.	The experimental plot should be provided to each student at village level	71.48	XVI
24.	Experts may visit other universities to get an empirical experience	78.88	IV
25.	RAWE Programme should be implementing in 3rd year of UG degree programme.	75.55	VIII
	Overall	**75.82**	

MPS: Mean Percent Score

Table 2: Suggestions related to skill training

n=90

S.No.	Suggestions	MPS	Rank
1.	Duration of skill training in RAWE programme to be increased	78.88	III
2.	Company attachment should be an alternate for skill training.	74.44	VI
3.	Proper planning by teachers required before skill training	80.37	II
4.	Skill training should be job oriented	78.88	III
5.	More orientation to be given to students in areas of post-harvest operations and marketing aspects	81.11	I
6.	Proper training should be provided to students in a particular area.	77.03	IV
7.	Skill training should be implementing in 3rd year of UG degree programme.	75.92	V
	Total	**78.09**	

MPS: Mean Percent Score

Table 3: Suggestions related to educational tour

n=74

S.No.	Suggestions	MPS	Rank
1.	Time for educational tour in RAWE programme to be increased for about one month.	78.82	VI
2.	Proper planning by teachers required before educational tour	79.72	V
3.	Tour should be on the basis of all India.	86.93	I
4.	Financial help should be provided to each student at the time of tour.	81.53	III
5.	All the major agricultural institutes of India should be visited	86.03	II
6.	Tour should be implementing in 3rd year of UG degree programme.	81.08	IV
7.	Students should keep away from politics and groupism at the time of tour	74.32	VII
	Overall	81.21	

MPS: Mean Percent Score

respectively. Followed by other suggestions like "Proper planning by teachers required before educational tour", "Time for educational tour in RAWE programme to be increased for about one month" and "Students should keep away from politics and groupism at the time of tour" with 79.72, 78.82 and 74.32 mean per cent score respectively. This might be due to the facts that tour is not able to cover the whole Indian historical and major agricultural institutes.

REFERENCES

Annonimous 2009. Report of Fourth Deans committee on Agricultural Education in India. Education Division, Indian Council of Agricultural Research New Delhi 34-36.

Randhawa, N. S. 1992. Rural Agriculture Works Experience programme implementation in SAUs of India. Report of the Indian Council of Agricultural Research Committee.

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ECONOMICS OF POULTRY ENTERPRISE IN RAJASTHAN

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ABSTRACT

The present investigation was carried out to study the economics of poultry enterprise and constraints faced by poultry producers in MPUAT service area and Ajmer district of Rajasthan during the year 2018. The primary data were collected from four poultry farms of MPUAT service area and Ajmer district of Rajasthan with the help of pre-tested schedule. The results of study revealed that the per bird average cost of egg and broiler production has been found more in MPUAT service area as compared to Ajmer district of Rajasthan. In total cost of production the share of variable cost has been found very high than fixed cost. Major cost items were found as cost of feed, cost of day old chicks, wages of permanent labour and medicine and veterinary charges. The per bird gross returns has been found high in MPUAT service area as compared to Ajmer district of Rajasthan from both broiler as well layer farms. Major constraints faced by poultry producers were identified as high cost of feed, day old chicks, medicine and veterinary charges, high disease incidence, high fluctuations in selling prices, high rate of mortality, high cost of variable inputs, high cost of establishment, non-availability of government policies and subsidies and non-availability of resources has been found as major problems in poultry production.

INTRODUCTION

Indian poultry and egg consumption continues to grow up and is expected to double by 2020. While agricultural production was rising at the rate around 2 per cent per annum over the past two to three decades, whereas poultry production has been rising at the rate of around 8 per cent per annum, with an annual turnover of US $7500 million. Livestock population of India is highest in the world; it contributes approximately 4 per cent to GDP and 27 per cent to agricultural GDP (Economic Survey 2015-16). Poultry Industry is providing nutritional security to the poor and also offering employment to millions of people in rural and urban areas. The future for Indian poultry industry appears to be very favorable and is driven by rising purchasing power, changing food habits, contract poultry farming and rapid urbanization are certain key reasons for this constant upswing in poultry sector.

Though, some studies regarding economic analysis of poultry production in Rajasthan have been carried out by the researchers at all India level but no concerted efforts have so far been made to study the economics of poultry production in MPUAT service area of Rajasthan, particularly with reference to various important economic parameters like cost and returns from poultry enterprise and constraints faced by poultry producers in these areas. Again this is an untouched issue in poultry sector of the area.

In view of the overwhelming importance of the poultry sector in devising the both rural and urban economy of Rajasthan, the present study has been undertaken to study the economics of poultry enterprise in MPUAT service area and Ajmer district of Rajasthan.

RESEARCH METHODOLOGY

The study was conducted in MPUAT service area and Ajmer district of Rajasthan. For selection of

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poultry farm, a complete list of all potential poultry farms of Ajmer and MPUAT service area has been prepared. The list has been arranged in chronological order according to the poultry population there after categorized into two size group viz., small (5000 poultry birds) and large size (15000 poultry birds) categories. Ultimately two farms, one from small size and one from large size from both the areas have been selected for present study.

For analysis of costs and returns of poultry enterprise following concepts was used: (i) Total Fixed Costs (TFC), (ii) Total Variable Costs (TVC), (iii) Total Costs (TC = TVC + TFC), (iv) Gross Returns (GR), (v) Net Returns (NR = GR - TC).

RESULTS AND DISCUSSION

Cost and returns from small size broiler farms: The per bird average cost incurred in producing broiler for small size farms in both the study areas has been presented in Table 1. The table indicates that per bird total cost for broiler production for small size farms in MPUAT service area and Ajmer district has been calculated as Rs. 139.47 and Rs. 122.67, respectively. The total cost has been found as more in MPUAT service area than Ajmer district. This is due to higher feed cost (Rs. 43.20), salary to permanent labour (Rs. 25.20), high price rate of day old chicks (Rs. 40.48) and higher medicine and veterinary charges (Rs. 5.70) in MPUAT service area than Ajmer district of Rajasthan.

The cost incurred in salary to permanent labour was found to be highest among total variable cost i.e. 18.07 and 18.86 per cent for MPUAT service area and Ajmer district of Rajasthan, respectively followed by interest on fixed capital. In variable cost, the feed cost was the major item which alone accounts 30.97 per cent in MPUAT service area

Table 1: Per bird cost of broiler production for small size poultry farms in MPUAT service area and Ajmer district (in Rs.)

S.No.	Particulars	MPUAT area	Ajmer district
A.	**Fixed cost**		
1.	Depreciation on building @ 5% value of the building	2.80(2.01)	2.50(2.04)
2.	Depreciation on equipments@ 2% value of the equipments	2.54(1.82)	2.20(1.79)
3.	Salary to permanent labour	25.20(18.07)	23.14(18.86)
4.	Interest on fixed capital @10 % per annum	8.14(5.84)	6.50(5.30)
	Total Fixed Cost (TFC)	**38.68(27.73)**	**34.34(27.99)**
B.	**Variable cost**		
1.	Day old chicks @ 5 % mortality	40.48(29.02)	37.00(30.16)
2.	Feed @ 4 kg per bird	43.20(30.97)	39.20(31.96)
3.	Wages for casual labour 7.66(5.49)	5.56(4.54)	
4.	Medicine and veterinary charges	5.70(4.09)	4.36(3.55)
5.	Water and electricity	3.08(2.21)	1.76(1.43)
6.	Cost of litter	0.42(0.30)	0.22(0.18)
7.	Repair and maintenance charges	0.18(0.13)	0.16(0.13)
8.	Other miscellaneous expenses	0.07(0.05)	0.07(0.06)
	Total Variable Cost (TVC)	**100.79(72.27)**	**88.33(72.01)**
	Total Cost (TFC+TVC)	**139.47(100.00)**	**122.67(100.00)**

Figures in parentheses indicates percentage share in total cost

and 31.96 per cent in Ajmer district. In both the study areas the second most important cost item was cost of day old chicks, which accounts 29.02 and 30.16 per cent of variable cost, respectively.

The per bird net and gross returns from small size broiler farms has been shown in Table 2. Per bird gross returns from broiler production has been calculated as Rs. 192.68 and Rs. 182.14 for MPUAT service area and Ajmer district, respectively. The gross returns for MPUAT service area has been found more as compared to Ajmer district. It might be due to less number of poultry farms and high demand of poultry products in this area. The major source of revenue from the broiler farms was found to be sale of birds, which accounts 96.01 and 96.08 per cent of gross returns for MPUAT service area and Ajmer district, respectively. The per bird net returns from broiler industry was found to be Rs. 53.21 for MPUAT service area and Rs. 59.47 for Ajmer district.

Cost and returns from large size broiler farms: The per bird costs for production of broiler for large size poultry farms in both the study areas has been shown in Table 3. Per bird total cost incurred for large size broiler farms has been found to be Rs. 121.46 and Rs. 114.12 for MPUAT

Table 2: Per bird returns from broiler production for small size poultry farms in MPUAT service area and Ajmer district (in Rs.)

S.No.	Particulars	MPUAT service area	Ajmer district
1.	Sale of birds (broilers)	185.00(96.01)	175.00(96.08)
2.	Sale of manure	7.50(3.90)	7.00(3.84)
3.	Sale of empty gunny bags	0.18(0.09)	0.14(0.08)
	Gross Returns	**192.68(100.00)**	**182.14(100.00)**
	Net Returns =(GR-TC)	**53.21**	**59.47**

Figures in parentheses indicates percentage share in gross returns

service area and Ajmer district, respectively. It can be concluded that the difference among the total cost for large farms in MPUAT service area and Ajmer district of Rajasthan is less than small broiler farms. It might be due to adequate knowledge of scientific rearing practices for broiler and better experience of market prices for various inputs needed for broiler product.

Per bird fixed cost for MPUAT service area and Ajmer district has been calculated as Rs. 35.83 and Rs. 32.02, respectively. It accounts 29.50 and 28.06 per cent of total cost in MPUAT service area and Ajmer district of Rajasthan, respectively. The major cost item in fixed cost has been found as salary to permanent labour like small broiler farms in both the study areas, which contributes in total cost as 17.29 per cent in MPUAT service area and 17.53 per cent in Ajmer district. The total variable cost has been calculated as Rs. 85.63 and Rs. 82.10 for MPUAT service area and Ajmer district of Rajasthan, respectively. The most important expense for large size broiler farms was found as feed cost accounts 29.20 and 30.35 per cent of total cost for MPUAT service area and Ajmer district, respectively followed by cost of day old chick and medicine and veterinary charges.

The per bird returns from large size broiler farms has been presented in Table 4. The table reveals that the per bird gross returns from large size broiler farms has been found as Rs. 182.15 for MPUAT service area and Rs. 176.12 for Ajmer district. The major output item which accounts maximum share in gross returns was found as sale of birds contributing 96.07 and 96.53 per cent of gross returns for MPUAT service area and Ajmer district of Rajasthan, respectively. The net returns from large size broiler farms have been calculated as Rs. 60.69 and Rs. 62.00 per bird for MPUAT service area

Table: 3 Per bird cost of broiler production for large size poultry farms in MPUAT service area and Ajmer district (in Rs.)

S.No.	Particulars	MPUAT service area	Ajmer district
A.	**Fixed cost**		
1.	Depreciation on building @ 5% value of the building	3.12(2.57)	2.80(2.45)
2.	Depreciation on equipments@ 2% value of the equip.	3.07(2.53)	2.68(2.35)
3.	Salary to permanent labour 21.00(17.29)	20.00(17.53)	
4.	Interest on fixed capital @10 % per annum	8.64(7.11)	6.54(5.73)
	Total Fixed Cost (TFC)	**35.83(29.50)**	**32.02(28.06)**
B.	**Variable cost**		
1.	Day old chicks @ 5 % mortality	35.00 (28.82)	34.50(30.23)
2.	Feed @ 4 kg per bird	35.47 (29.20)	34.63(30.35)
3.	Wages for casual labour	3.28 (2.70)	3.08(2.70)
4.	Medicine and veterinary charges	6.80 (5.60)	5.50(4.82)
5.	Water and electricity	4.40(3.62)	3.83(3.36)
6.	Cost of litter	0.40(0.33)	0.30(0.26)
7.	Repair and maintenance charges	0.19(0.16)	0.18(0.16)
8.	Other miscellaneous expenses	0.09(0.07)	0.08(0.07)
	Total Variable Cost (TVC)	**85.63(70.50)**	**82.10(71.94)**
	Total Cost (TFC+TVC)	**121.46(100.0)**	**114.12(100.0)**

Figures in parentheses indicates percentage share in total cost

Table 4: Per bird returns from broiler production for large size poultry farms in MPUAT service area and Ajmer district (in Rs.)

S.No.	Particulars	MPUAT Service area	Ajmer district
1.	Sale of birds (broilers)	175.00(96.07)	170.00(96.53)
2.	Sale of manure	7.00(3.84)	6.00(3.40)
3.	Sale of empty gunny bags	0.15(0.09)	0.12(0.07)
	Gross Returns	**182.15(100.00)**	**176.12(100.00)**
	Net Returns =(GR-TC)	**60.69**	**62.00**

Figures in parentheses indicates percentage share in gross returns

and Ajmer district, respectively.

Cost and returns from small size layer farms: Per bird cost for egg production on small size layer farms has been shown in Table 5. Per bird total cost was Rs. 526.45 and Rs. 489.06 for MPUAT service area and Ajmer district of Rajasthan, respectively. The major fixed cost item was found to be salary to permanent labour, which accounts 18.06 and 18.86 per cent of total cost for MPUAT service area and Ajmer district, respectively. In both the study areas per bird cost of feed was found as most important variable cost item, which accounts 72.25 and 73.72 per cent of total cost, respectively followed by medicine and

veterinary charges (Rs. 50.52 and Rs. 46.65) and cost of day old chicks (Rs. 25.50 and Rs. 21.50) in case of broiler farms the per bird total cost was found less for Ajmer district than MPUAT service area, it is due to well maintained poultry farms, availability of input items at low cost, better knowledge of scientific rearing and vaccination etc. in poultry producers of Ajmer district of Rajasthan.

The gross and net return from per bird for small size layer farms has been shown in Table 6. The table reveals that per bird gross returns for small size layer farms in MPUAT service area and Ajmer district was calculated as Rs. 790.20 and Rs. 777.33, respectively. The major output for small size layer farms in MPUAT service area and Ajmer district has been found as sale of eggs, which contributes 91.94 and 92.37 per cent in gross returns, respectively followed by sale of cocks, manure and gunny bags. The net returns from per bird for small size layer farms has been calculated as Rs. 263.75 for MPUAT service area and Rs. 288.27 for Ajmer district of Rajasthan.

Cost and returns from large size layer farms: Per bird cost of layer production for large size poultry farms has been presented in Table 7. The table shows that per bird total cost for large scale layer farms has been found as Rs. 504.07 and Rs. 448.21 for MPUAT service area and Ajmer district of Rajasthan, respectively. Per bird total fixed cost has been calculated as Rs. 52.80 for MPUAT service area and Rs. 48.57 for Ajmer district of rajasthan. The variable cost has been found as Rs. 451.27 and Rs. 399.64 per bird for MPUAT service area and Ajmer district, respectively. The major fixed cost items are salary to permanent labour (Rs. 21.78 and Rs. 20.40) followed by interest on fixed capital

Table 5: Per bird cost of layer production for small size poultry farms in MPUAT service area and Ajmer district (in Rs.)

S.No.	Particulars	MPUAT service area	Ajmer district
A.	**Fixed cost**		
1.	Depreciation on building @ 5% value of the building	7.53(1.43)	6.24(1.28)
2.	Depreciation on equipments @ 2% value of the equipments	6.12(1.16)	6.00(1.23)
3.	Salary to permanent labour	22.62(4.30)	20.45(4.18)
4.	Interest on fixed capital @10 % per annum	14.40(2.74)	12.87(2.63)
	Total Fixed Cost (TFC)	**50.67(9.62)**	**45.56(9.32)**
B.	**Variable cost**		
1.	Day old chicks @ 5 % mortality	25.50(5.36)	21.50(4.40)
2.	Feed @ 40 kg per bird	384.00(72.25)	360.56(73.72)
3.	Wages for casual labour	2.64(0.50)	1.89(0.39)
4.	Medicine and veterinary charges	50.52(9.51)	46.65(9.54)
5.	Water and electricity	8.50(1.60)	8.50(1.74)
6.	Cost of litter	1.460.28)	1.30(0.27)
7.	Repair and maintenance charges per annum	2.04(0.38)	1.98(0.40)
8.	Other miscellaneous expenses	1.12(0.21)	1.12(0.22)
	Total Variable Cost (TVC)	**475.78(90.09)**	**443.50(90.68)**
	Total Cost (TFC+TVC)	**526.45(100.00)**	**489.06(100.00)**

Figures in parentheses indicates percentage share in total cost

Table 6: Per bird returns from layer production for small size poultry farms in MPUAT service area and Ajmer district (in Rs.)

S.No.	Particulars	MPUAT Service area	Ajmer district
1.	Sale of eggs	726.50(91.94)	718.00(92.37)
2.	Sale of birds (cocks)	40.05(5.07)	38.65(4.97)
3.	Sale of manure	20.65(2.61)	18.40(2.37)
4.	Sale of empty gunny bags	3.00(0.38)	2.28(0.29)
	Gross Returns	**790.20(100.00)**	**777.33100.00)**
	Net Returns (Gross Returns-Total Cost)	**263.75**	**288.27**

Figures in parentheses indicates percentage share in gross returns

Table 7: Per bird cost of layer production for large size poultry farms in MPUAT service area and Ajmer district (in Rs.)

S.No.	Particulars	MPUAT service area	Ajmer district
A.	**Fixed cost**		
1.	Depreciation on building @ 5% value of the building	8.03(1.59)	7.13(1.59)
2.	Depreciation on equipments @ 2% value of the equipments	6.74(1.34)	6.50(1.45)
3.	Salary to permanent labour	21.78(4.32)	20.40(4.55)
4.	Interest on fixed capital @10 % per annum	16.25(3.22)	14.54(3.25)
	Total Fixed Cost (TFC)	**52.80(10.47)**	**48.57(10.84)**
B.	**Variable cost**		
1.	Day old chicks @ 5 % mortality	23.76(4.71)	18.00(4.02)
2.	Feed @ 40 kg per bird	365.80(72.57)	324.89(72.49)
3.	Wages for casual labour	2.35(0.47)	1.80(0.40)
4.	Medicine and veterinary charges	47.68(9.46)	43.44(9.69)
5.	Water and electricity	7.54(1.50)	7.54(1.68)
6.	Cost of litter	1.03(0.21)	1.00(0.22)
7.	Repair and maintenance charges	1.38(0.27)	1.24(0.28)
8.	Other miscellaneous expenses	1.73(0.34)	1.73(0.38)
	Total Variable Cost (TVC)	**451.27(89.53)**	**399.64(89.16)**
	Total Cost (TFC+TVC)	**504.07(100.00)**	**448.21(100.00)**

Figures in parentheses indicates percentage share in total cost

(Rs. 16.25 and Rs. 14.54) in both the study areas. The important variable cost items have been found as cost of feed (Rs. 365.80 and Rs. 324.89) and medicine expenses (Rs. 47.68 and Rs. 43.44) for layer farms.

Per bird gross and net returns from layer production for large size farms has been shown in Table 8. The table shows that per bird gross returns from large size farms in MPUAT service area was found to be Rs. 773.00 and Rs. 760.00 for Ajmer district. The major return item in large size layer farms in MPUAT service area and Ajmer district has been found as sale of eggs i.e. Rs. 715.00 and Rs. 708.00, respectively. After then important item which provide higher return for MPUAT service area and Ajmer district was found to be sale of cocks (Rs. 37.50) and (Rs. 35.00), respectively followed by sale of manure (Rs. 18.50 and Rs. 15.50) and gunny bags (Rs. 2.00 and Rs. 1.50).

Constraints faced by poultry producers: There are thirteen major constraints have been found to be faced by poultry producers in study area presented in Table 9 with their ranks.

The foremost constraint faced by poultry producers in MPUAT service area has been found as high cost of variable inputs i.e. feed, day old chicks, medicine and veterinary charges etc. While in Ajmer district the most important constraint faced by poultry producers was found to be disease severity. Pankaj *et al*. (2013) reported the similar findings in Jorhat district of Assam. The second important constraint has been identified as disease severity and high fluctuations in selling prices in MPUAT service area and Ajmer district, respectively.

CONCLUSION

The cost and return analysis showed that the total cost has been found as high in MPUAT service area as compared to Ajmer district of Rajasthan for both broiler as well as egg production. In total cost the most important cost item was found as feed cost in the poultry enterprise followed by cost of day old chicks, salary to permanent labour and medicine and veterinary charges. The gross returns from poultry enterprise have been calculated more in MPUAT service area as compared to Ajmer district. The major return has been received from selling of birds in broiler farms and selling of eggs in layer farms followed by selling of by products i.e. cocks (for layer farms), poultry manure and empty gunny bags. Major constraints faced by poultry producers in poultry production in the study areas were high cost of feed followed by cost of day old chicks, medicine and veterinary charges etc in MPUAT service area and in case of Ajmer district high disease incidence was identified as most important constraint followed by high fluctuations in selling prices, high rate of mortality, high cost of variable inputs, high cost of establishment, non-availability of government policies and subsidies and non-availability of resources.

Table 8: Per bird returns from layer production for large size layer poultry farms in MPUAT service area and Ajmer district (in Rs.)

S.No.	Particulars	MPUAT Service area	Ajmer district
1.	Sale of eggs	715.00(92.50)	708.00(93.16)
2.	Sale of birds (cocks)	37.50(4.85)	35.00(4.60)
3.	Sale of manure	18.50(2.39)	15.50(2.04)
4.	Sale of empty gunny bags	2.00(0.26)	1.50(0.20)
	Gross Returns	**773.00(100.00)**	**760.00(100.00)**
	Net Returns =(G R-T C)	**268.93**	**311.79**

Figures in parentheses indicates percentage share in gross returns

Table 9: Constraints faced by poultry producers in MPUAT service area and Ajmer district of Rajasthan

S.No.	Particulars	MPUAT service area	Ajmer district
1.	Lack of capital	IX	VIII
2.	High cost of establishment	VI	V
3.	High cost of variable inputs	I	IV
4.	Lack of government policies & subsidies	IV	VI
5.	Lack of management knowledge	V	XIII
6.	Unavailability of resources	VII	XI
7.	Lack of storage facilities	XIII	IX
8.	Disease severity	II	I
9.	Social factors	X	X
10.	Higher rate of mortality	IX	III
11.	Lack of veterinary facilities	VIII	VII
12.	High fluctuations in selling prices	XII	II
13.	Poor extension facilities	III	XII

REFERENCES

Ahmad, H.S., Singh N., Pukhta, M.S. 2010. Economic Analysis of Broiler Production in Allahabad District of UP. *Environment and Ecology* **28**: 1373-1377.

Pankaj, D., Borgohain, R. and Deka, B. 2013. Status and Constraints of Backyard Poultry Farming Amongest Tribal Community of Jorhat District in Assam. *Asian Journal of Animal Science* **8**:86-91.

Pawariya, V. and Jheeba, S.S. 2015. Economic Analysis of Cost-return, Income and Employment in Poultry Enterprise in Jaipur District of Rajasthan. *International Journal of Agricultural Science and Research* **5**: 73-80.

Rajendran, K. and Samarendu M. 2003. 2020 Vision for Indian Poultry Industry in Namakkal District of Tamilnadu. *International Journal of Poultry Science* **2**:139-143.

Shettar, V.B. and Jadhav, N.V. 1999. Economic Evaluation of Small Scale Broiler Farming, Shehore, Madhya Pradesh. *Indian Veterinary Journal* **76**:663-665.

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TIME UTILISATION PATTERN OF FARM WOMEN IN HINGOLI DISTRICT OF MAHARASHTRA

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ABSTRACT

Rural women play a crucial role in agricultural development and allied fields, including crop production, livestock production, horticulture, post-harvest operations, fisheries, etc. Rural homemakers differ from their urban counterparts mainly in the farm and farm related activities they perform. So it is essential to know how the homemakers from different areas use their time. Hence, the present investigation was carried out with the objective to know the general profile of the respondents, to estimate amount of time utilized for farm operations. to test the relationship between time component of drudgery and age. Interview method was adopted to collect data from 200 randomly selected farm women from *Talni* and *Walki* village of Hingoli District of Maharashtra state. Pre structured and pretested questionnaire was used as a tool for data collection. Time spent on scooping by the women of 25 to 50 years age (177.75) was significantly more than the time spent by women of below 25 years of age. Time spent on spreading of manure by the women of 25 to 50 years of age (124.13) was significantly more than the time spent by the women below 25 years of age. Time spent on cutting / uprooting by the women of 25-50 years age (254.34). Means time spent by the women of more than 50 years of age was at par with the group of women below 25 years of age. Time spent on bundling by the women of 25 to 50 years of age (84.62) was significantly more than the women below 25 years age (54.78) It can be stated that women spent maximum time on farming or farm related activities. In pre-harvesting and post harvesting activities, women of middle age group spent more time than older women.

INTRODUCTION

Empowerment in the context of women's development is a way of defining, challenging and overcoming barriers in a woman's life through which she increases her ability to shape her life and environment. It is an active, multidimensional process which should enable women to realize their full identity and power in all spheres of life. Since time immemorial, women have played and continue to play a key role in conservation of basic life support system, such as, land, water, flora and fauna. Rural women play a crucial role in agricultural development and allied fields, including crop production, livestock production, horticulture, post-harvest operations, fisheries, etc. Without total intellectual and physical participation of women, it is not possible to achieve the goals of rural upliftment (Goel, 2011 and Jat *et al*. 2011.)

The participation of women in agricultural activities was marginal during early days but now their role in agricultural activities is on the steady increase. The international development community has recognized that agriculture is an engine of growth and poverty reduction in countries where it is the main occupation of the poor (FAO, 2011).

The time spent on various household activities varies from family to family. No two families are alike in their way of leading life. Factors of difference in time use may be socio-economic status of the family, composition of the family, social environment and location of the family such as rural or urban area. Rural homemakers differ from their urban counterparts mainly in the farm and farm related activities they perform. So it is essential to know how the homemakers from different areas use their time. Hence, the present investigation was carried out with the following objective -

1. To know the general profile of the respondents.
2. To estimate amount of time utilized for farm

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operations.

3. To test the relationship between time component of drudgery and age.

RESEARCH METHODOLOGY

Interview method was adopted to collect data from 200 randomly selected farm women from *Talni* and *Walki* village of Hingoli District of Maharashtra state. Pre structured and pretested questionnaire was used as a tool for data collection. Statistical analysis of data was carried out by applying one-way analysis of variance with unequal number of observation per treatment was carried out to know the differences between time spent by farm women of different age group on various farm operations.

RESULTS AND DISCUSSION

Majority (60 %) of the respondents belonged to nuclear family while 37 percent and 2.5 percent were from joint and extended families respectively. Regarding family size it was observed that most of the families belonged to medium size (65 %) and 30 per cent families were from small size having less than five members.

Only 5 per cent families were large families having more than ten members. Maximum respondents (72%) belonged to middle age group ranging between 26-50 years followed by younger age group (23%) of less than 25 years. Vast majority of female respondents were farm labours (61%) while 26 and 12 percent were doing farming and dairying respectively. As selected sample was from agricultural labour (59 %) hence the annual income of the respondent ranges from Rs. 50,000 to 1,00,000 followed by women having annual income less than Rs.50,000. In conclusion it can be said that majority of the households were nuclear family, vast majority of female respondents were in the age group ranging from 26-50 years.

Perusal of the Table 2 shows that the time spent by women of first age group (less than 25 years) was less for most of the pre-harvesting activities as compared with the women of second (25 to 50 years) and third age group (more than 50 years). For certain activities like harrowing and opening furrow the time spent increased as the age of the women increased.

Table 1: General information of the selected rural respondents

S.No.	Characteristics	Number of respondents
1.	Type of family	
	Nuclear	120(60.0)
	Joint	75(37.5)
	Extended	5(2.5)
2.	Family size	
	Small (<5)	60(30.0)
	Medium (5-10)	130(65.0)
	Large (>10)	10(5.0)
3.	Age of women	
	Young age group (<25)	46(23.0)
	Middle age group (26-50)	145(72.5)
	Older age group (>51)	9(4.5)
4.	Occupation of women	
	Farming	53(26.5)
	Labour	123(61.5)
	Dairy	24(12.0)
5.	Women annual income	
	Less than 50000	57(28.5)
	50000-100000	119(59.5)
	Above 100000	24(12.0)

Statistical analysis with application of one-way analysis of variance revealed significant differences between time spent on scooping and spreading of manure by the women of different age groups. Time spent on scooping by the women of 25 to 50 years age (177.75) was significantly more than the time spent by women of below 25 years of age.

Mean time spent by the women of more than 50 years of age was at par with women below 50 years of age. Time spent on spreading of manure by the

women of 25 to 50 years of age (124.13) was significantly more than the time spent by the women below 25 years of age. Mean time spent by women of more than 50 years was at par with time spent by women of less than 25 years age.

It is clear from the table 2 that for certain harvesting and post harvesting activities like bonding, heaping , sieving and winnowing the time spent increased as the age increased while for certain activities such as cutting/uprooting and nipping of ear heads the time spent decreased as age increased.

Statistical analysis with application of one way

Table 2: Time spent on harvesting activities by the women of varying age

Activities	Mean time (Min) spent by women of varying age (yrs)			
	A1<25	A2(25-50)	A3 >50	F Value
Cutting /uprooting	254.34	244.06	220.40	4.7*
Picking	213.91	196.13	198.90	2.3 NS
Nipping of earheads	185.65	165.6	160.00	1.5 NS
Bundling	54.78	84.62	100.00	4.1*
Heaping	52.17	69.58	86.66	2.15 NS
Winnowing	139.56	178.34	200.66	2.16 NS
Sieving	100	135.58	160.00	1.47 NS
Cleaning	111.12	75.86	86.66	1.56 NS
Bagging /matting	43.04	51.31	47.77	0.27 NS
Storage	45.10	81.06	73.33	2.50 NS
Dusting pesticide	3.91	8.79	4.44	1.80 NS

NS-Non Significant *-Significant at 1% level of significance

Table 3: Time spent on pre-harvesting activities by the rural women of varying age

Activities	Mean time (Min) spent by women of varying age (yrs)			
	A1<25	A2(25-50)	A3 >50	F Value
Removing of stalks and stubbles	238.69	247.17	233.33	0.60 NS
Grubbing of clod crushing	125.21	163.65	140.00	2.86 NS
Harrowing	171.52	174.82	176.66	0.03 NS
Opening furrow	61.95	92.89	96.66	1.91 NS
Scooping	144.78	177.72	150.00	8.23**
Spreading of manure	179.34	242.13	266.66	8.76**
Sowing	279.13	275.40	293.33	0.81 NS
Covering	52.17	85.24	50.00	2.97 NS
Transplanting	67.82	94.13	76.66	1.70 NS
Dibbling	258.69	250.41	280.00	1.04 NS
Weeding	277.82	278.13	253.33	1.18 NS
Nipping/ copping	219.78	201.10	220.00	1.37 NS

NS-Non Significant *-Significant at 1% level of significance

analysis of variance revealed significant differences between time spent on cutting /uprooting and bundling by the women of different age groups. Means time spent by the women of more than 50 years of age was at par with the group of women below 25 years of age. Time spent on bundling by the women of 25 to 50 years of age (84.62) was significantly more than the women below 25 years age (54.78) where as time spent on bundling by the women above 50 years age and below 25 years was at par.

CONCLUSION

It can be concluded that women spent maximum time on farming or farm related activities. For most of the time pre-harvesting and post harvesting activities women of middle age group spent more time than older women. The impact of age of the women on time utilization on various farm operations is clear from the above discussion and also confirmed by statistical significance.

REFERENCES

FAO. 2011. The role of women in agriculture. The Food and Agriculture Organization of the United Nations **11**(2): 1-46.

Goel, A and Kholiya, R. 2011. Entrepreneurship skills development of rural women in textile technology. *Pantnagar Journal of Research* **9**(2):284-28.

Jat, J.R., Singh, S., Lal, H. and Choudhary, L.R. 2011. Knowledge level of farmers about improved Tomato production technology, *Raj. J. Extn. Edu.* **19**: 139-143.

Rohini and Arya, Asha 2014. Nutritional status of urban women. *Food Sci. Res. J.* **5**(1): 11-14.

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KNOWLEDGE OF DAIRY FARM WOMEN REGARDING SCIENTIFIC MANAGEMENT OF DAIRY ANIMALS IN UDAIPUR DISTRICT

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ABSTRACT

Among the various animal husbandry practices the dairying has been playing a major role by providing livelihood to rural people. Dairying is considered as a "treasure" of the Indian rural economy. It provides gainful employment to a vast majority of rural households. The present study was conducted including 120 dairy farm women selected randomly from Girwa and Salumbar tehsils of Udaipur. It was found that knowledge level of dairy farm women in various practices such as breeding (80%), feeding (86.67%), management (86.67%), health care (65.83%), milking (66.66%), and marketing (70.83%) was found to vary with practices and it was further found that dairy farm women played significant role in various aspects namely breeding (85.84%), feeding 88.33%, health care (66.67%), management (79.16%), milking (90%), marketing (81.67%).

INTRODUCTION

In India, livestock production is largely in the hands of women. In fact animal husbandry is becoming feminized. About 70 per cent of the agricultural workers, 80 per cent of food producers and 10 per cent of those who process basic foodstuffs are women and they also undertake 60 to 90 per cent of the rural marketing thus making up more than two-third of the workforce in agricultural production (Anonymous, 2014). Dairy farming in India is mainly family based where the family participates as a unit and the share of women is half of the human resource. Farm women are the back bone of dairy farming since more than 80 per cent of dairy operations have been traditionally handled by women. The social, economic and cultural conditions of the area determine women's participation in home and farm activities. It also varies from region to region and within a region, their involvement varies among different farming systems, castes, classes and socio- economic status (Swaminathan, 1985).

Women generally are responsible for the feeding, grazing, fodder collection, milking, processing, dung management, while men who manage the finances generally sale of milk and milk products (Sethi, 2010). Rural women play a vital role in all spheres of economic life and contribute richly towards national income. Of the major rural enterprises, they always participated in dairy and animal husbandry activities in addition to their daily household chores (Belurkar *et al*. 2003). About 75 million women as against 15 million men are engaged in dairying in India (Thakur and Chander, 2006). Rural women remain busy from dawn to dusk in various agricultural activities and livestock management. Women's active involvement in decision making is considered essential for rapid economic development of the country (Chayal *et al.* 2013).

To make the dairy farm efficiently and to make it a viable and profitable enterprise, the knowledge of dairy management practices is of paramount importance. Keeping the significance of knowledge in managing dairy farm scientifically a present study entitled "Knowledge of dairy farm women regarding scientific management of dairy animals in Udaipur district" was undertaken in Udaipur district of Rajasthan.

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RESEARCH METHODOLOGY

The study was conducted in purposively selected Udaipur districts considering maximum number of dairy animals. two tehsils based on maximum number of dairy animals were identified. Thereafter, six villages from each identified tehsils were identified following the same criteria. Finally 10 respondents from each identified villages from both the tehsils were selected randomly. Thus, the total sample size was of 120 respondents (Farm Women) included in the study.

RESULTS AND DISCUSSION

The data presented in Table 1 indicates that the respondents of Girwa Tehsil had highest mean per cent score i.e. 100 per cent for knowledge about length of gestation period and ranked first. The lowest knowledge was reported in relation for sign of parturition (MPS=36.67). Similarly, in case of Salumbar Tehsil the respondents had obtained highest mean per cent score i.e. 100 per cent for knowledge about length of gestation period and methods of breeding and both ranked first.Further, the moderate knowledge was reported in case of sign of estrus (MPS=40). The poor knowledge was found regarding sign of parturition (MPS=35.33). Overall analysis of 120 dairy farm women indicates that the respondents had cent per cent knowledge about length of gestation period. They were found with 99.33 per cent knowledge about methods of breeding and 86.67 per cent knowledge about length of dry period and ranked second and third, respectively and age at first calving (MPS=62.22), sign of estrus (MPS=41.67) and knowledge of sign of parturition was reported 36 per cent.

The data presented in Table 2 indicate that the respondents of Girwa Tehsil possessed fairly good knowledge about supplementation of ration with mineral mixture and vitamin (MPS=98), conversation of feed for scarcity period and colostrum feeding (MPS=96 each). Further, average knowledge was reported about whole milk feeding (MPS=63.33), criteria of feed offered to animals with (56%) in feeding aspect of dairy animal management. On the other hand, in case of Salumbar Tehsil the respondents had obtained highest mean per cent score i.e. cent per cent knowledge about access to clean and safe drinking water and ranked first and average knowledge was found about whole milk feeding (MPS=65.33) and criteria of feed offered to animals with (MPS 64.33). The pooled analysis of data reveals that excellent knowledge regarding the recommended feeding practices was reported by dairy farm women about supplementation of ration with mineral mixture and vitamin with (99%) access to clean and safe drinking water with (97%). Good knowledge was reported for concentrate mixture to pregnant animals with (75%) and average knowledge for whole milk feeding with (64.33%) and criteria of feed offered to animals with (60%)..

The data presented in Table 3 indicate that the respondents in Girwa Tehsil possessed excellent knowledge about the practice of culling at their dairy farm with mean per cent score i.e. 95 per cent and ranked first. Further, caring of calf after birth with 33.67 per cent thus allotted last two ranks in the hierarchy. In case of Salumbar Tehsil, similar results were obtained with slight variation in the magnitude of knowledge score. The respondents reported excellent knowledge about the practice of culling with mean per cent score i.e. (95%) and ranked first. Surprisingly, very poor knowledge was reported about caring of calf after birth with mean per cent score 10 per cent and occupied last rank. Overall analysis of 120 respondents indicates that the dairy farm women were having excellent knowledge for the practice of culling with mean per cent score i.e. 95 per cent and ranked first regarding the improved management practices of dairy farming. Further, poor knowledge was observed in caring of calf after birth with 21.67 per cent and secured last rank in the order.

The data depicted in Table 4 indicate that the respondents of Girwa Tehsil had obtained highest mean per cent score i.e. (65.33%) for knowledge about sign of illness and thus ranked first, further followed by average knowledge about deworming in animals (MPS=44.6) and However, the respondents possessed very poor knowledge

Table 1: Level of knowledge of dairy farm women about breeding aspects of dairy animals

S. No.	Items/Areas	T.S.	Girwa			Salumbar			Overall		
			MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank
1.	Methods of Breeding	3	2.95	98.33	II	3	100	I	2.98	99.33	II
2.	Age at first calving	9	5.66	62.89	IX	5.65	62.77	VIII	5.6	62.22	X
	(a) Indigenous cow	3	1.88	62.67	I	1.86	62.00	II	2.04	68.00	I
	(b) Exotic cow	3	1.78	59.33	II	2.1	70.00	I	1.94	64.67	II
	(c) Buffalo	3	1.71	57.00	III	1.53	51.00	III	1.63	54.33	III
3.	Duration of estrus period	3	1.76	58.67	X	2.06	68.67	VII	1.93	64.33	IX
4.	Age at puberty	9	7.26	80.67	VI	7.66	85.11	IV	7.46	82.88	VI
	(a) Indigenous cow	3	2.71	90.33	I	2.9	96.67	I	2.80	93.33	I
	(b) Exotic cow	3	2.16	72.00	III	2.11	70.33	III	2.14	71.33	III
	(c) Buffalo	3	2.38	79.33	II	2.66	86.67	II	2.52	84.00	II
5.	Age at first mating	9	6.7	74.44	VII	7.2	80	VI	6.89	76.55	VII
	(a) Indigenous cow	3	2.71	90.33	I	2.95	98.33	I	2.83	94.33	I
	(b) Exotic cow	3	1.95	65.00	II	2.13	71.00	II	2.04	68.00	II
	(c) Buffalo	3	1.91	63.33	III	2.11	70.33	III	2.01	67.00	III
6.	Optimum time of insemination	3	2.05	68.33	VIII	2.06	68.67	VII	2.05	68.33	VIII
7.	Length of gestation period	6	6	100	I	6	100	I	6	100	I
8.	Length of dry period	9	7.78	86.44	III	7.81	86.77	II	7.8	86.67	III
	(a) Indigenous cow	3	2.78	92.67	II	2.86	95.33	I	2.82	94.00	I
	(b) Exotic cow	3	2.2	73.33	III	2.13	71.00	III	0.01	0.60	III
	(c) Buffalo	3	2.81	93.67	I	2.81	93.67	II	2.81	93.67	II
9.	Sign of estrus	3	1.3	43.33	XI	1.2	40.00	IX	1.25	41.67	XI
10.	Heat after calving	3	2.46	82.00	IV	2.51	83.67	V	2.49	83.00	V
11.	Sign of parturition	3	1.1	36.67	XII	1.06	35.33	X	1.08	36.00	XII
12.	Inter calving period	6	4.91	81.33	V	5.13	85.50	III	4.99	83.17	IV
	(a) Cow	3	2.68	89.33	I	2.81	93.67	I	2.75	91.67	I
	(b) Buffalo	3	2.2	73.33	II	2.35	78.33	II	2.30	76.67	II

MS=Mean Score

MPS=Mean Percent Score

Table 2: Level of knowledge of dairy farm women about feeding aspect of dairy animals

S. No.	Items/Areas	T.S.	Girwa			Salumbar			Overall		
			MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank
1.	Colostrum feeding	1	0.96	96.00	II	0.96	96.00	III	0.96	96.00	III
2.	Whole milk feeding	3	1.9	63.33	VIII	1.96	65.33	VIII	1.93	64.33	VIII
3.	Feeding of calf starter	4	3.36	84.00	V	3.63	90.75	V	3.5	87.50	V
4.	Concentrate mix. to heifer	4	3.26	81.50	VI	3.53	88.25	VI	3.4	85.00	VI
5.	Concentrate mix. to lactating animals	3	2.76	92.00	IV	2.93	97.67	II	2.85	95.00	IV
6.	Concentrate mix. to pregnant animals	3	2.21	73.67	VII	2.28	76.00	VII	2.25	75.00	VII
7.	Criteria of feed offered to animals	3	1.68	56.00	IX	1.93	64.33	IX	1.80	60.00	IX
8.	Access to clean and safe drinking water	1	0.95	95.00	III	1	100	I	0.97	97.00	II
9.	Supplementation of ration with min mix and vitamin	1	0.98	98.00	I	0.96	96.00	III	0.99	99.00	I
10.	Conversation of feed for scarcity period	1	0.96	96.00	II	0.93	93.00	IV	0.95	95.00	IV

Table 3: Level of knowledge of dairy farm women about management aspect of dairy animals

S. No.	Items/Areas	T.S.	Girwa			Salumbar			Overall		
			MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank
1.	Caring of calf after birth	3	1.01	33.67	VIII	0.3	10.00	VII	0.65	21.67	VIII
2.	Weaning of calf	3	1.78	59.33	II	2.05	68.33	II	1.91	63.67	II
3.	Castration in calves	6	3.1	51.66	IV	3.3	55.00	IV	3.2	53.33	IV
	(a) Age of castration	3	2.11	70.33	I	2.41	80.33	I	2.26	75.33	I
	(b) Importance of castration	3	0.98	32.67	II	0.9	30.00	II	0.94	31.33	II
4.	Practice of culling	1	0.95	95.00	I	0.95	95.00	I	0.95	95.00	I
5.	Practice of identification in animals	4	1.83	45.75	V	1.86	46.50	VI	1.85	46.25	V
6.	Housing of dairy animals	4	1.8	45.00	VI	1.86	46.50	VI	1.83	45.75	VI
7.	Characteristics/characters of a good animal house	3	1.16	38.67	VII	1.48	49.33	V	1.32	44.00	VII
8.	Criteria for housing of animal	3	1.73	57.67	III	1.93	64.33	III	1.83	61.00	III

Table 4: Level of knowledge of dairy farm women about health care aspect of dairy animals

S. No.	Items/Areas	T.S.	Girwa			Salumbar			Overall		
			MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank
1.	Sign of illness	3	1.96	65.33	I	2.01	67.00	II	1.99	66.33	I
2.	Caring of sick animals	3	1.11	37.00	VI	1.21	40.33	IV	1.16	38.67	V
3.	Symptoms of parasitic infestation	3	1.13	37.67	V	1.21	40.33	IV	1.17	39.00	IV
4.	Preventive measures against endoparasites in animals	3	1.08	36.00	VII	1.11	37.00	V	1.1	36.67	VII
5.	Deworming in animals	10	4.46	44.60	II	8.1	81.00	I	6.29	62.90	II
6.	Spraying against ectoparasites	3	0.43	14.33	X	0.48	16.00	X	0.45	15.00	XI
7.	Common diseases in dairy animals	3	1.2	40.00	III	1.03	34.33	VI	1.11	37.00	VI
8.	Vaccination in dairy animals	4	1.2	40.00	III	1.28	42.67	III	1.24	41.33	III
9.	Common animals diseases for vaccination	3	0.83	27.67	VIII	0.71	23.67	IX	0.77	25.67	X
10.	Preventive measures against general diseases	3	0.73	24.33	IX	1	33.33	VIII	0.86	28.67	IX
11.	Disposal of carcass	3	1.16	38.67	IV	1.01	33.67	VII	1.09	36.33	VIII

Table 5: Level of knowledge of dairy farm women about milking practices of dairy animals

S. No.	Items/Areas	T.S.	Girwa			Salumbar			Overall		
			MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank
1.	Methods of milking	3	0.05	1.67	IV	0.11	3.67	IV	0.08	2.60	IV
2.	Measures for hygienic milk production	3	1.71	57.00	II	1.58	52.67	II	1.65	55.00	II
3.	Practices related to good milking practices	3	1.61	53.67	III	1.5	50.00	III	1.55	51.67	III
4.	Types of milking pails for storage and transportation	3	2.71	90.33	I	2.93	97.67	I	2.82	94.00	I

regarding the practice of spraying against ectoparasites (MPS=14.33) with last rank. Similar results were obtained in case of Salumbar Tehsil with slight variation in the magnitude of the knowledge score regarding scientific health care practices. The knowledge about deworming in animals (MPS=81) was ranked first and further followed by average knowledge about sign of illness (MPS=67). Overall analysis of 120 dairy farm women clears that the respondents had average knowledge for the health care practices like sign of illness (MPS=66.33), deworming in animals (MPS=62.9) and vaccination in dairy animals (MPS=41.33) with top three ranks in the hierarchy. Likewise the results as obtained in both the Tehsils, knowledge about spraying against ectoparasites in

Table 6: Level of knowledge of dairy farm women about marketing aspect of dairy animals

S. No.	Items/Areas	T.S.	Girwa			Salumbar			Overall		
			MS	MPS	Rank	MS	MPS	Rank	MS	MPS	Rank
1.	Channels of marketing for milk	3	1.06	35.33	V	1.05	35.00	V	1.05	35.00	V
2.	Types of milk products	3	2.65	88.33	I	2.58	86.00	I	2.61	87.00	I
3.	Importance of milk processing	3	0.78	26.00	VI	0.88	29.33	VI	0.83	27.67	VI
4.	Marketing channels for dairy animals	3	1.56	52.00	III	1.86	62.00	III	1.71	57.00	III
5.	Factors affecting marketing price of dairy animals	3	1.91	63.67	II	2.18	72.67	II	2.05	68.33	II
6.	Indicators for selection of good dairy animals	3	1.33	44.33	IV	1.4	46.67	IV	1.35	45.00	IV

animals was perceived as very poor knowledge with 15 per cent and obtained last rank in the order.

The data presented in Table 5 reveal that in Girwa Tehsil the respondents had obtained highest mean per cent score (90.33%) for knowledge about types of milking pails for storage and transportation and ranked first. Shockingly, extremely poor knowledge was observed about methods of milking (MPS=1.67) with last rank in the order. Similarly, in case of Salumbar Tehsil the respondents had obtained highest mean per cent score i.e. (97.67%) for knowledge about types of milking pails for storage and transportation and ranked first and Amazingly, extremely poor knowledge was observed for methods of milking (MPS=0.11) with last rank in the order. Pooled analysis of sample reveals that the respondents had obtained highest mean per cent score i.e. 94 per cent for knowledge about types of milking pails for storage and transportation and ranked first followed by average knowledge about measures for hygienic milk production (MPS=55) and almost no knowledge was found formethods of milking (MPS=2.60) and secured last rank in the order.

A perusal of data presented in Table 6 indicate that the respondents in the Girwa Tehsil were having fairly good knowledge about types of milk products to be marketed with highest mean per cent score i.e. 88.33 per cent thus ranked first in the order. Further, poor knowledge was reported in the marketing practices like channels for marketing of milk (MPS=35.33) and importance of milk processing (MPS=26) thus occupied last two rank in the order. On the other hand, in case of Salumbar Tehsil, exactly similar results were noted regarding item wise knowledge of marketing practices in dairy farming with slight variation in the magnitude of MPS. They reported fairly good knowledge about types of milk products (MPS=86) followed by good knowledge about factors affecting marketing price of dairy animals with MPS 72.67. Overall analysis of 120 respondents reveals that fairy good knowledge associated with improved marketing practices in dairy farming was observed for types of milk products (MPS=87) hence ranked first, Further, respondents reported poor knowledge about channels for dairy animals (MPS=35) and importance of milk processing (MPS=27.67) with last order ranks repectively.

CONCLUSION

The results highlighted that dairy farm women have partial knowledge on important aspects of general knowledge. Interestingly a fair majority of the respondents is acquainted with types of dairy animals but they do not know the improved breeds of cattle and buffalo. Relatively high knowledge has been

reported by the respondents in length of gestation period, methods of breeding and length of dry period. It is encouraging to note that a fair majority of respondents had knowledge about supplementation of ration with mineral mixture and vitamins. Similarly the knowledge of respondents about significance of clean and safe drinking water was reported high by the respondents. It has been observed that the knowledge regarding age of castration has an age over the importance of castration as reported by the respondents. An overview of the data indicates the medium level of knowledge in almost all the health- aspects possessed by the subjects. The situation once again is not satisfactory and demands the greater role to be played by the veterinary practitioner and filed functionaries. Looking to the average knowledge of dairy farm women about milking practices it is suggested that the respondents be demonstration good milking practices and measure for clean milk production. It is discouraging to note that very few respondents are aware about importance of milk processing, channels of marketing both for animals and their products and indicators for selection of good dairy animals.

REFRENCES

Anonymous 2014.19th Livestock Census 2012.Department of Animal Husbandry, Dairyingand Fisheries, Ministry of Agriculture, Government of India, New Delhi.

Belurkar, G.M., Wakle, P.K. and Gholve, M.A. 2003.A study on decision making pattern and participation of rural women in animal husbandry and dairying enterprise.*Maharashtra Journal of Extension Education* **22**(**2**)**:** 81-85.

Chayal, K. and Dhaka, B.L. 2010.Analysis of role performance of women in farm activities. *Indian Research Journal of Extension Education* **10**(**2**)**:**109-112.

Sethi, N. 2010. Factors affecting adoption of scientific technologies by dairy women in buffaloes. Proc. of International Buffalo Conference, 2**:** 166-67.

Swaminathan, M.S. 1985. Imparting rural women perspective to agriculture research and development. Report of the project Design workshop on women in farming systems, held at the International Rice Research Centre, Los Banos, Phillippines, April 10.

Thakur, D. and Chandar, M. 2006. Gender based differential access to inform among livestock owners and its impact on house hold milk production in Kangra district of Himachal Pradesh. *Ind. J. Dairy Sci.*, **59**(**6**)**:** 401-404

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ANALYSIS OF CONSTRAINTS EXPERIENCED BY WOMEN BENEFICIARIES OF CORPORATE SOCIAL RESPONSIBILITY INITIATIVES

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ABSTRACT

Rural women are considered as the backbone of rural society. Corporate sector is trying to play a pivotal role in ensuring private investment flow to rural areas that have been left out of the development process so far and also to work for sustainable development of rural women in particular by giving them entrepreneurial trainings. Just like other developmental programmes constraints are experienced by the rural women in these CSR initiatives. Constraints imply the problems or difficulties experienced by the rural women. Thus, the present paper aims to analyze the constraints experienced by women beneficiaries of CSR initiatives.

INTRODUCTION

Corporate world recognizes women in every possible area in which it functions. As the women are core of family system in India, it is important for the rural society, like in urban society, that she should not only be educated but also socially and economically empowered. Industrial houses are trying to augment rural women's income to sustain their livelihoods thereby focusing on creating, supporting and developing rural women-led enterprises, supporting women's role along value chains, enhancing their income opportunities and promoting their linkages to high value markets. They also strive to support women-led associations and small scale businesses in overcoming their supply side constraints so that they can take full advantage of opportunities offered by the market. It is seen that enterprises which received some type of formal support, particularly in marketing and credit requirements on an average performed better in comparison to stand alone enterprises. Just like other developmental programmes constraints are experienced by the rural women in these CSR initiatives. The present paper highlights the infrastructural, operational and; personal and family constraints faced by the beneficiaries of Hindustan Zinc Limited's CSR women beneficiaries.

RESEARCH METHODOLOGY

The present study was conducted in the Udaipur district of Rajasthan, where HZL has its headquarters. For the purpose of the study 60 rural women beneficiaries of HZL's CSR initiatives were selected randomly. Data was collected using interview schedule and frequency, percentage and mean percent score was used to analyze the data.

RESULTS AND DISCUSSION

Constraints imply the problems or difficulties experienced by the rural women in the CSR activities. The constraints were categorized into personal and family, operational and infrastructural constraints. The response was recorded on the scale of three continuum that is, to great extent, to some extent and not at all assigning scores as 2, 1 and 0 respectively. The results are presented under the following sub heads.

Infrastructural Constraints: Data in Table 1 highlights that beneficiaries of HZL's CSR initiatives faced constraints such as lack of transportation (MPS 80) and communication facilities (MPS 76.67) as major constraints (70% and 71.67% respectively). The trainings were carried out outside the village near the HZL factories, and respondents commuted mainly by walking. Lack of adequate

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space to carry out suggested activities was the least faced constraint (MPS 39.1).At HZL the training center were quite spacious to accommodate group of 12 to 15 women at a time. Results are in line with the findings of other studies that highlight lack of transportation and distance from training centre as bottlenecks in infrastructural aspects (Meenakshi and Mahapatra, 2015; Kandeeban and Velusamy ,2016).

Operational Constraints: The beneficiaries of HZL's CSR initiatives were reported to face the least pooled operational constraint (MPS 29.87)

Table 1: Infrastructural constraints faced by rural women in CSR activities

S.No.	Constraints	Extent of constraints (n=60)			MPS
		To great extent f (%)	To some extent f (%)	Not at all f (%)	
1	Distance of training centre from home.	36 (60)	9 (15)	15 (25)	67.5
2	Lack of basic amenities like bank, post offices.	32 (53.33)	19 (31.67)	9 (15)	69.17
3	Lack of adequate space to carry out suggested activities.	13 (21.67)	21 (35)	26 (43.33)	39.17
4	Lack of communication facilities.	43 (71.67)	6 (10)	11 (18.33)	76.67
5	Lack of transportation facilities.	42 (70)	12 (20)	6 (10)	80

Table 2: Operational constraints faced by rural women in CSR activities

S.No.	Constraints	Extent of constraints (n=60)			MPS
		To great extent f (%)	To some extent f (%)	Not at all f (%)	
1	Untimely supply of input.	8 (13.33)	15 (25)	37 (61.67)	25.83
2	High cost of initial investment.	52 (86.67)	8 (13.33)	0 (0)	93.33
3	Language barrier in training.	0 (0)	0 (0)	60 (100)	0
4	Activities not according to the needs.	6 (10)	12 (20)	42 (70)	20
5	Lack of technical guidance and support after the training.	0 (0)	0 (0)	60 (100)	0
6	Lack of institutional support.	2 (3.33)	19 (31.67)	39 (65)	19.17
7	Lack of faith in beneficiaries.	6 (10)	16 (26.67)	38 (63.33)	23.33
8	Difficulty in carrying out suggested work due to lack of knowledge/skill.	0 (0)	0 (0)	60 (100)	0
9	Follow up activities are poor.	24 (40)	18 (30)	18 (30)	55
10	Personnels consider it a target oriented work.	11 (18.33)	19 (31.67)	30 (50)	34.17
11	Asympathatic behaviour of training perssonels.	7 (11.67)	11 (18.33)	42 (70)	20.83
12	Unfulfilled promises.	47 (78.33)	10 (16.67)	3 (50)	86.67
13	Discrimination at the training centre due to caste or class.	0 (0)	12 (20)	48 (80)	10

as compared to the other three companies. Perusal of the Table 2 highlighting the operational constraint depicts that none of the respondents faced problems of language in trainings, lack of technical guidance and support after the trainings and difficulty in carrying out suggested work due to lack of knowledge /skill with MPS 0. At HZL, the respondents were trained in stitching and embroidery. After the training, they were absorbed at the centre itself, by assigning them stitching projects thereby establishing market linkups. Thus, the beneficiaries earned a regular income through proper institutional support. High cost of initial investment (MPS 93.33) was the highest faced constraint reported by most of the respondents because of the cost of electricity operated sewing machines used in trainings which was quite difficult for the respondents to own, if in case they plan to start their own enterprise.

Similar findings were reported by Ahuja (2016); Collett and Gale (2009) who observed high cost of initial investment, trainings not relevant to the needs, inadequate follow up activities as major barriers that prevent them accessing training.

Personal and family constraints: Data furnished in Table 3 regarding personal and family constraints depicts the neglect of domestic work as the highest faced constraint (MPS 90.8), experienced to great extent by majority (85 %) of the beneficiaries of HZL's CSR initiatives. The respondents elicited an increased workload due to participation in the activities (MPS 84.17) and no extra work can be taken up due to fatigue and debility (MPS 80.83) as the other major constraints. It was seen that the beneficiaries had to spend an average of 4 to 5 hours daily carrying out the CSR activities; as a result it affected their time devoted to daily domestic chores. Constraints such as elderly left uncared (MPS 6.67) and farm and cattle activities not attended properly(MPS 5) were least

Table 3: Personal and family constraints faced by rural women in CSR activities

S.No.	Constraints	Extent of constraints (n=60)			MPS
		To great extent f (%)	To some extent f (%)	Not at all f (%)	
1	Too much workload in family.	42 (70)	11 (18.33)	7 (11.67)	79.17
2	Increased workload due to participation in the activities.	46 (76.67)	9 (15)	5 (8.33)	84.17
3	Non-cooperation from family members.	6 (10)	14 (23.33)	40 (66.67)	21.67
4	Domestic work neglected.	51 (85)	7 (11.67)	2 (3.33)	90.83
5	No extra work can be taken up due to fatigue and debility.	41 (68.33)	15 (25)	4 (6.67)	80.83
6	Children left uncared.	38 (63.33)	10 (16.67)	12 (20)	71.67
7	Elderly left uncared.	0 (0)	8 (13.33		
)	52 (86.67)	6.67			
8	Farm and cattle care activities not attended properly.	3 (5)	0 (0)	57 (95)	5
9	Lack of initiative.	29 (48.33)	17 (28.33)	14 (23.33)	62.5
10	Lack of enthusiasm to adopt something new.	25 (41.67)	12 (20)	23 (38.33)	51.67

faced constraints due to the reason that more than half of the respondents had nuclear families and did not posses any cattle or lands, thus their duties towards elders and farm were negligible.

It is clearly evident from the table that workload constraints were the prominent constraints (Rank I, II, II) that restricted the beneficiaries of all the four companies to pursue the CSR activities. The respondents reported that though engaging in these activities reap economic benefits but they had to work for a long stretch of time from around 4-6 hours a day, thereby resulting in the above constraints. The findings are in line with the research by Sharma and Varma (2008) that highlights that increased work burden and responsibility and small children or dependent in-laws as major personal constraints faced by women beneficiaries.

CONCLUSION

Overall the respondents ranked infrastructural constraints followed by personal and family; and operational constraints as important constraints. To make a development initiative effective it requires efforts on the part of the organizers to look into the constraints and act immediately for the successful adoption of the programme. Development should be treated as a holistic process and constraints of the beneficiaries from personal and family sides should be addressed personally if possible.

REFERENCES

Ahuja, A. 2016. Women Entrepreneurship in Tertiary Sector in Indore District. School of Economics Devi, Ahilya Vishwavidyalaya, Indore.

Collett, K. and Gale, C. 2009. Training for Rural Development: Agricultural and Enterprise Skills for Women Smallholders. City Guilds Centre for Skills Development, London cited from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.404.4825&rep=rep1&type =pdf retrived on April 20th 2018.

Kandeeban, M. and Velusamy, R. 2016. Training Needs of Rural Women in Hilly Areas for Their Empowerment. *Social Science Review* **2**(2): 59-71.

Meenakshi, M. and Mahapatra, S. N. 2015. Constraints Faced by Women Entrepreneurs. *Journal Impact Factor* **6**(5): 08-17.

Sharma, P., and Varma, S. K. 2008. Women Empowerment through Entrepreneurial Activities of Self Help Groups. *Indian Research Journal of Extension Education* **8**(1): 46-51.

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KNOWLEDGE OF SIROHI GOAT AMONG AICRP PROJECT BENEFICIARIES AND NON-BENEFICIARIES IN RAJSAMAND DISTRICT OF RAJASTHAN

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ABSTRACT

The present study was conducted in purposely selected Rajsamand district of Rajasthan. Deogarh tehsil has been selected on the basis of maximum beneficiaries covered by AICRP on Sirohi goat project. Three villages were selected from the identified tehsil on the basis of maximum number of beneficiaries from this project. Three villages were selected from the same tehsil as non-beneficiaries villages, thus total six villages were selected for the study. Total 120 respondents (60 beneficiaries and 60 non-beneficiaries) were selected for this study. Majority of respondents 58.33 per cent fell in medium knowledge level group whereas, 22.50 per cent goat owners were observed in the low knowledge level group and remaining 19.17 per cent respondents possessed high level of knowledge about improved goat management practices. Majority of goat owners had adequate knowledge regarding breeding followed by health and hygiene and feeding, whereas they had less knowledge regarding improved goat management practices.

INTRODUCTION

The All India Coordinated Research Project on Goats was initiated during the IVth Five Year Plan with the main objective to develop new genotypes involving cross-breeding of native goat breeds with high yielding exotic breeds in order to improve the efficiency of production of milk, meat and fibre.

Sirohi breed is native to Sirohi district of Rajasthan. The breed is raised for dual-purpose i.e meat and milk. However, milk production is relatively less in compared with other goat breeds. Each Sirohi female goat gives on average about 0.5 to 0.6 litter milk per day. The lactation period in Sirohi goat is about 4 months. An average of 70 litter milk yield can be obtained during the lactation period of 120 days.

RESEARCH METHODOLOGY

The present study was conducted in purposely selected Rajsamand district of Rajasthan. There are total 7 tehsils in Rajsamand district of Rajasthan, out of which Deogarh tehsil has been selected on the basis of maximum beneficiaries covered by AICRP on Sirohi goat project. Presently AICRP on Sirohi goat project is working in one gram panchayats of Deogarh Tehsil. Three villages were selected from the Gram Panchayat on the basis of maximum number of beneficiaries from this project. Similarly one Gram Panchayat was selected from nearby area, where AICRP on goat project was not working. Three villages were be selected from the Gram Panchayat as non beneficiaries villages, thus, total six villages were selected for the study. For selection of beneficiary respondents, a comprehensive list of farmers was prepared from AICRP project office. Out of this list, randomly twenty farmers were selected from each selected village and similarly non beneficiary farmers were selected from villages where project activities were not implemented. Total 120 respondents were selected. Random sampling technique was employed for the selection of respondents for this study. Data were collected by personnel interview technique through suitable structured schedule. Thereafter, data were tabulated, analysed and inferences were drawn in light of the objective.

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RESULTS AND DISCUSSION

1. Distribution of respondents according to their knowledge: Table 1 reveals that out of 120 respondents, majority of respondents (58.33%) fell in medium level knowledge group whereas, 22.50 per cent goat keepers were observed in the low knowledge group and remaining 19.17 per cent respondents possessed high level of knowledge about improved goat management practices.

Analysis of table further reveals that 16.67 and 28.34 per cent respondents were observed in low knowledge level group in beneficiary and non-beneficiary respondents, respectively. While, 63.33 and 53.33 per cent respondents were observed in medium knowledge level group in beneficiary and non-beneficiary respondent, respectively. Whereas, 20.00 and 18.33 per cent respondents were observed in high knowledge level group in beneficiary and non-beneficiary respondents respectively.

2. Aspect-wise knowledge of the respondents regarding improved goat management practices: To get a clear picture of knowledge possessed by goat keepers, aspect-wise knowledge of goat keepers was work out and presented in Table 2.

Table 2 indicates that beneficiary farmers possessed 65.00 per cent extent of knowledge about breeding aspect whereas, knowledge of non-beneficiaries about this practice was comparatively low with 61.31 per cent. Further, analysis shows that this practice was ranked first by beneficiary respondents, whereas, second by non- beneficiary respondents. The knowledge about feeding management, it was noted that beneficiary and non-beneficiary respondents had knowledge 62.08 and 63.33 per cent respectively. Further, analysis shows that this practice was ranked third by beneficiary respondents, whereas first by non- beneficiary respondents.

The knowledge regarding goat management was found that beneficiary and non-beneficiary respondents possessed 56.25 per cent and 54.35 per cent knowledge respectively. This aspect was ranked fourth by beneficiary respondents and non-beneficiary respondents. The knowledge about health and hygiene, it was found that 63.06 and 60.28 per cent was recorded in beneficiary and non-beneficiary respondents respectively. The knowledge about this aspect at second and third ranked by the beneficiary and non- beneficiary respondents respectively.

Thus, from the above discussion, it could be concluded that the extent of knowledge in beneficiary respondents was from 56.25 to 65.00 per cent, whereas, in case of non-beneficiary respondents the extent of knowledge was observed to be from 54.35 to 63.33 per cent in all the improved goat management practices. Further, it was concluded that beneficiary respondents had more knowledge than non-beneficiary respondents about most of the

Table 1: Distribution of respondents according to their knowledge level about improved goat management practices

n=120

S.No.	Knowledge Level	Beneficiary respondents		Non-Beneficiary respondents		Total	
		f	%	f	%	f	%
1.	Low (<66.13)	10	16.67	17	28.34	27	22.50
2.	Medium (66.13 to 91.33)	38	63.33	32	53.33	70	58.33
3.	High (>91.33)	12	20.00	11	18.33	23	19.17
	Total	**60**	**100**	**60**	**100**	**120**	**100**

F = frequency, % = Percentage

improved goat management practices in the study area.

Table 2: Aspect-wise knowledge of the respondents regarding improved goat management practices

n=120

S. No.	Aspect	Beneficiary respondents		Non- Beneficiary respondents	
		MPS	Rank	MPS	Rank
1	Breeding	65.00	I	61.31	II
2	Feeding	62.08	III	63.33	I
3	Management	56.25	IV	54.35	IV
4	Health and Hygiene	63.06	II	60.28	III

MPS= Mean Per cent Score

3. Comparison of knowledge between benefi-ciary and non-beneficiary respondents about improved goat management practices:

In relation to the extent of knowledge of respondents about improved goat management practices, it also felt necessary to study the difference between beneficiary and non-beneficiary respondents. To find out the variation in the knowledge of the respondents 'z' test was applied. The results are presented in Table 3.

Table 3: Comparison of adoption of improved goat management practices between beneficiary and non-beneficiary respondents

S. No.	Category of sample	Mean	S.D.	'Z' value
1.	Beneficiary respondents	76.33	12.07	1.53
2.	Non-beneficiary respondents	73.30	9.45	

No- Significant at 5 per cent level of significance

NH_{01}: There is no significant difference between beneficiary and non- beneficiary respondents with respect to knowledge about improved goat management practices.

Table 3 shows that the calculated value of 'Z' (1.53) is less than its tabulated value at 5 per cent level of significance. Thus, null hypothesis (NH_{01}) is accepted and research hypothesis rejected. Therefore, the null hypothesis "there is no significant difference between the beneficiary and non-beneficiary respondents with respect to knowledge about improved goat management practices." was accepted. It infers that there was no significant difference between beneficiary and non-beneficiary respondents with respect to possession of knowledge about improved goat management practices.

CONCLUSION

The study reveals that majority of respondents (58.33%) fell in medium knowledge level group whereas, 22.50 per cent goat owners were observed in the low knowledge level group and remaining 19.17 per cent respondents possessed high level of knowledge about improved goat management practices.

REFERENCES

Akhter, A., Asiwal, B.L. and Hussain, A. 2014. Knowledge and adoption of animal husbandry practices among the farmers of Sikar District of Rajasthan. *Indian Journal of Extension Education & Rural Development* **21**: 196-199.

Sharma, K., Singh, S.P. and Yadav, V.P.S. 2009. Knowledge of dairy farmers about improved buffalo husbandry management practices. *Indian Research Journal of Extension Education* **9:**51-54.

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EFFECTIVENESS OF WOMEN SELF HELP GROUPS (SHGs) REGARDING INCOME, SAVING AND EXPENDITURE

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ABSTRACT

The study entitled "Effectiveness of Women Self Help Groups (SHGs) on Income, Saving and Expenditure" was carried out during 2016-17 in four blocks namely, Bichiwada, Dobada, Jothari and Sagavada of Dungarpur district of Rajasthan on the basis of maximum number of Self Help Groups. This study was confined to four blocks and 32 SHGs of Dungarpur district. The study is based on primary data collected from 96 sample women members and 32 chairmen for the year 2016-17. Tabular analysis and Garrett ranking analysis were employed to analyse the data to achieve the specified objectives of the study. The average monthly income, saving and household expenditure of respondents before and after SHG programme intervention was worked out to be Rs. 1971.88 and Rs. 4616.67, Rs. 345 and Rs. 1524.48, Rs. 1715.79 and Rs. 2666.67, respectively. Average monthly borrowing of respondents was Rs. 5430.85 and Rs. 40270.66 in before joining SHGs and after joining SHGs, respectively. A number of income generating activities were undertaken by the members after joining the SHGs.

INTRODUCTION

Credit is a major obstacle, due to the fact that the formal institutions need collateral security against credit when the poor are unable to meet the requirements. When credit is not available from the formal sector, the poor approaches informal institutions such as moneylenders, traders, and big landowners.

The Government of India has introduced many community development programmes to uplift the status of women in terms of their socio-economic conditions in order to reduce the vulnerability of poverty. At the grass root level, women's participation and development often take place through interventions in the form of development programmes.

The Micro Finance Institutions extend loans that can help the poor in many ways. The SHGs cater to the needs of the poor in rural and urban areas by delivering financial services. The SHG programme is one of the areas of attraction to development economists, policy makers, bankers and other researchers throughout the world.

The SHG is one of the channels used for the development of women at the grass root level. Through the SHGs, women work together to save money by participating in economic and other non-economic activities. Apart from meeting the immediate needs of the members, women access credit, learn habits of saving and thrift, repay loans, engage in economic and other productive activities, and work for the women's holistic improvement through education and other awareness raising activities.

In the past many studies have been conducted on functioning and performance of self help groups in different parts of country at different points of time by Mishra (2001), Joseph (2005), Fouillet and Augsburg (2007), Swain and Varghese (2009), Lakhawat and Singh (2015), Meganathan *et al.* (2015) and Sarania (2015). Keeping above background in mind, the present study was carried out with an objective to understand the pattern of income, pattern of savings, pattern of household

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expenditure and pattern of borrowing of members in SHGs in Dungarpur district of Rajasthan.

RESEARCH METHODOLOGY

Present study was conducted in Dungarpur district of Rajasthan. Out of ten blocks of Dungarpur district, four blocks namely, Dobada, Jothari, Bichiwada and Sagavada were selected on the basis of highest number of SHGs. Two clusters from each block were selected on the basis of highest number of SHGs. Two villages from each cluster were selected randomly. Two SHGs from each village were selected randomly. A comprehensive list of all women members of selected SHG was prepared. Out of which, three ordinary members who were actively engaged in SHG were selected randomly from each SHG. Thus, total 8 clusters, 16 villages, 32 SHGs and 96 respondents have been selected for the present study. Data were collected with the help of specific interview schedule during 2016-17.

RESULTS AND DISCUSSION

The monthly income of women members before and after joining the SHG has been presented in Table 1. The average monthly income before and after SHG situation worked out to Rs. 1971.88 and Rs. 4616.67, respectively. There was an income increment of about 134.13 per cent in their income in after SHG situation over before SHG situation.

The monthly amount of saving of the women members before and after joining the SHG has been depicted in Table 1. The table shows that the average monthly saving of respondents was Rs. 1524.48 after joining SHG which was relatively more than Rs. 345 before joining SHG. The majority of members maintained their savings in SHG and banks (both co-operative and commercial banks) after joining the SHGs.

Household expenditure includes different activities such as food, clothing/footwear, education, medical/health, bills (water, electricity and mobile/ telephone), festivals, gifts / recreation and others (surf, soup, agarbati and cosmetic etc.). The table revealed that the average monthly expenditure before and after joining SHGs was Rs. 1715.79 and Rs. 2666.67, respectively.

Purpose of borrowing: Data in Table 2 depicts that average borrowing by SHG respondents for non income generating activities and income generating activities before joining SHG was 93.67 per cent and 6.33 per cent of total borrowing (Rs. 5430.85) respectively. After joining SHG, corresponding figures were 69.66 per cent and 30.34 per cent of total borrowing (Rs. 40270.66) respectively. Percent share of borrowing has increased from 3.84 per cent to 15.7 3 per cent in trading and business activity after joining SHG. As a part of trading and business many participants operated hardware shops, cosmetic shop, milling, selling of fruits, vegetables and flowers, tailoring, retailer shop and beauty parlor etc. It can be concluded from the analysis that still most of the large amount of borrowing used in non income generating activities in both after joining the SHG and before joining the SHG situation.

CONCLUSION:

There was a definite positive impact of self help

Table 1: Average monthly income, saving and household expenditure of SHG members

(n=96)

S. No.	Particulars	Amount (Rs. per household)		Increase (%)	"t" value
		Before SHG ($\bar{X}$)	After SHG ($\bar{X}$)		
1	Income	1971.88	4616.67	134.13	8.15**
2	Saving	345.00	1524.48	341.88	5.80**
3	Household expenditure	1715.79	2666.67	55.42	7.86**

**1 per cent level of significance.

Table 2: Purpose wise amount borrowed by SHG members

(Amount in Rs. per household)

Particulars	Mean			
	Before SHG ($\bar{X}$)	Per cent	After SHG ($\bar{X}$)	Per cent
Non income generating activities				
Education	104.17	1.92	583.33	1.45
Medical	312.50	5.75	416.67	1.03
Housing	2842.11	52.34	24166.70	60.01
Marriage	1827.63	33.66	2885.12	7.16
Sub total	5086.41	93.67	28052.12	69.66
Income generating activities				
Trading & business	208.43	3.84	6333.24	15.73
Livestock	135.42	2.49	5885.42	14.61
Sub total	343.85	6.33	12218.66	30.34
Total	**5430.85**	**100.00**	**40270.66**	**100.00**

group on income, saving, household expenditure and purpose of borrowing of women members on the entire dimension. However, the overall impact was observed in income, saving and household expenditure before joining SHG and after joining SHG programme was worked out to be Rs. 1971.88 and Rs. 4616.67, Rs. 345 and Rs. 1524.48, Rs. 1715.79 and Rs. 2666.67, respectively.

REFERENCES

Fouillet, C., and Augsburg, B. 2007. Spread of the self-help groups banking linkage programme in India. Paper presented at the International Conference on Rural Finance Research, Moving Results, FAO and IFAD, Rome.

Joseph, J. 2005. The relevance of involvement in micro-credit self-help groups and empowerment in Tamilnadu. Ph.D., McGill University (Canada), Canada.

Lakhawat, S., and Singh, C.S. 2015. Women empowerment through microfinance (SHGs) in Ajmer district of Rajasthan. *International Research Journal of Social Sciences* **4** : 1-6.

Mishra, J.P. 2001. The socio-economic analysis of rural SHG schemes in block Amaniganj district Faizabad. Sage Publicaitons, New Delhi.

Meganathan, M., Magheswari, M. and Arumugam, M. 2015. Self help groups and economic empowerment of women in Parakudi. *International Journal of Research in Engineering and Social Sciences* **9**: 9-16.

Sarania, R. 2015. Impact of Self-Help Groups on Economic Empowerment of Women in Assam. *International Research Journal of Interdisciplinary & Multidisciplinary Studies* **1**: 148-159.

Swain, R.B. and Varghese, A. 2009. Does self help group participation lead to Asset creation? *World Development* **37** : 1674-1682.

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PROBLEMS OF ELDERLY WOMEN WITH EXISTING CLOTHING WARDROBE

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ABSTRACT

The clothing needs of the elderly women are very different from those people of other age groups due to occurrence of physiological and psychological changes. Present study has been conducted to explore the clothing problems of the elderly women with existing clothing wardrobe on a purposively selected sample of 40 elderly women. A structured interview schedule was developed to obtain desired information from the respondents. Findings revealed that major problems faced by them were in dressing & undressing of garment, garment opening &fitting, neckline and armhole related, material related and care & maintenance related.

INTRODUCTION

Every human being passes through various stages in his lifetime, infancy, childhood, adolescence, adulthood and old age and faces some changes in physical characteristics as the individual grows older. The clothing needs of elderly women are very different from those people of other age groups due to occurrence of physiological and psychological changes. Smarther and Horridge (2007) concluded that various physiological and biological changes occurring during old age which have an effect upon the clothing need and preferences of elderly women. With growing age, it becomes more difficult to move, stretch, bend and twist, making the process of dressing a bit of a challenge at times. Clothing for seniors should look good, feel good, and most of all, to keep the wearer as independent as possible.

A problem due to shifting of weight is the lose of weight in upper arm this causes an unattractive sagging of flash and increase in wrinkles in this area. The most difficult physical changes to adjust are those related to general health like loss of hearing and eye-sight and thus, garment, which don't require extensive stretching to put on or to fasten and unfasten are good for older person dresses with opening in front. Their larger armholes, raglan sleeve etc. are easier to put on and take off. The older person has increased susceptibility to both heat and cold as there are changes in skin which leads to temperature sensitivity. In this paper, the researcher assessed the clothing problems of elderly women with existing clothing wardrobe.

RESEARCH METHODOLOGY

The present study was conducted on purposively selected 40 elderly women who are residing in Udaipur city and associated with Matushree Mahila Club and Varishth Mahila Prakoshth of Vighyan Samiti NGO. A structured interview schedule was developed to obtain information on clothing problems faced by elderly women with existing clothing in their wardrobe. i.e. comfort in dressing and undressing, problems related to fitting of the garment, arm-hole fitting, neckline size and finish and fastener related problem, etc.

RESULTS AND DISCUSSION

This part contains the outcome of the analysis done on socio-personal profiles of the respondents. The socio-personal profile of the respondents included age, educational status, occupation of the respondents, type of the family and monthly income of the family. The details of the information related to this has been furnished in Table 1.

A. Socio-personal characteristics of the respondents: Data given in the Table indicate that majority of the respondents (52.5%) belonged to the age group of 65-67 years, followed by the age groups 68-70 years (47.5%). The data pertaining

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Table 1: Socio-personal characteristics of the respondents

n = 40

Socio-personal traits		Frequency	Percentage
Age (in years)	65-67 years	21	52.5
	68-70 years	19	47.5
Education	Middle level	3	7.5
	High school	8	20
	Graduate	10	25
	Post graduate	12	30
	Doctorate	7	17.5
Occupation	Business	11	27.5
	Service	29	72.5
	Type of family		
	Nuclear	14	35
	Joint	26	65
Monthly family	10,000-50,000	25	62.5
income (Rs.)	50,001-90,000	15	37.5

to education revealed that more than one fourth of the respondents (30%) were post graduate, one fourth respondents were graduate, 17.5 per cent respondents holds doctorate degree, 20 per cent respondents were educated upto high school. It was observed that 65 per cent respondents belonged to joint family. Regarding occupation, majority of the respondents (72.5%) belonged to service class and less than half of the respondents (27.5%) were engaged in family business.

The findings of the study revealed that family income of majority of the respondents (62.5%) was found in the range of Rs. 10,000-50,000/- per month and remaining respondent's (37.5%) family income was in the range of Rs. 50,001-90,000/- monthly.

B. Clothing Problems faced : The results in this section have been presented by exploring the existing clothing pattern and clothing problems associated with it in terms of ease in dressing & undressing, neckline of the garment, arm- hole/ sleeve, garment opening, fitting related, material related and care & maintenance related.

Existing clothing pattern: The data pertaining to existing clothing pattern of the respondents have been presented in Figure-1.

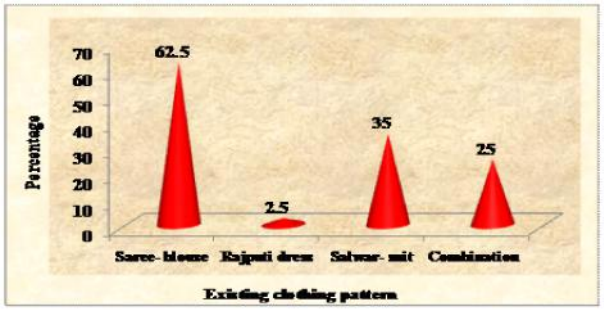

Fig. 1: Distribution of respondents by existing clothing pattern

The given data of Figure 1 illustrate that majority of the respondents (62.5%) used to wear sari-blouse followed by 35 per cent respondents who wear salwar-suit for casual wear, a few respondents (2.5%) used to wear rajputi-poshak, one fourth of the respondents (25%) gave multiple responses as they used to wear sari-blouse and salwar-suit both.The reason for wearing different dresses may be that the sample subjects selected for the present

investigation comprised of mixed group of elderly women from different castes like Punjabi, Rajput, etc. and clothing pattern of each of these women group varies from sari to salwar- suit.

Clothing problems related to dressing and undressing: The data pertaining to ease in dressing and undressing presented in Fig.2 reveal that more than half of the respondents (55%) were facing problem in dressing and undressing of garment, while remaining 45 per cent respondents didn't have any problem in put on and taking off of upper garment.

Clothing problems related to neckline of the garment : The data pertaining to clothing problems of the respondents related to neckline and their related preferences regarding neckline shape, neckline finishing and type of collar have been presented in Table 2. The table depicts that majority of the respondents (82.5%) did not have any problem with neckline, while 17.5 percent respondents were having problem with neckline. The researcher made an effort to collect information about their preferences in shape of neckline and found that 37.5 per cent respondents preferred round and U-shaped neckline followed by 30 per cent respondents who preferred all shapes of neckline.

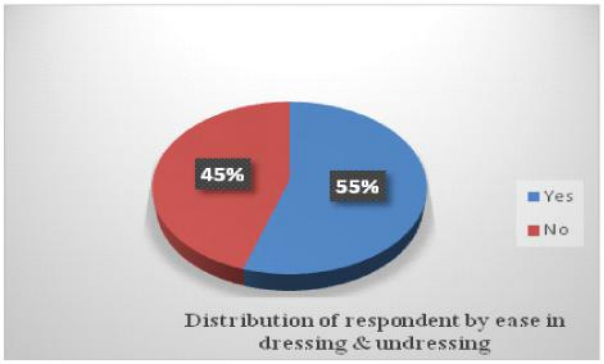

Fig. 2: Distribution of respondents by ease in dressing and undressing

Table 2: Problems and preferences of the respondents related to neckline of the garment

n=40

Aspect	Description	Frequency * (f)	Percentage * (%)
Problem with neck line	Yes	7	17.5
	No	33	82.5
Preferences in shape of neckline	Round shape	8	20
	V- shape	4	10
	U-shape	-	-
	Square shape	6	15
	Round and U-shape	15	37.5
	All	12	30
Preferences in neckline finish	Piping	21	52.5
	Bounding	2	5
	Facing	16	40
	All type	1	2.5
Preference in type of collar	Chinese without stiffness	3	7.5
	Stand collar	12	30
	Any other	2	5
	Not prefer	23	57.5

*Multiple response

Some of the respondents (20%) preferred only round shape of neckline, while only 10 per cent respondents have given preference to only V-shape neck line. Regarding neck line finish, it was found that more than half of the respondents (52.5%) preferred neckline finished with piping followed by 40 per cent respondents who gave their preference to neckline finished with facing. Few of the respondents (5%) preferred bound neckline. The table further shows that majority of the respondents (57.5%) did not prefer collar in their garment, while 30 per cent respondents preferred stand collar followed by Chinese collar (7.5%) without stiffness.

Sharma (2010) conducted a study to find out the clothing practices and satisfaction level with present clothing and problem faced by aged arthritic person. Majority of respondents were less satisfied with existing clothing in their wardrobe. Major problem faced by them were related to fitting of garment and armhole and neckline related problem in their dresses.

Table 3: Problems and preferences of the respondents related to arm-hole and sleeve

n=40

Aspect	Description	Frequency (f)	Percent (%)
Problem with arm-hole	Yes	16	40
	No	24	60
Size of arm- hole	Large	20	50
	Normal	14	35
	Fitted	6	15
Length of sleeve			
(short /half sleeve)	Always	35	87.5
	Some time	4	10
	Never	1	2.5
(Full sleeve)	always	1	2.5
	Some time	14	35
	never	25	62.5
(three fourth sleeve)	Always	-	-
	Some time	7	17.5
	Never	33	82.5
Sleeveless	Always	-	-
	Some time	-	-
	Never	40	100
Type of sleeve			
Regular Set-in sleeve	Always	-	-
	Some time	35	87.5
	Never	5	12.5
Raglan/kimono/any sleeve	Always	40	100
with fullness at armhole	Some time	-	-
	Never	-	-

Clothing problems related to arm- hole/ sleeve : Table 3 furnishes the data related to clothing problems with arm hole/sleeve by the respondents and related preferences like armhole size, length of sleeve and type of sleeve.

Data in given Table 3 reveal that majority of the respondents (60%) didn't have any problem with arm-hole and remaining 40 per cent respondents were having problem with arm-hole. Regarding preference in size of armhole, it was found that half of the respondents gave their preference to large size arm-hole followed by 35 per cent respondents who preferred normal size of armhole. The table further shows that majority of the respondents (87.5%) always preferred short/half sleeve followed by 10 per cent respondents who preferred half sleeve for some time. Majority of the respondents (62.5%) never preferred full sleeve followed by 35 per cent respondents who preferred full sleeve for some time. A very few respondents (2.5%) always preferred full sleeves in their garment. None of the respondents reported their preference towards sleeveless dresses. With regards to preference of sleeve type, data revealed that cent per cent respondents always want to have comfort and ease at armhole and sleeve portion and gave their preference towards raglan/kimono or any type of sleeve that will provide fullness and comfort, as most of the respondents were not technically aware of the terms used in sleeve types.

Clothing problem in garment opening: The data pertaining to facing problems with use of fastener and its opening by the respondents has been presented in Table 4.

The researcher tried to collect information about their preference in type of fastener to be used in the garment by the respondents and found that majority of the respondents (57.5%) were giving preference to use of hook-eye in their garment, while 25 per cent respondents preferred only button and button-hole, 12.5 per cent respondents preferred press-button. Few of the respondents (5%) have given preference to use of zipper for easy holding and ease in operation. None of the respondents preferred use of Velcro in their garment. The reason of not preferring Velcro was prevalence of uncertainty in their mind about its effectiveness in use of upper garments. The data show that majority of the respondents (85%) preferred front opening in their garment because it is easy to operate and they can open and close it independently and remaining (15%) respondents preferred back opening in their garment.

Clothing problems related to fitting and their preference-The data pertaining to respondents facing problem with fitting of the garment have been presented in Table 5.

Table 4: Problems and preferences of the respondents related to garment opening

n=40

Aspect	Description	Frequency (f)	Percentage (%)
Preference in type of fastener	Button and button -hole	10	25
	Press-button	5	12.5
	Velcro	-	-
	Hook -eye	23	57.5
	Zip	2	5
Type of opening	Front opening	34	85
	Back opening	6	15
	Side opening	-	-

The data reveal that majority of the respondents (90%) were having problem related to fitting of the garment, while few of the respondents (10%) didn't have any problem related to fitting.

Majority of the respondents (75%) gave preference to semi-fitted garment, while an equal number of respondents (12.5%) preferred fitted and loose garment, respectively.

Findings are in conformity with results of Dwidevi and Luniya (2007) who also reported that old ladies like to wear loose, soft and easy to wear clothes. The readymade dresses do not fit to them because they are made from standard measurements. Rani (2008) suggested that the clothing of the old age people should be according to their age. They should feel comfortable and protected in it. Clothing should be loosely fitted and provide adequate warmth.

Material related problems : The researcher made an effort to find out the existence of material related problems among the respondents and it was found that majority of the respondents (87.5%) were not facing problem related to weight of the garment as depicted in Table 6.

Half of the respondents were facing problem with fabric absorbency because 50 per cent respondents were using synthetic fabric and the synthetic fabric did not have absorbent property. Majority of the respondents (70%) were facing problem related to shrinkage property and pilling at the surface of fabric, because they were using cotton fabric and cotton fabric generally shrinks on laundering. The reason of facing problem of pilling formation was related to fabric quality which depends on the quality of

Table 5: Percentage Problems and preferences of the respondents related to fitting of garment

n=40

Aspect	Response	Frequency (f)	Percentage (%)
Problem with Fitting of the garment	Yes	30	75
	No	10	25
Preference according to fitting	Tight	-	-
	Semi-fitted	30	75
	Fitted	5	12.5
	Loose	5	12.5

Table 6: Percentage distribution of respondents by material related problems

n=40

Material related problem	Response	Frequency (f)	Percentage (%)
fabric weight	Yes	5	12.5
	No	35	87.5
Absorbency	Yes	20	50
	No	20	50
Shrinkage	Yes	28	70
	No	12	30
Colour fastness	Yes	-	-
	No	40	100
Pilling	Yes	28	70
	No	12	30

Table-7: Problems of the respondents related to care and maintenance of garment

n=40

Problem with care and maintenance	Response	Frequency (f)	Percentage (%)
Soiled easily	Yes	30	75
	No	10	25
Require daily wash	Yes	36	90
	No	4	10
Wrinkle badly	Yes	28	70
	No	12	30
Need ironing	Yes	28	70
	No	12	30
Easy to care	Yes	36	90
	No	4	10
Easy to wash	Yes	36	90
	No	4	10

yarn used in fabric construction. Guzel (2013) concluded that elders pay more attention into the features i.e. comfort, suitability, practicability, being economical and durable.

Clothing problem related to care and maintenance : Data regarding problems faced in care and maintenance of the garment depict that majority of the respondents had common problem of garments being soiled easily (75%), garment needed daily wash (90%) because of the reasons of cleanliness and maintaining hygiene as presented in Table 7.

The respondents also reported that their garments become badly wrinkled on use and require frequent ironing. Majority of the respondents (90%) responded that their garments are easy to wash and care, while remaining 10 per cent respondents did not find their garments easy to wash and care.

CONCLUSION

Clothing for the elderly women must be based upon their abilities and limitations to dress with or without assistance. Findings revealed that majority of the respondents were facing problem with their existing clothing wardrobe. Major problems faced by them are in dressing & undressing, garment fitting, garment opening, neckline related, arms and armhole related, material related and care & maintenance related.

REFERENCES

Smarther, D. G. and Horridge, P. E. 2007. The effect on physical changes on clothing preferences elderly women. Retrieved from http://www.ncbi.nlm.nih.gov/sites/entrez?cmd=Retrive&db=PubMed&list_uids=753775&dopt=Abstract.s on January 7, 2016,

http://www.buckandbuck.com/shop-by-need/elderly-apparel.html)

Sharma, R. 2010. A study on clothing practices and satisfaction level of elderly arthritis men and women. An Unpublished thesis department of Textile and Apparel Designing, College of Home Science, MPUAT, Udaipur, Rajasthan.

Guzel, S. 2013. Clothes preferences and problems of consumers aged 65 and above. *The Macrotheme Review* **8**:168-178.

Diwedi, B. and Lumiya, V. 2007. Effect of clothing on physical and mental wellbeing of old aged women. *Asian Journal of Home Science* **2**: 39-42.

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PROPORTIONATE DISTRIBUTION OF FARMERS ACCORDING TO VARIOUS CROPPING RESOURSES IN RAIPUR DISTRICT OF CHHATTISGARH

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ABSTRACT

The present study was conducted in Raipur District of Chhattisgarh state. Out of 15 blocks in Raipur district, three blocks namely Abhanpur, Arang and Dharsiwa were purposively selected for this study. Out of the total villages of these 3 blocks, four villages from each block were selected purposively. Thus, the total 12 villages were selected. For this study, out of the total farm families of each selected village, 10 farmers were selected on the basis of soil types. Thus, the total 40 rice growers were selected from each blocks. In this way a total 120 farmers were finally considered in the sample for the collection of primary data. This study displays that maximum number of respondents 69.17 per cent kanhar soil (Vertisols) and 67.5 per cent respondents had matasi soil (Inceptisoils), whereas 25.83 and 6.67 per cent respondents had Dorsa (Alfisols) and Bhata (Entisols) type of soil, respectively. It reveals that kanhar and matasi soil were occupied by majority of the respondents, but most of them were having only 1.1 to 5 acre, about 22, 9 and 1.20 per cent respondents had below 1, 5.1 to 10 and above 10 acre area of kanhar soil, respectively. It indicates that out of the total cultivable area among the respondents, 40.96 per cent belonged kanhar type. About 33 per cent area comprised with matasi in the study area.

INTRODUCTION

The diversities in rock reliefs, climate and vegetations are found here as a result of these diversities different types of soil are found in India. The soils of India can be grouped into six types viz. Alluvial soils, Black soils, Red soils, Mountain soils, Laterite soils and Desert soils. The characteristics and quality of land to determine its suitability for agriculture and other allied activities are topography, texture, water retention, infiltration rate, physico-chemical properties etc. In Chhattisgarh according to depth and topography, the soils are mainly classified as Bhata (Entisols), Matasi (Inceptisols), Dorsa (Alfisols) and Kanhar (Vertisols). Each soil type has its own characteristics and accordingly best suitable for some specific crops and needed some specific inputs and management practices.

RESEARCH METHODOLOGY

The study was conducted in Raipur District of Chhattisgarh state. Out of 15 blocks in Raipur district, three blocks namely Abhanpur, Arang and Dharsiwa were purposely selected for this study. Out of the total villages of these 3 blocks, four villages from each block were selected purposively. Thus the total 12 villages were selected. For this study, out of the total farm families of each selected village, 10 farmers were selected on the basis of soil types. Thus, the total 40 rice growers were selected from each blocks. In this way a total 120 farmers were finally considered in the sample for the collection of primary data

RESULTS AND DISCUSSION

Technological characteristics

1. Soil types: The data presented in Table 1

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display that maximum number of respondents (69.17%) had kanhar soil (Vertisols) and 67.5 per cent respondents had matasi soil (Inceptisoils), whereas 25.83 and 6.67 per cent respondents had Dorsa (Alfisols) and Bhata (Entisols) type of soil, respectively.

Table 1: Availability of soil types among the respondents

(n = 120)

S.No.	Soil type	Frequency	Percent
01	Bhata	8	6.67
02.	Matasi	81	67.5
03.	Dorsa	31	25.83
04.	Kanhar	83	69.17

2. Cultivable area according to soil types: The data in Table 2 indicate that out of the total cultivable area among the respondents 40.96 per cent belonged kanhar type soil. About 33 per cent area comprised with matasi and remaining 24.48 and 1.60 per cent cultivable area among the respondents belonged to dorsa and bhata type of soils, respectively.

Table 2: Cultivable area according to soil types

S.No.	Soil type	Area (acre)	Percent
01	Bhata	17	1.60
02.	Matasi	350	32.96
03.	Dorsa	260	24.48
04.	Kanhar	435	40.96

3. Cropping pattern in different soil types: Table 3 reveals the cropping pattern according to various soil types. In khariff season rice was found as the only crop grown in cent-percent area of matasi, dorsa and kanhar soils. Mung and Urid were cultivated by some of the farmers in bhata soils. Chickpea crop was found as the most important rabi crop grown by the 14.46, 22.58 and 37.03 per cent respondents in matasi, dorsa and kanhar soils, respectively.

Grasspea was also found as an important second crop grown as utera in rice based cropping system and is undertaken by 37.03, 12.05 and 9.68 per cent respondents in kanhar, matasi and dorsa soils, respectively. Other crops were undertaken by 4.94, 3.61 and 3.22 per cent respondents in kanhar, matasi and dorsa soils, respectively.

Table 3: Distribution of respondents according to their crops

(n=120)

S. No.	Crop	Frequency	Percent *
A.	**BHATA**		
01.	Rice	4	50.00
02.	Mung/ Urid	4	50.00
03.	Lentil	0	0.00
04.	Grasspea (Lathyrus)	0	0.00
B.	**MATASI**		
01.	Rice	81	100.00
02.	Gram	12	14.46
03.	Lentil	01	1.20
04.	Grasspea (Lathyrus)	10	12.05
05.	Other crops	3	3.61
C.	**DORSA**		
01.	Rice	31	100.00
02.	Gram	7	22.58
03.	Lentil	3	9.68
04.	Grasspea (Lathyrus)	3	9.68
05.	Other crops	1	3.22
D.	**KANHAR**		
01.	Rice	83	100.00
02.	Gram	30	37.03
03.	Lentil	10	12.35
04.	Grasspea (Lathyrus)	30	37.03
05.	Other crops	4	4.94

*per cent are based on multiple response.

4. Source wise availability of inputs for rice cropping: The data presented in Table 4 focus on the availability of different inputs according to their purchasing from various location.

Majority of the respondents (97) were not using the seed of rice crop from other sources, they use their own or other villager's seed for sowing. While 11 per cent of the respondents were purchasing the seed from cooperative societies. Whereas, 12 per cent respondents were purchasing the rice seed from retail shops.

Maximum 98 per cent respondents were using fertilizers of cooperative societies, while 19 per cent respondents were using fertilizer purchased from retail shops and 3 respondents were buying fertilizers from Raipur city.

Maximum 82 per cent respondents were using their own manure. Most of the 46 respondents were using insecticides from retail shop. Followed by 42 and 12 respondents were using Raipur city and cooperative society for insecticides. Maximum 25 respondents were using retail shop for weedicides. Following 20 and 2 respondents were using Raipur city and cooperative society for weedicides.

Maximum 22 respondents were using Raipur city for other source of input. While 11 and 7 respondents were using retail shop and cooperative society for other source of input. Regarding availability, maximum 92.42 per cent availability were recorded for insecticides. Also 86.72, 91.50, 88.33, 87.88 and 68.52 per cent availability was recorded pertaining to seed, fertilizer, other inputs, weedicides and manure respectively.

5. Irrigated area according to soil types: Table 5 briefs about the different extent of irrigated area according to various types of soil. Majority of the respondents 37.50 per cent were having low level (up to 25 %) extent of irrigated area in bhata type of soil. Followed by 25.00, 00.00 and 12.50 per cent respondents were having very high level (above 75%), medium and high level (51 to 75 %) extent of irrigated area in bhata soil.

Majority of the respondents 39.52 per cent were having very high (above 75 %) extent of irrigated

Table 4: Distribution of respondents according to their Source of inputs

(n= 120)

S.No.	Inputs	Self / other farmer	Coop. Society	Retail shop of village	Raipur city	Availability Index
01.	Seed	97	11	12	0	86.72
02.	Fertilizer	0	98	19	3	91.50
03.	Manure	82	0	0	0	68.52
04.	Insecticides	0	12	46	42	92.42
05.	Weedicides	0	2	25	20	87.88
06.	Others	0	7	11	22	88.33

Table 5: Distribution of respondents according to the irrigated area in various soil types

S.No.	Extent of irrigated area	Bhata		Matasi		Dorsa		Kanhar	
		F	%	F	%	F	%	F	%
01.	Nil	2	25.00	16	19.75	7	22.58	17	20.48
02.	Low (up to 25 per cent)	3	37.50	24	29.62	9	29.03	12	14.46
03.	Medium (26-50 per cent)	-	-	1	1.23	1	3.22	2	2.41
04.	High (51-75 per cent)	1	12.50	8	9.88	3	9.68	7	8.43
05.	Very high (above 75 per cent)	2	25.00	32	39.52	11	35.48	45	54.22

Table 6: Distribution of respondents according to their cropping intensity according to various soil types

S.No	Cropping intensity	Bhata (n=8)		Matasi (n=83)		Dorsa (n=31)		Kanhar (n=81)	
		F	%	F	%	F	%	F	%
01.	100 per cent	6	75.00	62	74.70	20	64.52	30	37.04
02.	101-125 per cent	0	0.00	0	0.00	1	3.22	0	0.00
03.	126-150 per cent	0	0.00	2	2.41	2	6.44	6	7.41
04.	151-175 per cent	0	0.00	2	2.41	0	0.00	7	8.64
05.	Above 176 per cent	2	25.00	17	20.48	8	25.82	38	46.91
	Overall CI (%)	117		122		138		159	

area in matasi soil. While, 29.62 per cent respondents were having low (up to 25 %) extent of irrigated area in matasi. Whereas, 19.75, 9.88 and 1.23 per cent respondents were having nil, high level (51 to 75 %) and medium level (26 to 50 %) extent of irrigated area respectively in matasi.

Majority of the respondents 35.84 per cent were having very high (above 75%) extent of irrigated area in Dorsa type of soil. While, 29.04 per cent respondents were having low level (upto 25 %) extent of irrigated area. Whereas, 22.58, 9.68 and 3.22 per cent respondents were having nil, high level (51 to 75 %) and medium level (26 to 50 %) extent of irrigated area respectively in dorsa type of soil.

Majority of the respondents 54.22 per cent were having very high (above 75 %) extent of irrigated area of Kanhar type of soil. While 20.48 per cent respondents were having nil. Whereas, 14.46, 8.43 and 2.41 per cent respondents were having low level (up to 25 %), high level (51 to 75%) and medium level (26 to 50 %) extent of irrigated area respectively in kanhar type of soil.

6. Cropping intensity according to soil types: The research finding in Table 6 refers that cropping intensity according to various types of soil. In bhata soil, majority of the respondents (75%) were having 100 per cent cropping intensity and 25.00 per cent respondents obtained more than 176 per cent cropping intensity. In reference to matasi soils about 75 per cent respondents were growing only one crop in a year. About 20 per cent respondents were having above 176 per cent cropping intensity, whereas, 2 .41 per cent each respondents were having 126 to150 and 151 to 175 per cent cropping intensity. Similar to above, 64.52 per cent respondents were growing only one crop in a year having 100 per cent cropping intensity in dorsa soils, while 25.82 per cent respondents were having above 176 per cent cropping intensity. Also, 6.44 and 3.22 per cent respondent were having 126 to 150 and 101 to 125 per cent cropping intensity respectively in dorsa type of soil. Regarding kanhar soils 46.91 per cent respondents were growing more than one crop in a year and hence acquired above 176 per cent cropping intensity, while 37.94 per cent respondents were having 100 percent cropping intensity. About 9 and 7 per cent respondents were having 151 to 175 and 126 to 150 per cent cropping intensity respectively in kanhar soils.

In all kanhar soils has maximum 159 per cent cropping intensity may be due to its high water retention capacity and minimum 113 per cent in bhata soils. The other soils namely matasi and kanhar were used to grow 1.22 and 1.38 crops in a grown by the respondents.

CONCLUSION

Inceptisoils and vertisols were found as the

popularly acquired soil types among the respondents. Rice was the only crop grown in bhata, matasi, dorsa and kanhar or all type of soils in kharif season. Gram crop was taken by respondents in increasing order in matasi, dorsa and kanhar soils, respectively. Majority of the respondents were adopting broadcast biasi method for sowing in all type of soils. Majority of the respondents were not using seed from other sources, they generally using their own seed for sowing in fields. Maximum respondents obtaining the fertilizers from cooperative societies. Manures were prepared by themselves, weedicides and insecticides were procured from retail shops. Maximum respondent (65.83%) were having bullock pair as a major source of farm power. Majority of the respondents had acquired the credit from cooperative societies in the form of inputs.

REFERENCES

Badodiya, S.K. 2000. Study on technological gap in chickpea cultivation technology in Raipur district of Chhattisgarh Region (M.P.) M.Sc.(Ag.) Thesis, IGAU, Raipur.

Desai, B.R.; Waman, G.K. and Girase, K.A. 2000. Adoption of recommended technology for rainfed cotton-NHH-44. *Maharashtra J. Extn. Edn.* **19**: 48-52.

Kumar, S.S.; Hirevenkanagoudar, L.V. and Nagaraja, M.V. 2000. Understanding and adoption level of various soil and water conservation practices by farmers. *Agri. Extn. Rev.* May-June : 27-31.

Mohapatra , L., Dhaliwal ,R.K. and Kaur, M. 2016. Farmers Knowledge about the Agricultural Insurance Scheme in Punjab. *Indian Research Journal of Extension Education* **1**:49-53.

Pandey, P.K. 2000. Constraints analysis in adoption of rice production technology in the Kota tribal block of Bilaspur district in Madhya Pradesh. M.Sc. (Ag.) Thesis, IGKVV, Raipur (M.P.).

Raj, A.D., Yadav, V. and Rathod, J.H. 2013. Impact of front line demonstration (FLD) on the yield of pulses. *International J. Sci. and Res.***9**(3):1-4.

Ravi, M.V. and Pandurangaiah, K. 2001. Influence of different soil conservation practices on crop yield in an alfisoils of Bangalore rural district, NWDPRA/ORP co-ordinating cell. Old Agri. Col. UAS, Hebbal. Sept.-Oct., **30** (9,10) : 142 - 143.

Sapurti, Meena, G. L. and Burark, S. S. 2015. Impact of Horticulture and Livestock Based Technologies on Production and Marketing of Agricultural Produce in Udaipur District of Rajasthan. *Indian Journal of Agricultural Marketing* **29** (1): 91-103.

Singh K.K. and Pandya M.L. 2013. Knowledge and adoption behaviour of paddy growers. *Agril. Extn. Review*, Jul-Aug: 22-23

Venkata, V., Goppala, R.S., Ananda, R., Endreddy, K.P. and Bhagawan, R. 2014. Prevalence and patterns of internet addication among medical students. 0975-2870.

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UTILIZATION OF PROTECTIVE MEASURES AGAINST DOMESTIC VIOLENCE BY THE WOMEN OF SLUM AREAS OF UDAIPUR CITY

Asha Godawat* and Dhriti Solanki**

ABSTRACT

The present study was undertaken with the objective to study the utilization of protective measures against domestic violence by the slum women. The study was conducted in four slum areas having maximum population of slums in the Udaipur city. Total sample of the study consisted of 100 women. Interview schedule was prepared for collecting information from the respondents. Frequency, percentage and mean weighted scores were used for analysis of data. The extent of utilization of protective measures by the women to combat domestic violence was found to be low as reflected by mean weighted scores ranging from 0 - 0.17. Lack of knowledge, financial problems, lack of trust on husband and other family members and lack of support from relatives and friends were the common reasons for non utilization of protective measures as reported by the respondents. Thus, it could be inferred that women of slum area were suffering from domestic violence but utilizing very little efforts to overcome the problem. Hence, there is a need to make them aware and motivate them for utilization of various efforts to prevent violence against them through various awareness generation programme, counseling, etc.

INTRODUCTION

Women in ancient India were respected and accorded very high position in the society. But the 21st century has witnessed steep fall in the status and treatment meted out to women throughout the world and suffering from various problems particularly at domestic level such as early marriage, divorce, malnutrition, poor health and maternal mortality, gender biasness mistreatment, physical and mental violence, trafficking, female infanticide/ feticide, sexual harassment, excess work load, divorce, etc. One of the most serious, complex and deep-rooted problem that the women are facing in our country is domestic violence. According to India's National Crime Record Bureau (2007) an average of 160 women were victims of domestic violence every day. On the other side government and non-government organizations are doing many efforts to overcome these problems. The present study was undertaken with the objective to study the extent of utilization of protective measures by the slum women against domestic violence and the reasons for its non adoption.

RESEARCH METHODOLOGY

The present study was conducted in four slum areas of Udaipur city. From each selected area, 25 married women in the age group of 15-45 years were selected randomly to form a total sample of 100 women. Interview technique was used for data collection. The data collected from the respondents were scored, tabulated and analyzed by using frequency and percentage distribution and mean weighted scores.

RESULTS AND DISCUSSION

In the present investigation utilization of protective measures to combat domestic violence by the respondents were categories into two separate sections i.e. government measures and non government measures. The pertaining information is presented as under :

The information pertaining to the utilization of protective measures against domestic violence by the respondents presented in Table 1 reveals that none of the slum women was utilizing any of the

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Table 1: Extent of utilization of Government efforts against domestic violence by the slum women

n=100

S.No.	Protective measure	Extent of use			MWS
		Always %	Sometimes %	Never %	
1.	**Police help line-100**	0	0	100	0
2.	**Report to police (FIR)**				
	• Beating after alcoholism	4	9	87	0.17
	• Turned out from in-laws house	0	6	94	0.06
	• Illegal second marriage	2	0	98	0.04
3.	**Dowry Prohibition Act (1961)**				
	• Taking and demanding for dowry	1	3	96	0.05
4.	**Indian Penal Code (IPC)**				
	• Section 304 B- Dowry death	0	0	100	0
	• Section 498 A- Attempt to murder	0	0	100	0
	• Section 307 B-Harassment for dowry	4	0	96	0.08
	• Section 376 A-forcing a sexual relationship	0	0	100	0
5.	**Family Court Act (1984)**				
	• Divorce	3	0	97	0.09
	• Financial support	4	0	96	0.08
	• Void marriage	0	0	100	0
	• Custody of child	3	0	97	0.06

MWS = Mean Weightage Score

services provided under Police help line-100 and Domestic Violence Act (2005). There were very few respondents who lodged complaints at the police station when they were beaten by their husband after alcoholism, turned out from their in-laws house, illegal second marriage by husband, harassment for dowry, divorce, lack of financial support and custody of child as indicated by MWS ranging from 0.04-0.17.

With regard to utilization of non-government protective measures data in the Table 2 depict that none of the respondents reported to visit Mahila Salah evam Suraksha Kendra . However, there were 6 respondents who reported that they contacted Mahila Alpawas Grah for getting the shelter when they were turned out from their home and wanted to get job for their livelihood. During discussion it was found that when they were turned out from their home they got shelter at Mahila Alpawas Grah of Vidhya Bhawan Society, Udaipur and worked as maid servant in nearby areas and performed household chores like cleaning of utensils, brooming and taking care of children.

Findings are in line with results of a study conducted by Yugantar Education Society (2010) that majority of the respondents not reported for FIR to the police station and family court for legal advice and only 9 per cent women victims utilized the efforts of non

Table 2: Extent of utilization of non-government protective measures against domestic violence by slum women

n=100

S.No.	Protective measure	Extent of use			MWS
		Always %	Sometimes %	Never %	
1.	**Mahila Salah evam Suraksha Kendra**	0	0	100	0
2.	**Mahila Alpawas Grah**				
	" Shelter	6	0	94	0.12
	" Counseling	0	0	100	0
	" Skill development training	0	0	100	0
	" Medical care	0	0	100	0
	" Job and services	0	0	100	0

MWS = Mean Weightage Score

government organizations.

Table 3: Reasons for non-utilization of protective measures against domestic violence.

n=100

S.No.	Particulars	%
1.	Lack of knowledge/ information	52
2.	Financial problems	47
3.	Lack of support from relatives and friends	37
4.	Fear of husband and in-laws	30
5.	Distance location of organization	15

As indicated in Table 3 that majority of the respondents did not utilize any of the government and non-government organization's measures against domestic violence and the reasons reported by them were lack of knowledge/ information (52 %), financial problems (47 %), lack of support from relatives and friends (37 %), fear of husband and in-laws (30 %) and distant location of the government and NGOs (15%) as reported by the womens.

CONCLUSION

Thus, it can be concluded that the slum women were not utilizing most of the measures due to lack of knowledge, fear of in-laws and lack of support from relatives and friends, etc. Therefore, there is a need to make them aware about the issues and ways to overcome the problem of domestic violence.

REFERENCES

Yugantar Education Society. 2010. A study of nature, extent, incident and impact of domestic violence. *Gynaecology & Obstetrics Journal* **76**:83-85

United Nations Declaration on the Elimination of violence against women Newyork: United Nations General Assembly. 2002. Retrieve from hhtp:\\ daccessddsny.un.org/doc/UNDCO/ GEN/N94/05/PDF/N9409505 on October 20, 2013.

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MARKETING OF POULTRY AND POULTRY PRODUCTS IN RAJASTHAN

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ABSTRACT

The present investigation was carried out to observe the present status of poultry enterprise in Rajasthan state and marketing channels followed by poultry producers in marketing of their products in MPUAT service area and Ajmer district of Rajasthan during year 2018. The study was based on both primary and secondary data. The study has been shown that the total poultry population, egg production and poultry meat production in Rajasthan was noticeably increased from year after year might be due to high returns from poultry farms, implication of various government subsidiary policy schemes by the government of Rajasthan, awareness about employment generation from poultry and changing health diets of peoples. The most popular marketing channel in MPUAT service area was identified as channel-III (Producer-Wholesaler-Retailer-Consumer) for both broilers as well as eggs marketing, while in case of Ajmer district channel-V (Producer-Super market-Consumer) and channel-III (Producer-Wholesaler-Retailer-Consumer) has been found as best for broilers and eggs, respectively.

INTRODUCTION

India is one of the largest producers of poultry meat and eggs in the world. As India is the 3rd largest egg producer after China and USA with annual production of 82.93 billion eggs, further India is 7th largest chicken producer after China, USA, Indonesia, Brazil, Iran and Pakistan (Agricultural Statistics at a glance 2016, GoI). Currently the total poultry population in country is 729.21 million poultry birds (as per the 19th Livestock Census of India). In India out of total meat production, which is 4.7 million tonnes, poultry meat production is 3.26 million tonnes which is almost 47.05 per cent of total meat production in year 2016-17. Rajasthan ranks 14th in egg production and contributes 10 per cent of meat production in India. Rajasthan has 80.24 lakh poultry birds. There are total 20,000 poultry rearers in Rajasthan. From the livestock census 18th to 19th the per cent change in poultry bird's population is 60.69 per cent in Rajasthan. In view of the overwhelming importance of the poultry sector in devising the both rural and urban economy of Rajasthan, the present study has been undertaken to study "Marketing of Poultry and Poultry Products in MPUAT Service Area and Ajmer District of Rajasthan".

RESEARCH METHODOLOGY

The present investigation was conducted in MPUAT service area and Ajmer district of Rajasthan. It has been seen that most of large sized poultry farms viz., about 525 registered poultry farms are located in Ajmer district, while only one large and five small poultry farms are located in MPUAT service area. Ultimately two farms, one from small size and one from large size from both the areas have been selected for present study. The study was based on both primary and secondary data. Primary data about marketing channels followed by poultry producers in marketing of poultry products in MPUAT service area and Ajmer district of Rajasthan has been collected from four poultry farms selected for study in MPUAT service area and Ajmer district with the help of pre tested interview schedule. The secondary data on various aspects of poultry farming, bird population, egg and chicken production required for the study were obtained from various

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published and unpublished sources such as, library, reports, journals and official websites. There after data so collected were analysed, tabulated and resutls were discused.

RESULTS AND DISCUSSION

The livestock census wise poultry population of Rajasthan from the year 1951 to 2012 has been shown in Table 1. Table reveals that the population of poultry birds in Rajasthan state has been gradually increased from year 1951 to 2012 from 2.50 lacs in 1951 to 80.24 lacs in 2012, except during the year 2007. It might be due to the high incidence of disease in various areas of Rajasthan. There was a high increment in poultry population has been seen from year 2007 to 2012, might be due to high returns from poultry farms, implication of various government subsidiary policy schemes by the government of Rajasthan, awareness about employment generation from poultry and changing health diets of peoples.

Table 1: Poultry population of Rajasthan from year 1951 to 2012

Years	Population (in Lacs)	Percentage change(%)
1951	2.50	-
1956	4.60	84.00
1961	7.20	56.52
1966	8.70	20.83
1972	12.30	41.38
1977	15.90	29.27
1983	22.10	38.99
1988	25.00	13.12
1992	30.00	20.00
1997	44.00	46.67
2003	61.30	39.32
2007	49.93	-18.55
2012	80.24	60.70

Source: Agricultural Statistics at a Glance 2014

Year wise production, annual growth rate and availability of eggs in Rajasthan: Egg production in Rajasthan during the period between 1985-86 and 2016-17 has been presented in Table 2. Egg production has increased from 196.58 million numbers in 1985-86 to 1363.00 million numbers in 2016-17. Compound growth rate (CGR) in egg production was registered around 5.95 per cent (1985-86 to 2016-17). An extreme variation in the annual growth rate of egg production was observed during the period 1985-86 to 2016-17 which varied from -5.66 per cent in the year 2006-07 to 43.43 per cent in the year 2011-12. The per capita availability of egg during the period between 1985-86 and 2016-17 was observed increasing with fluctuations in few years. The per capita per annum availability of egg in the year 1985-86 was almost 5.14 numbers which has increased upto 19.20 numbers in 2016-17. There was continuous increase in the per capita availability of eggs but the per capita annual availability of eggs in Rajasthan is still lower than ICMR recommendation (180 eggs). Compound growth rate in per capita availability of eggs was found to be around 3.71 per cent (1985-86 to 2016-17).

Year wise production, annual growth rate of poultry meat in Rajasthan

The production, annual growth rate and compound growth rate in poultry meat production between the period 2007-08 to 2015-16 in Rajasthan has been shown in Table 3. Table reveals that the poultry meat production has been increased from 9.00 thousand tonnes in 2007-08 to 22.92 thousand tonnes in 2015-16. An extreme variation in the annual growth rate of poultry meat production was observed during the period 2007-08 to 2015-16 which varied from -62.68 per cent annual growth rate in the year 2012-13 to 124.26 per cent in the year 2015-16. Compound growth rate (CGR) was registered around 5.01 per cent (2007-08 to 2015-16).

Marketing channels in MPUAT service area: Marketing channels for broiler and eggs marketed by small and large broiler and layer producers in MPUAT service area has been shown in Figure 1.

Table 2: Year wise Production, Annual Growth Rate and Availability of Eggs in Raj.

Year	Eggs Production (Million No.)	Annual Growth Rate (%)	Per capita egg available (No./annum)
1985-86	196.58	-	5.14
1986-87	208.93	6.28	5.33
1987-88	213.72	2.29	5.32
1988-89	225.77	5.64	5.49
1989-90	230.00	1.87	5.47
1990-91	280.50	21.96	6.52
1991-92	316.67	12.89	7.20
1992-93	349.20	10.27	7.72
1993-94	395.70	13.32	8.51
1994-95	416.95	5.37	8.73
1995-96	436.39	4.66	8.91
1996-97	482.17	10.49	9.60
1997-98	503.66	4.46	9.78
1998-99	534.36	6.10	10.13
1999-2000	558.22	4.47	10.34
2000-01	571.53	2.38	10.35
2001-02	602.17	5.36	10.66
2002-03	635.91	5.60	11.02
2003-04	672.16	5.70	11.41
2004-05	693.26	3.14	11.53
2005-06	702.90	1.39	11.46
2006-07	663.10	-5.66	10.60
2007-08	673.09	1.51	10.56
2008-09	645.17	-4.15	9.93
2009-10	671.30	4.05	10.14
2010-11	669.70	-0.24	9.94
2011-12	960.54	43.43	14.00
2012-13	1033.49	7.59	14.80
2013-14	1190.17	15.16	16.75
2014-15	1320.20	10.93	18.27
2015-16	1385.00	4.91	19.00
2016-17	1363.00	-1.59	19.20
CGR (%)	**5.95****	**-**	**3.71****

** Significant at 1 per cent level
CGR = Compound growth rate
Source: Directorate of Animal Husbandry, Jaipur (Govt. of Rajasthan) from period 1985-86 to 2016-17

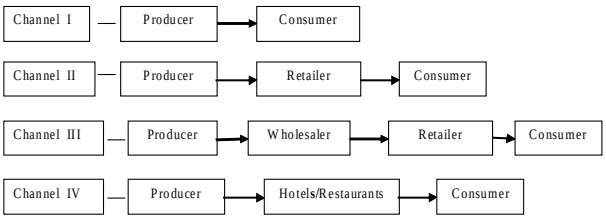

Fig. 1: Marketing Channels prevailing in MPUAT service area

The Figure 1 reveals that there were four marketing channels followed by broiler and layer producers for disposal of poultry products in market in MPUAT service area. The marketable surplus through different marketing channels for small and large size broiler farms and layers farms in MPUAT service area has been shown in Table 4 and Table 5, respectively. Data indicate that the percentage share of mortality and home consumption of broiler in total broiler production was found to be 8.21 and 5.88 per cent for small and large farms, respectively. Whereas in case of layer farms it has been found as less than one per cent of total production broken and consumed at home.

Channel - I (Producer-Consumer): The channel- I is popular among small farm size producers, who doesn't have transport and communication facilities. This channel had its operational economy because the marketing charges for various intermediaries were not involved which increased the producer's share in the price paid by the consumer. Table 4 and 5 reveals that the small and large size broiler unit holders of MPUAT service area sold on an average 25.98 per cent and 21.00 per cent of their products, respectively through this channel. While, the small and large layer unit holders sold 21.00 and 19.50 per cent eggs, respectively through this channel.

Channel - II (Producer-Retailer-Consumer): The small size broiler entrepreneur sold 25.77 per cent of broilers through channel-II (producer-Retailer-Consumer), while selling percentage for large size broiler entrepreneur was 26.00 per cent of broilers through this channel. In case of egg producer small unit holders sold 27.00 per cent of broilers through channel-II while, it was 23.03 per cent for large unit holders. In this channel producer

themselves look the retailing business and get higher profit. The average sale through retailer was 24.02 and 23.01 per cent.

Table 3: Year wise production and annual growth rate of poultry meat in Rajasthan

Years	Poultry Meat production (000 tonnes)	Annual growth rate (%)
2007-08	9.00	-
2008-09	9.58	6.44
2009-10	10.19	6.37
2010-11	15.21	49.26
2011-12	19.00	24.92
2012-13	7.09	-62.68
2013-14	9.06	27.78
2014-15	10.22	12.80
2015-16	22.92	124.26
CGR (%)	**5.01****	**-**

** Significant at 1 per cent level

CGR = Compound growth rate

Source: Department of Animal Husbandry, Dairying and Fisheries, 2015-16

Channel - III (Producer-Wholesaler-Retailer-Consumer) : The small size broiler unit holders sold 24.43 per cent of broilers and large size broiler entrepreneur sold 30.99 per cent of total broilers through channel-III. Whereas, the small size layer unit holders sold 26.00 per cent and 37.03 per cent of eggs were sold by large unit layer holders through channel-III. All the large size of layer and broiler farms prefers this channel due to marketing burden, used market and timely payment facility.

Channel - IV (Producer-Hotels/restaurants-Consumer): The small size broiler unit holders sold 22.01 per cent and large size of broiler entrepreneurs sold 22.27 per cent of total broilers through this channel. In case of layer farms small unit holders sold 26.00 per cent and large size unit holders sold 20.44 per cent eggs through channel-IV.

Marketing channels prevailing in Ajmer district: The marketing channels prevailing in Ajmer district for small and large poultry farms has been presented in Figure 2. The figure shows that poultry producers of Ajmer district have been found to adopt five marketing channels for disposal of their poultry products from their farms to consumers.

Channel I : The marketable surplus through different marketing channels for small and large size broiler farms in Ajmer district of Rajasthan has been shown in Table 6. Likewise the Table 7 shows the

Table 4: Marketable surplus and marketing of broiler in different marketing channels in MPUAT service area

Size of broiler farms	Total no. of broiler/ Cycle /Farm	Mortality & Home Consumption of broiler	Marketing channels				Broiler marketed
			I	II	III	IV	
Small	1,050	80 (8.24)*	252.00 (25.98)	237.00 (25.77)	250.00 (24.43)	231.00 (23.82)	970 (100.00)
Large	6,300	350 (5.88)*	1,249.00 (21.00)	1,547.00 (26.00)	1,844.00 (30.99)	1,310.00 (22.01)	5,950 (100.00)
Average	3,675	215 (6.21)*	750.50 (21.69)	892.00 (25.78)	1,047.00 (30.26)	770.50 (22.27)	3,460 (100.00)

Figures in parentheses indicates percentage share in total broilers marketed

*Percentage of total broiler production mortality and home consumption

Table 5: Marketable surplus and marketing of layer egg in different marketing channels in MPUAT service area

Size of layer farms	Small	Large	Average
Total no. of layers/ farm	4,200	9,450	6,825
No. of eggs produced/birds /year	280	284	282
Total no. of eggs produced/farms	1,176,000	2,683,800	1,929,900
Broken & Home Consumption of eggs	6,000 (0.51)*	10,000 (0.37)*	8,000 (0.41)*
Marketing Channels I (P-C)	245,750.00 (21.00)	521,150.00 (19.50)	383,450.00 (19.95)
II (P-R-C)	315,870.00 (27.00)	615,700.00 (23.03)	465,785.00 (24.24)
III (P-W-R-C)	304,220.00 (26.00)	990,250.00 (37.03)	647,235.00 (33.67)
IV (P-H/R-C)	304,160.00 (26.00)	546,700.00 (20.44)	425,430.00 (22.14)
Eggs marketed	1,170,000 (100.00)	2,673,800 (100.00)	1,921,900 (100.00)

Figures in parentheses indicates percentage share in total eggs marketed

*Percentage of total eggs production broken and consumed at home

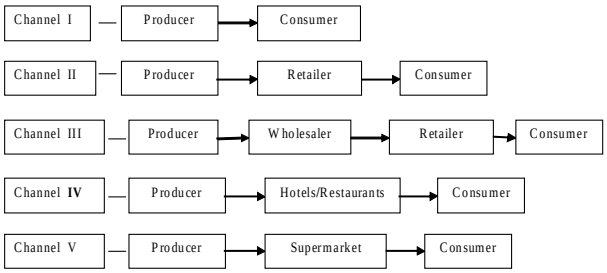

Fig. 2: Marketing Channels prevailing in Ajmer District

marketable surplus through different marketing channels for small and large size layer farms. In Ajmer district the average percentage share of mortality and home consumption of broilers was calculated as 9.65 per cent, while in case of egg production it was found to be less than one.

Channel - I (Producer-Consumer): In Ajmer district, this channel was not as popular as in MPUAT service area among both small and large broiler and layer. This channel had its operational economy because the marketing charges for various intermediaries were not involved which increased the producer's share in the price paid by the consumer. Table 6 shows that from the total broilers 16.13 per cent broilers have been sold through channel-I (Producer) by small broiler unit holders. While, the table 7 shows that the large size broiler unit entrepreneurs sold 8.62 per cent broilers through this channel. In case of small size layer unit holders 25.00 per cent eggs sold through channel-I while, it was 15.00 per cent for large unit holders.

Channel - II (Producer-Retailer-Consumer): The small scale broiler unit holders sold their 21.50 per cent broilers through channel-II. Whereas, the large scale broiler entrepreneurs sold 17.24 per cent broilers through this marketing channels. In Ajmer district the small scale layer unit holders sold 21.06 per cent eggs through channels -II. While, the large scale layer unit holders sold 20.00 per cent eggs through this marketing channel.

Channel - III (Producer-Wholesaler-Retailer-Consumer): The small size broiler entrepreneur sold 26.88 per cent of broilers through channel-II (producer-Wholesaler-Retailer-

Table 6: Marketable surplus and marketing of broilers in different marketing channels in Ajmer district

Size of layer farms	Small	Large	Average
Total no. of broiler/Cycle/farm	1,050	6,300	3,675
Mortality & Home Consumption of broiler	120(12.90)*	500(8.62)*	325(9.65)*
Marketing Channels I	150.00(16.13)	500.00(8.62)	325.00(9.66)
II	200.00(21.50)	1,000.00(17.24)	600.00(17.84)
III	250.00(26.88)	1,500.00(25.86)	875.00(26.01)
IV	150.00(16.13)	1,200.00(20.69)	675.00(20.01)
V	180.00(19.36)	1,600.00(27.59)	890.00(26.45)
Broiler marketed	930(100.00)	5,800 (100.00)	3,365(100.00)

Figures in parentheses indicates percentage share in total broilers marketed

*Percentage of total broiler production mortality and home consumption

Table 7: Marketable surplus and marketing of layer egg in different marketing channels in Ajmer district.

(Figures in No.)

Size of layer farms	Small	Large	Average
Total no. of layers/ farm	4,200	9,450	6,825
No. of eggs produced/birds /year	285	290	287.50
Total no. of eggs produced/farms	1,197,000	2,740,500	1,968,750
Broken & Home Consumption of eggs	10,000 (0.84)*	12,000 (0.44)*	11,000 (0.56)*
Marketing Channels I	296,750.00 (25.00)	409,275.00 (15.00)	353,012.50 (18.03)
II	250,000.00 (21.06)	545,700.00 (20.00)	397,850.00 (20.32)
III	237,400.00 (20.00)	682,125.00 (25.00)	459,762.50 (23.48)
IV	1,75,000.00 (14.74)	463,845.00 (17.00)	319,422.50 (16.32)
V	227,850.00 (19.20)	627,555.00 (23.00)	427,702.50 (21.85)
Eggs marketed	1,187,000 (100.00)	2,728,500 (100.00)	1,957,750 (100.00)

Figures in parentheses indicates percentage share in total eggs marketed

*Percentage of total eggs production broken and consumed at home

Consumer) while selling percentage for large size broiler entrepreneur was 25.86 per cent of broilers through this channel. In case of egg producer small unit holders sold 20.00 per cent of broilers through channel-II while, it was 25.00 per cent for large unit holders.

Channel - IV (Producer-Hotels/restaurants-Consumer): The small size broiler unit holders sold 16.13 per cent of broilers and large size broiler entrepreneur sold 20.69 per cent of total broilers through channel-III. Whereas, the small size layer unit holders sold 14.74 per cent and 17.00 per cent of eggs were sold by large unit layer holders through channel-IV.

Channel - V (Producer-Supermarkets-Consumers): The small size broiler entrepreneur sold 19.36 per cent of broilers through channel-II (producer-Wholesaler-Retailer-Consumer) while, selling percentage for large size broiler entrepreneur was 27.59 per cent of broilers through this channel. In case of egg producer small unit holders sold 19.20 per cent of broilers through channel-II while, it was 23.00 per cent for large unit holders.

CONCLUSION

The poultry bird population, egg and poultry meat production and per capita availability of eggs has been found to gradually increase from year after year in Rajasthan state. The most popular marketing channel in MPUAT service area was identified as channel-III (Producer-Wholesaler-Retailer-Consumer) for both broilers as well as eggs marketing, while in case of Ajmer district channel-V (Producer-Super market-Consumer) and channel-III (Producer-Wholesaler-Retailer-Consumer) has been found as best for broilers and eggs, respectively.

REFERENCES

Ahmad, H. S. and Hakim, I. A. 2010. Economics of Broiler Marketing in Allahabad District of Uttar Pradesh. Agriculture update, **5**:375-379.

Ali, 2007. Livestock Sector Development and Implications for Rural Poverty Alleviation in Indian Institute of Management, Lucnow, UP (India). *Livestock Research for Rural Development* **19**:19-27.

Chatterjee, R. N. and Rajkumar, U. 2015. An Overview of Poultry Production in Rajendranagar district of Hyderabad. *Indian Journal of Animal Health* **52**: 89-108.

Hegde, G. 2013. Study on socio-economic status and effect of various managemental practices on the production performance of commercial broilers. *Asian journal of Animal Sciences* **8**: 92-99.

Shrivastava, A. 1997. Economics of Poultry Production and Marketing in Jabalpur district (M.P.). Report of Agricultural Economic Research Center, J.N.K.V.V. Jabalpur.

Singh, S. and Kaur, P. 2016. Marketing of Broilers in Ludhiana District of Punjab. *Indian Journal of Economics and Develpoment* **12**:117-122.

Thakur, D., Sharma, A. K., Ravikumari, R. K.and Shivani Katoch 2012. Status of Backyard Poultry Farming in Chamba District, Himachal Pradesh (India). *Indian Journal of PoultryScience* **47**: 102-105.

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PREFERENCE OF POST-CONSUMER TEXTILE WASTE DISCARDING CHANNEL AMONG WOMEN

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ABSTRACT

The present research paper studied channel preference for discarding Post-consumer Textile waste (PCTW) along with the frequency of discarding and factors affecting discarding PCTW among women. Various preference channels like resale, donation, passing on, throwing, dumping and swapping for discarding post-consumer textile waste were analyzed. Self-structured interview schedule was used for data collection. A sample of 200 working women of Udaipur city was selected through purposive random sampling technique. The findings of the present study revealed that six channels were identified as always available to manage unwanted clothes: Resale (2.92%), Donation (16.33%), Pass-on (24.38%), and Swapping (4.75%), whereas Disposal (24.75%) and Destruction (15%) were sometimes selected as preferring channel for discarding PCTW. Majority (87%) always discarded as per the convenience of time.The respondents were of the opinion that psychological and sentimental values always prompted them to discard PCTW. It was summarized that irrespective of demographic profile donation and passing on were the most preferred discarding channels.

INTRODUCTION

Post-consumer textile waste can be discarded through two different redistribution channels - direct or indirect. Direct redistribution refers to hand-me-downs, the passing-on of unwanted items to individuals without monetary gains, while the indirect redistribution refers to any form of charity without monetary gains. Rented shops, resale of clothes are an example of direct channel of redistribution with monetary gains, while second-hand retailers, Sunday markets etc. are examples of indirect redistribution with monetary gains. Birtwistle and Moore (2007) found that young respondents were more likely to retain expensive clothing for longer and then eventually donate it to charity, while cheap clothing were more likely to be worn a few times and just thrown out. In some cases garments were so inexpensive, that it is possible to purchase a piece of clothing for the same amount as a bottle of water or soda. Low prices stimulate consumption and today's race to the bottom prices have triggered a shopping frenzy, where clothing consumers were buying, storing and throwing out millions of garments each year (Cline, 2012). The objective of the study is to find out the preference channel for discarding Post-Consumer Textile Waste (PCTW) and to study the preferred frequency parameters of discarding textile waste.

RESEARCH METHODOLOGY

To collect desired information about factors responsible for discarding Post- consumer textile waste by consumers, 200 urban women were selected through purposive random sampling technique. A four point rating scale was developed in consultation with the subject matter specialists and after extensive review of available literature. The statements were made short and clear in order to ensure that it should be understood by respondents.

RESULTS AND DISCUSSION

The respondents were studied for the age, education, and family structure and awareness about PCTW.

Age: The data in Table 1 show that majority (35%) of respondents were in the age group of 40-50 years, 22.5 per cent were between the age group

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Table 1: General information of the respondents

n=200

Aspects	Categories	Frequency	Per centage
Age (in Years)	20-30	15	07.50
	30-40	45	22.50
	40-50	70	35.00
	50-60	45	22.50
	Above 60	25	12.50
Family Structure	Nuclear	80	40.00
	Joint	120	60.00
Education	Up to graduate	35	17.50
	Above graduate	165	82.50
Aware about Reusing	Yes	175	87.50
Textile Waste	No	25	12.50

of 30-40 years and 22.5 per cent of them were in the age group of 50-60 years.

Family Structure: Table 1 illustrates that 60 per cent respondents belonged to joint family and remaining 40 per cent were from nuclear family.

Education: The data in Table1 brings to light that 17.5 per cent respondents had education upto graduate level, 82.5 per cent respondents were post graduate and had other higher degrees. The literacy rate among the respondents was reasonably good.

Awareness about Reusing Textile Waste: Majority of the respondents (87.5 %) were aware about Reusing of Textile Waste and 12.5 per cent were not.

Table 2: Percentage distribution of Channel Preference for discarding PCTW

n=200

Channels	Always	Often	Sometimes	Rarely
Resale	2.92	5.83	18.25	73.00
Donation	16.33	23.83	38.50	21.33
Passing- on	24.38	21.50	14.50	39.63
Disposal	0	1.75	24.75	73.5
Destruction	0	10	15	75
Swapping	4.75	4.25	9	82

Respondents have various choices for discarding PCTW like resale, donation, disposal, destruction and swapping. It is evident from Table 2 that respondents rarely prefer resale (73 %), donation (21.33%) passing on (39.63%), disposal (73.5%), destruction (75%) and swapping (82%). Nearly one fourth of the respondents reported that they always prefer passing on clothes to relatives, siblings and friends. Likewise, 4.75 per cent respondents prefer always swapping.

Table 3: Percentage distribution of selected 'Resale' channels to discard PCTW

n=200

Resale channels	Always	Often	Sometimes	Rarely
Online	0	0	0	100
Individual person	10	13	63	14
Local vendors	7.5	22	43	27.5
National vendors	0	0	3.5	96.5
International vendors	0	0	0	100
Directly to local industries	0	0	0	100

It is evident from the data that 100 per cent respondents never sell disposed clothing to international vendors, online or directly to local industries. Adding on 63, 43, and 3.5 per cent respondents, respectively commented that they rarely sell disposed clothing to individuals, local or national vendors. Only 10 and 7.5 per cent respondents were of the opinion that they always sell disposed clothes to individuals or local vendors.

Table 4: Percentage distribution of selected 'donation' channels to discard PCTW

n=200

Donation channels	Always	Often	Sometimes	Rarely
Individuals in need / beggars	35	45	11.5	8.5
Institutions/ charity (NGOs)/ orphanage house	11	23	45	21
Municipality/ government	3	3.5	59	34.5

It was observed from the Table 4 that 45 and 35 per cent respondents, respectively often and always donate textiles to individuals in need or beggars, while 11 per cent respondents always donated to institutions, charities and orphanage houses. Also it was clear that only 3 and 3.5 per cent respondents donate textiles to municipality or government agencies. Nonetheless, donation is the channel with the least overall barriers. Respondents appreciated the initiative like 'NekikiDiwaar' for donation with respect, where anybody can donate unwanted clothes and other things and any needed person can take from that wall in Bhilwara and Udaipur cities of Rajasthan. Study done on donations reported that increased fashion consumption and consequently increased clothing disposal are linked to intensifying the landfill problems and pose challenges for charity shops. As Morgan and Birtwistle (2009) report, many charity shops in the UK have reached their saturation point. Exporting more second-hand clothing to the developing world cannot be simply understood as altruistic acts but also as passing on the responsibility of waste management.

Table 5: Percentage distribution of selected 'Passing-on' to discard PCTW

n=200

Passing-on channels	Always	Often	Sometimes	Rarely
Relatives	13	13	14	60
Friends	9.5	11	11	68.5
Maids/ servants	59	39	2	0
Siblings	16	23	31	30

Table 5 reveals that maid/servants is the most preferable option (59%) for passing on PCTW while 60, 68.5 and 30 per cent respondents, respectively reported that they never gave away their disposed clothes to relatives, friends or siblings whereas, 23 per cent respondents said that they gave their discarded clothes to siblings.

Table 6: Percentage distribution of selected 'disposal' channels to discard PCTW

n=200

Disposal channels	Always	Often	Sometimes	Rarely
Garbage/ dustbin	0	3	32	65
On roads	0	0	42	58
Open areas	0	4	13	83
Water bodies like rivers, lake, etc	0	0	12	88

Table 6 depicts different throwing pattern of PCTW among respondents. It was observed that most of the respondents (65%, 58%, 83%, 88%) never throw away textiles in garbage, on roads, in open areas and in water bodies. Whereas, 2 and 42 per cent respondents rarely throw textiles in

garbage or on roads. This makes it clear that most of the respondents were aware about the harmful effects of directly throwing away fabrics. Most of the apparels thrown in water bodies have some religious and sentimental value as per discussion with the respondents.

Table 7: Percentage distribution of selected destruction channels to discard PCTW

n=200

Destruction channels	Always	Often	Sometimes	Rarely
Burn	0	13	24	63
Buried / composting	0	7	6	87

It is implicit that majority of the respondents (63% and 87%) rarely burn or buried PCTW however, 13 and 7 per cent respondents often burn and bury discarded fabrics. It is also stated that the study of consumers' motives for disposing of unwanted clothes, especially as garbage disposal, certainly is a sensitive topic. Laitala and Klepp (2011) reported, only very few respondents admitted to throw their old clothes into the garbage.

Table 8: Percentage distribution of selected 'swapping' channels to discard PCTW

n=200

Swapping channels	Always	Often	Sometimes	Rarely
Street vendors	0	8	8	84
Online Exchange offers	0	5	2	93
Shops	0	1	3	96
Home vendors	19	3	23	55

Data in Table 8 clearly show that 19 per cent respondents always swap textiles with home vendors in exchange of other commodities whereas, 84, 93 and 96 per cent respondents were of the opinion that they rarely involved in swapping with street vendors, shops and online exchange offers. Home vendors include individuals that trade goods in exchange of old clothes, locally tagged as 'Bartanwaali'.

The low involvement in swapping could lead to the assumption that swapping is the new solution to manage textile waste. Thus, while swapping might be a new way to manage unwanted clothing, a lot is required to be done as respondents have shown lack of awareness and participation in the same. Certain swap events where people come together and exchange textiles could be organized.

Table 9: Percentage distribution of preferred frequency parameters to discard PCTW

n=200

Parameters	Always	Often	Sometimes	Rarely
Time wise	11	7.4	4.6	77
Season wise	34	23	34	9
Occasion wise	11	17.5	5.5	66
Age wise	11	7.4	4.6	77
Gender wise	10	13	43	34
Situation wise	34	45	17	4
Convenient time wise	87	13	0	0

Data in Table 9 reveal that 77, 9, 66, 77, 34, and 4 per cent respondents, respectively never discard their clothes time wise, season wise, occasion wise, age wise, gender wise and situation wise, 34 per cent of respondents always discard their textiles season wise and situation wise, 87 per cent respondents reported that they always discard their clothes on the convenience of time. Very few respondents discarded the textiles often (7.4%) time wise and situation wise. Discarding of textiles was always done time wise, occasion-wise and age wise by 11 per cent respondents. Respondents remarked that they prefer discarding mostly when the wardrobes were overcrowded and they were less on space. It was also remarked that respondents preferred discarding mostly when the wardrobes

were overcrowded. Similar facts were studied by Domina and Koch (2001) that consumers change their disposal behaviour when they have a lot of clothing to dispose of versus a few pieces. The volume can highly influence a person's behavior.

CONCLUSION:

The study on preference of channel selection for discarding PCTW among women of Udaipur identified six different discarding channels which were Resale (2.92%), Donation (16.33%), Pass-on (24.38%), Swapping (4.75%), Disposal (24.75%) and Destruction (15%).

Most of the respondents (87%) preferred frequency parameter of discarding as per the convenience of time. Ekström and Salomonson (2014) suggested that both clothing and textile, reuse and recycling were under-researched areas and that more information was needed on how reusing and recycling could be utilized by different stakeholders in society.

REFERENCES

Birtwistle, G. & Moore, C. 2007. Fashion clothing-where does it all end up? *International Journal of Retail & Distribution Management* **35**: 210-216.

Domina and Koch.2001.The Textile recycling, convenience and the older adult. *J Fam Res consumer science* **93**: 35-40.

Ekström, K. M., & Salomonson, N. 2014. Reuse and Recycling of Clothing and Textiles-A Network Approach. *Journal of Macro-marketing* **34**(3): 383-399.

Morgan and Birtwistle. 2009. An investigation of young fashion consumers disposal habits. *International journal of consumer studies* **33**(2): 190-198.

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ENTREPRENEURIAL ATTRIBUTES OF AGRI-PRENEURS OF UPPER BRAHMAPUTRA VALLEY ZONE OF ASSAM

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ABSTRACT

The study was undertaken to assess the entrepreneurial attributes of Agri-preneurs in three districts namely Jorhat, Golaghat and Dibrugarh of UBVZ of Assam. Purposive and random sampling technique was followed. A total of 186 respondents were selected for conducting the study. The results revealed that majority of the Agri-preneurs were first generation entrepreneurs having 7-20 years of experience and married. Majority of them spent 5-8 hours in their enterprises and also they were located in rural areas. Their sources of finance was own and sources of borrowings were from co-operative banks. The study revealed that 38.17 per cent of the respondents had undertaken "food processing" as their type of Agri-business followed by 29.03 per cent respondents who had taken up "animal rearing or livestock" as their type of Agri-business. It was seen that 20.43 per cent respondents who had "crop production" as their type of Agri-business whereas 13.97 per cent respondents had "cane products" as their type of Agri-business. 5.91 per cent respondents had "milling" Agri-business followed by 5.38 per cent respondents having "nursery" Agri-business, 4.31 per cent respondents had "Vermi-composting/ organic farming" Agri-business type, 3.23 per cent respondents had "fishery" Agri-business and the remaining 0.54 per cent respondents had "bee-keeping" as their Agri-business.

INTRODUCTION

India, after independence witnessed rapid growth in agro processing sector specifically during 1980s. The first phase Green Revolution had resulted in increased agricultural production and the need for its post harvest management. The importance of the sector was realized by the business community leading to diversification from grain trading to processing. With the passage of time modern agro industries sprang up in different parts of the country.

With the increase in agricultural production, there is a need to have proportionate growth in the agro-processing industry. It is that industry which does value addition to agricultural raw material through processing in order to produce marketable and usable products that help producers to draw profits from and also generate additional income. The agro-entrepreneurs play a significant role in not being themselves the establishers of new ventures but also provide employment to many by creating jobs. The term "agri-preneur" can be defined as an entrepreneur who undertakes agriculture and agriculture related activities as their main business.

This study had been aimed at understanding the entrepreneurial attributes among agro-entrepreneurs. It also enabled to provide the details of the constraints faced by them.

RESEARCH METHODOLOGY

The present study was conducted in three districts of Assam namely Jorhat, Dibrugarh, Golaghat. A purposive and random sampling design was followed for selection of respondents The selected districts have more number of registered Micro Small Medium Enterprise (MSME) units as compared to other districts in the upper Brahmaputra valley zone. So, it is felt that these districts are ideally suited for a study on entrepreneurship.

According to the Commissionerate of Industries and Commerce, Assam the three districts *viz.*, Dibrugarh, Golaghat and Jorhat had 155, 112 and 103 number of unit registered from the year 2009-

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12, respectively (Economic Survey, Assam, 2012-13). From, each district 50 per cent of each of the owner names of registered unit was selected for the purpose of study i.e., 78, 56 and 52, respectively. Thus, to obtain information and response for the present study, 186 Agri-preneurs were selected.

In order to assess the factors of motivating, structured schedule was prepared. The responses to the questions were properly analyzed, coded and worked properly. The responses were ranked on the basis of frequency and percentage of the respondents. 10 (Ten) variables were selected for the present study.

RESULTS AND DISCUSSION

Table 1 reveals that 80.64 per cent respondents were first generation entrepreneurs, followed by 11.29 per cent respondents having their parents as entrepreneur and 8.07 per cent respondents have their in-laws as entrepreneurs. This may be due to the reason that many individuals are taking up the agro business as a source of their income so that they do not have to rely solely on their parents' income. But few are still taking up ventures left behind by their parent generation. The data revealed that majority (93.02%) of the respondents were married and 6.98 per cent respondents were widow.

The study further reveals that 15.05 per cent of respondents had "less than 7 years" experience of in their enterprise, however, on the other hand, 54.83 per cent respondents had "7 to 20 years of experience" and 30.12 per cent respondents had "above 20 years" of experience in their enterprise. This may be due to the fact that years of experience had a positive effect on the individual's performance in his or her enterprise. These findings are supported by the findings of Gimeno *et al.* (1997). It can also be seen that 90.86 per cent respondents received support from their respective family members, whereas 9.14 per cent of the respondents did not receive any support from their respective family.

The data further show that 11.82 per cent respondents spent upto 4 hours in their enterprise, 55.92 per cent respondents spent upto 5 to 8 hours, 26.34 per cent respondents were involved in their enterprise between 9 to 13 hours and 5.92 per cent respondents spent above 12 hours. It is clear that majority of the respondents (55.92 %) spent a fair amount of time in their enterprise. This may be due to the reason that enterprises needed regular monitoring and balance of related activities and they are taking it as a prime source of income. It also was found that majority of the respondents (78.49%) had annual income ranging between Rs. 166882- Rs. 329665 followed by 17.21 per cent of the respondents having an annual income of more than Rs. 329665; only 4.30 per cent had low level of annual income less than Rs. 166882.

The study also reveals that 86.03 per cent respondents' enterprise were from rural areas, whereas 13.97 per cent respondents have urban location. It can be observed from Table 1 that majority (63.97%) of the respondents had medium level of marketing orientation followed by 21.52 per cent respondents had high and 14.51 per cent of them had low level of marketing orientation. This may be due to the fact that the study area is less exposed to better marketing facilities based on product requirement.

The data presented in Table 1 also show that majority (83.87%) of the respondents had low level of management orientation and the rest 16.13 per cent respondents had medium level of management orientation. This may be due to the fact that the respondents have not received any advanced training based on their area of specification or may be they are not able to receive any assistance from reputed organization as demanded by nature of work. Majority 94.08 per cent of respondents had medium level of entrepreneurial motivation followed by 3.24 per cent of respondents having high level of entrepreneurial motivation and only 2.68 percent of respondents having low level of entrepreneurial motivation.

Distribution of the respondents according to their business characteristics: The study reveals that 38.17 per cent of the respondents had undertaken "food processing" as their type of Agri-business followed by 29.03 per cent respondents

Table 1: Profile of Agri-preneurs

(n=186)

S. No.	Variable	Frequency	Percentage
1	No. of generation as entrepreneur		
	a) First Generation Entrepreneur	150	80.64
	b) Parents as Entrepreneur	15	11.29
	c) In-laws as Entrepreneur	21	8.07
2	Marital status		
	a) Married	173	93.02
	b) Widow	13	6.98
3	Experience in the enterprise		
	a) Less than 7 years	28	15.05
	b) 7 to 20 years	102	54.83
	c) More than 20 years	56	30.12
4	Family member's support		
	a) Yes	169	90.86
	b) No	17	9.14
5	Time spent in the enterprise		
	a) Upto 4 hours	22	11.82
	b) 5 to 8 hours	104	55.92
	c) 9 to 12 hours	49	26.34
	d) Above 12 hours	11	5.92
6	Annual income		
	a) <Rs.166882	8	4.30
	b) Rs.166882-Rs.329665	146	78.49
	c) >Rs.329665	32	17.21
7	Location		
	a) Rural	160	86.03
	b) Urban	26	13.97
8	Marketing orientation		
	a) Low (<16)	119	14.51
	b) Medium (16 to 20)	27	63.97
	c) High (>20)	40	21.52
9	Management orientation		
	a) Low (<31)	156	83.87
	b) Medium (31 to 38)	30	16.13
10	Entrepreneurial motivation		
	a) Low (< 49)	5	2.68
	b) Medium (49 to 64)	175	94.08
	c) High (>64)	6	3.24

who had taken up "animal rearing or livestock" as their type of Agri-business. It was seen that 20.43 per cent respondents who had "crop production" as their type of Agri-business where as 13.97 per cent respondents had "cane products" as their type of Agri-business. 5.91 per cent respondents had "milling" Agri-business followed by 5.38 per cent respondents having "nursery" Agri-business, 4.31 per cent respondents had "Vermi-composting/ organic farming" Agri-business type, 3.23 per cent respondents had "fishery" Agri-business and the remaining 0.54 per cent respondents had "bee-keeping" as their Agri-business (Table 2).

Table 2: Distribution of the respondents according to their business characteristics

(n=186)

S. No.	Type of Agri-business	Cumulative Frequency	Percentage
1.	Food processing	71	38.17
2.	Animal rearing/ livestock	54	29.03
3.	Crop production	38	20.43
4.	Cane products	26	13.97
5.	Milling	11	5.91
6.	Nursery	10	5.38
7.	Vermi composting	8	4.31
8.	Fishery	6	3.23
9.	Bee keeping	1	0.54

The findings shows that Agri-business taken up by agri-preneurs under food processing comprised mainly of pickle making, bread making, preparation of jam and jellies and preparation of other snacks as well like cookies, biscuits and cakes, preparation of vegetable oil, processing of spices *viz.*, turmeric and processing of chickpea. In case of animal rearing or livestock; dairy, goatery, poultry, duck rearing and piggery were included. Crop production included production of different vegetables, rice and tea enterprise. Under cane products preparation of various items from miniature show pieces to furniture

Table 3: Rank wise distribution of the constraints faced by agri-preneurs

(n=186)

S. No.	Statement	Cumulative Frequency	Percentage	Rank
1	Lack of capital	102	54.83	I
2	Lack of marketing facilities	85	45.69	II
3	Lack of government assistance in terms of need based trainings	75	40.32	III
4	Lack of knowledge about proper techniques of marketing	72	38.70	IV
5	Lack of adequate knowledge on use of inputs such as seed material, fertilizer doses, etc	64	34.40	V
6	Non availability of water filtration	58	31.18	VI
7	Lack of equipments such as pump sets and other equipments required for irrigation	53	28.49	VII
8	Lack of access to raw materials and labour at proper time	44	23.65	VIII
9	Interruption of power supply	31	16.66	IX
10	Lack of awareness of different schemes availed for entrepreneurs	25	13.44	X

was included. Under the nursery type of Agri-business, flowers, aromatic and medicinal plants were produced commercially. Rice mills, both wheat flour mill and gram flour mill and saw mills came under the milling Agri-business. Vermi composting included both Vermi compost and Vermi wash. The reason that more number of respondents is involved in food processing Agri-business as compared to other Agri-business may be due to easy access and availability of raw materials. Also food-processing units may be set up easily in the part of the house itself thereby saving time and cost of transportation.

Constraints faced by agri-preneurs: It can be seen from the Table 3 that "lack of capital" (54.83%) ranked first. This result is in line with the result of Lee-Gosselin and Grise (1990), as cited in Maysami *et al*. (1999) found that in general, the most common start-up problems seem to be lack of capital and Chu *et al.* (2008) who reported that without adequate capital, the success and growth of their business is limited and also in line with Benzing *et al.* (2005) who stated that the difficulty in obtaining capital is a problem for owners of most small and medium size enterprises operating in developing and transition economies. "lack of marketing facilities" with a percentage of 45.69 which ranked second followed by "Lack of government assistance in terms of need based trainings" (40.32%) which was ranked third. Lack of knowledge about proper techniques of marketing (38.70%) ranked fourth. "Lack of adequate knowledge on use of inputs such as seed material, fertilizer doses, etc" (34.40%) ranked fifth followed by "non availability of water filtration" (31.18%) which ranked sixth. "Lack of equipments such as pumps sets and other equipments required for irrigation" (28.49%) ranked seventh, "lack of access to raw materials and labour at proper time" (23.65%) ranked eighth, "interruption of power supply" (16.66%) ranked ninth followed by "lack of awareness of different schemes availed for entrepreneurs" (13.44%) which ranked tenth.

CONCLUSION

It is expected that the present study will help the planner, policy maker, trainer and field functionaries in formulating and modifying policies for improvement and development of entrepreneurial motivation of the Agri-preneurs of Assam. The entrepreneurial motivation is a combination of various factors which can be improved with the help of extension education. Factors like marketing orientation and management orientation are

psychological terms which come under extension science. If the number of agri-preneur increases in the state, the production and productivity will surely increase. With more agro-based production there is a possibility to meet the increasing demand in the country. So, it is necessary to adopt more extension strategies for improvement of entrepreneurial motivation of agri-preneurs in Assam.

REFERENCES

Benzing, C. and Chu, H.M. 2005. Entrepreneurial Behavior in Andhra Pradesh, India, Proceedings of the Association of Global Business 2005, Miami Beach, Florida.

Chu, H.; Kara, O. and Benzing, C. 2008. An empirical study of Nigerian entrepreneurs: Success, motivations, problems, and stress. *Intern. J. Bus. Res.* **8**(2): 102-116.

Gimeno, J.; Folta, T.B.; Cooper, A.C. and Woo, C.Y. 1997. Survival of the fittest? Entrepreneurial human capital and the persistence of underperfoming firms. *Admnst. Sci. Quart.* **42**: 750-783.

Lee-Gosselin and Grise 1990. As cited in Maysami, Cooper *et al*. 1999. Female business owners in Singapore and Elsewhere: A review of studies. *J. Small Bus. Mngt.* **37**(1).

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EMPOWERING RURAL WOMEN THROUGH FASHION AWARENESS AND SKILL UPGRADATION

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ABSTRACT

Empowering of women to enable them for gainful participation across all sectors is a prerequisite to develop stronger economies. It helps women to attain some leverage from the demoralizing attitude of the society and the social and economic discrimination faced by them. There are various sectors in which the Government is trying to promote entrepreneurship and self employment for rural women. One of the sector in which women can be successfully involved is the garmenting sector. There are ample employment opportunities for rural women in garment and craft sector. The need is to empower them with appropriate skills to make them competitive and contemporary in terms of product designing and production. The present study is an attempt to identify the fashion awareness, buying behavior and appropriateness of skill upgradation program for vocational training of participants in District Amritsar.

INTRODUCTION

"Empowerment of women is essential for an empowered and stable society" said Dr. A P J Abdul Kalam. Women are an extremely important force in a society for the development of the base unit of society which is a family. Their empowerment in terms of literacy as well as economic freedom helps them attain a social and economic standing in the society and frees them from discrimination on various fronts. The training provided for empowerment also allows them to unleash their potential in terms of skills and capabilities in order to help them become more capable of taking their own decisions for the benefit of their family and themselves. The skill development programs enable them to have increased earning potential by creation of employment opportunities, increase their productivity and show them an alternative source of supplementary family income.

Fashion is an extremely powerful form of talent with a global impact. It has its origin in the creative spirit of an individual and allows expression of uniqueness for an individual. It is an industry which does not have barriers of scale and can be successfully taken up from micro to large scale level depending on the individual requirement and potential. The field has got potential for creative manifestation, and unites different cultures and traditions. It is an important platform to promote social change and acceptance in the society. The field is suitable for women as it does not have the restriction of time and efforts and the achievement level depends on the individual performance. It is also a field which permits rural women to spend their free time in, after fulfilling their family responsibilities. Even with such flexibility, the endeavor in this field helps women attain economic independence and improved social status.

The study on empowerment of rural women through fashion awareness and skill up gradation was undertaken with the following objectives:

1. To identify the fashion awareness and adoption level among rural women.
2. To study the effectiveness of training and challenges faced by the rural women.
3. To understand the barriers to gainful employment in field of fashion.

The scope of the study was limited to Amritsar district. The data was collected from the rural women of Amritsar who were willing to participate in the skill development program conducted by

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RESEARCH METHODOLOGY

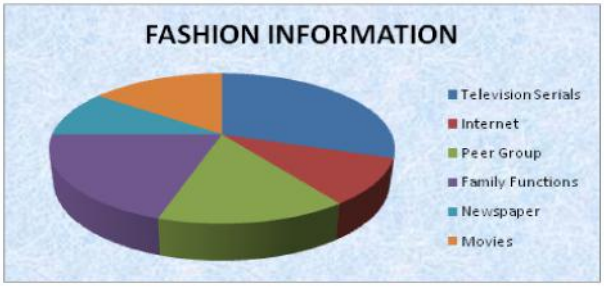
An interview schedule was prepared to identify the fashion awareness and adoption by rural women. The schedule was also intended to collect details about the effectiveness of training program conducted and the challenges faced by the women in starting their own enterprise. A total of 30 respondents were provided training on fashion awareness and latest techniques of stitching and tailoring. After the successful completion of training, the responses regarding training and barriers to gainful employment of trainees were obtained. For the purpose of study, the age group of respondents was restricted to 20- 35 years of age.

RESULTS & DISCUSSION

Fashion is a result of social emulation and acceptance. During recent years, the general interest in fashion has increased considerably and though fashion has its own centers to begin with, the awareness and adoption of latest fashions through various channels has become much quicker these days. For an entrepreneur to be successful in this field, it is important to be updated with latest information regarding styles and trends.

Fashion information: Thirty per cent of the respondents said that they were getting maximum awareness about fashion from Television serials, while another major source of this information was through observing others in family functions (20%). Movies and peer group also played an important part in making rural women aware about the latest fashion trends while least impact was found to be of Internet and Newspaper as reading habits are not so well developed in rural women.

n=30



Despite growing use, rural women are far less mobile savvy than urban counterparts. But among the few who bridged the divide, internet is used by ten per cent respondents to increase fashion awareness.

Factors affecting clothing purchase: The buying behavior of a consumer depends mainly on the attitudes and preferences of a customer. It also depends a lot on the information as well as the skill set available with the potential customer. Though it was discovered that more than 60 per cent women knew stitching, only 30 per cent were making daily wear clothing at home and party wear garments were preferred to be purchased as readymade garments. The decision to purchase garments was mostly dependent on occasion as ninety per cent of the garment buying was done according to the occasion. Sixty per cent of the respondents gave preference to cost, color, and print of the fabric as well as latest trends and advice of peer group. It was only 30 per cent of the respondents for whom the deciding factor was found to be the durability and quality of the fabric. Though personality attributes play an important role in suitability of garment to an individual, this aspect was considered to be of least importance by the respondents and was given some deliberation by only fifteen per cent of the respondents.

n=30

* Multiple responses

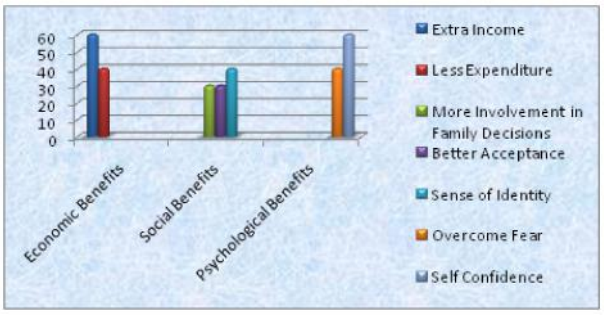
Appropriateness of training: Kittur Praveen (2014) found that in order to encourage women entrepreneurship, special training course should be started to improve their skills. The training program on latest techniques in stitching and tailoring was found to be useful by most of the participants. It

was found to be unsatisfactory with vast scope for improvement by fifteen per cent of the respondents only, while fifty per cent of the respondents found it to be useful and satisfactory. As the respondents already had knowledge and skill of basic stitching, the training program concentrated on the areas in which these women were found to be lagging behind like pattern making and adaptation as per the latest designs and the skill set to transfer an idea into a finished garment. The finishing of stitched garments was also given due consideration during training as neatness of seams and finishes play an important role in the overall appearance of a finished product. They were taught to take proper body measurements and prepare correct product in the first time only to save the need of alteration and redoing which is cumbersome and time consuming. They found it different from conventional training as new designing and latest techniques were discussed and training was imparted on industrial machinery.

n=30

Benefits of training: Vijaya and Reddy (2013) concluded that skill development will boost the women empowerment with high productivity and earnings. Skills lead to confidence among them to be more innovative. Sixty per cent of the respondents said that they intended to earn additional income by undertaking assignments from others, while forty per cent of the trainees responded that the training will result in their making less expenditure for the purpose of clothing. Forty per cent of the respondents communicated that the training program has helped them attain a better sense of identity, while thirty per cent of them were confident that their new found trust in their own capabilities will help them gain better acceptance in the society and have more involvement in family decisions. Sixty per cent of the respondents shared that the training has help them in increasing their self confidence, while forty per cent were of the opinion that they are able to overcome the fear and hitch they were facing in starting their own enterprise.

n=30



The trainees shared that they have benefitted not only economically in terms of saving expenses for dresses, better fashion awareness , but also had increased social acceptance and gained a lot of self confidence on attending the training. They were confidant of earning extra income by using the techniques learnt and to reutilize waste fabrics to create beautiful creations for self and others.

Challenges faced during training: The training program was found to be satisfactory on the basis of content, still candidates were asked about the challenges faced by them during training so that required changes can be done if possible. The training provider also had some limitations like that of location of the training center. A majority of respondents (sixty per cent) were of the view that distance of training center from their homes was a major issue faced by them. Major challenge faced by the trainees was on transportation front as public transport was not available to reach the training center and they found it difficult to afford individual transportation to the training center. As major family responsibility lies on the shoulder of women members, so expectation of the family to shoulder family responsibilities was also a big challenge faced by them due to which they were unable to maintain regularity in the training program. Another challenge faced by the trainees was lack of interest in the training program. Twenty per cent of the respondents

were of the view that they lacked motivation to learn new things and were not really interested in developing their skills to take it to a further level.

Barriers to employment after training: Employment opportunities for women are increasing in the garments sector and related activities but still they face a lot of gender bias and family issues. As per Vyas (2017), long working hours, traditional protocol, early marriages and safety issues do not allow them to stand independently in their career path. Sixty per cent of the respondents felt that there was a lack of supportive environment at home. Even

n=30

*Multiple responses

though family members did not have much issue on receiving training, participants were discouraged by family members on starting a new venture in most of the cases. Marketing of the prepared products was another major challenge they had in their journey as entrepreneur. Forty per cent of the respondents felt that lack of hand holding and advice on starting a new enterprise was an important deterrent, while the same percentage of respondents also felt that there was a major challenge of raw material availability in the vicinity. Lack of startup funds was also considered a major barrier to self employment after training by forty per cent of the respondents. The trainees wanted a lot of hand holding as they lacked enough confidence to take a plunge into entrepreneurship. As the trainees were intensively advised about the Government schemes available for their entrepreneurial support, lack of awareness on this front was considered as a limitation by only twenty per cent of the respondents.

CONCLUSION

It was found that fashion awareness and a willingness to adopt the latest fashion was there in eighty per cent of the respondents. Though a majority of rural women were preparing the clothing required by the family members on their own, lack of resources for starting enterprise, little knowledge about availability of raw material at cost effective price, and proper guidance in the form of handholding or institutional support are the major constraints being faced by them in starting an enterprise for gainful self employment. Successful marketing of the product was also an issue which was seen as a challenge by the respondents. The participants submitted that their confidence levels have increased and they feel assured that the training program will be helpful in providing them with gainful employment and generating income within the social, financial and familial constraints being faced by them in rural Amritsar.

REFERENCES

Kittur, Parveen 2014. Development of Rural Women Entrepreneurs through Workshop Training. *Res. J. of Management Sciences* **3**(2): 15-18.

Vijaya, A. and Reddy, L. 2013. Empowerment of Rural Women through Vocational Education and Training. *Conflux J. of Edu.* **1**(2): 15-18.

Vyas, A. 2017. The impact of skill development on women empowerment. *Int. J. of Advance Res. and Dev.* **3** (1): 8-11.

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INFORMATION SEEKING BEHAVIOUR OF TRIBAL LIVESTOCK OWNERS IN SIROHI DISTRICT OF RAJASTHAN

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ABSTRACT

The study was conducted in purposely selected Sirohi district of Rajasthan. Two tehsils namely, Pindwara and Abu road were selected considering maximum tribal population. Thereafter, four villages from each tehsil were selected and 8 villages were selected following the same criteria. In case of information sources, it was observed that an access to local leader for seeking information on livestock management practices. It was ranked as first in the rank order. Veterinary officer and LSA were also reported with high accessibility with MPS 87.22 and 86.94 respectively by the respondents and as such were accorded 2nd and 3rd rank. In case of information channels it can be observed that a faire majority (MPS 86.11) of respondents had an access to veterinary hospitals for information on livestock management practices. It was ranked first in the rank order. Similarly farmers meeting and training were also reported as channels with high accessibility accounting for MPS 79.16 and 77.22 respectively and as such were accorded 2nd and 3rd rank by the respondents. It can be suggested that the access and availability of cosmopolite sources viz. scientists from KVK/Universities be increased as they are competent and reliable. Similarly the access to cosmopolite channels to be improved for effective transfer of management practices to livestock owners.

INTRODUCTION

Information is considered as power in the contemporary world. Wilson (1999) defines the term information seeking behaviour as 'the totality of human behaviour in relation to sources and channels of information, including both active and passive information seeking and information use. Thus, it includes face-to-face communication with others, as well as the passive reception of information as in, for example watching television advertisements without any intention to act on the information given.

A source of information refers to a person who communicates information regarding scientific livestock farming practices to the livestock owners through face to face situations or in some other forms. A channel of information refers to physical means or mediums being used by the source or communicator to communicate information regarding scientific livestock farming practices.

The main purpose of animal husbandry information sources is to reach farmers who cannot be contacted personally by extension workers, in the shortest possible time. Location of the audience group and availability of time are the deciding factors for choosing information sources (Chauhan and Kansal, 2014). Traditionally, the potential sources of information for farmers on various aspects of production, marketing and finance include media, government extension services, consultants and farm service firms, traders, input dealers, other farmers and relatives (Mittal and Kumar, 2000). It is estimated that 40% of farmer households access information on agricultural techniques and inputs and only about 5% of farm households in India access information on livestock (NSSO 2005).

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Although farmers may have a number of information sources and channels available to them, they pursue only a few (Aboyade, 1987, Gunawardana and Sharma, 2006).

In the present study, the efforts have been made to study the information seeking behaviour of livestock owners in tribal areas of Sirohi district.

RESEARCH METHODOLOGY

The study was conducted in purposely selected Sirohi district of Rajasthan. Two tehsils namely, Pindwara and Abu road were selected considering maximum tribal population. Thereafter, four villages from each tehsil were selected and 8 villages were selected following the same criteria. Prior to collection of data, a comprehensive list of families who possess livestock as a mean of livelihood was prepared for each selected village with the help of Panchayat officials and villagers. Then 15 families from each selected village were taken randomly as respondents of study. Thus, total 120 tribal families were identified for inclusion in the sample. Data were collected by personal interview technique on three point continuum i.e. always (3), sometimes (2) and rarely (1). Thereafter, mean percent score (MPS) for the different sources and channels of information were calculated separately.

RESULTS AND DISCUSSION

A. Access and availability of sources of information

The data accommodated in Table 1 present the results pertaining to access and availability of different sources of information for seeking information on livestock management practices. From the data it can be observed that a faire majority (MPS 91.35) of respondents had an access to local leader for seeking information on livestock management practices. It was ranked as first in the rank order. Veterinary officer and LSA were also reported with high accessibility with MPS 87.22 and 86.94 respectively by the respondents and as such were accorded 2nd and 3rd rank. Interestingly two localite sources i.e. friends (MPS 81.66) and Neighbours (MPS 79.16) were accessed more and accorded 4th and 5th rank by the livestock owners. It is discouraging to note that Sarpanch (MPS 38.61), scientist from KVK (MPS 38.61) and co-operative personal (MPS 36.66) were accessed by relatively less number of respondents for seeking information on livestock management practices in the study area.

The rank order correlation value between the ranks accorded by tribal livestock owners of Pindwara and Abu road tehsils was found to be 0.72, which was statistically non-significant. This indicates that respondents of Pindwara and Abu road Tehsils were at par as for the access to different sources of information for seeking information on scientific livestock management practices in the study area is concern.

The maximum access to local leader was accorded first rank by the respondents, this may be due to the availability of local leader in the village itself throughout the day. Similarly the higher access to cosmopolite sources i.e. veterinary officer and LSA may be because of their frequent visits and contact with livestock owners in the villages.

Likewise access to localite sources i.e. friends and neighbours may be accounted for the trust and their availability in the village. Comparatively less access to Sarpanch and scientist of KVK may be due to their difficult approach and distant location. An overview reflects that livestock owners have an access to both localite and cosmopolite sources of information for seeking information on livestock management practices in the study area.

2. Access and availability of various channels of information

The data accorded in Table 2 present the results pertaining to access and availability of different channels of information for seeking information on livestock management practices. From the data it can be observed that a faire majority (MPS 86.11) of respondents had an access to veterinary hospitals for information on livestock management practices. It was ranked first in the rank order. Similarly farmer meeting and training were also reported as channels with high accessibility accounting for MPS 79.16

Table 1: Access and availability of information sources for seeking information on scientific livestock management practices

S.No.	Source	Pindwara Tehsil		Aburoad Tehsil		Total	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Local leader	90.55	I	92.20	I	91.35	I
2.	Vety. Officer	85.55	III	86.66	III	87.22	II
3	LSA	87.77	II	78.85	VI	86.94	III
4.	Friends	74.40	VIII	80	V	81.66	IV
5.	Neighbours	83.33	IV	66.66	VIII	79.16	V
6.	Extension officer	75	VII	75	VII	77.50	VI
7.	Progressive livestock owner	76.11	VI	88.33	II	77.20	VII
8.	Relatives	80	V	83.33	IV	71.38	VIII
9.	Sarpanch	40.55	IX	42.20	IX	40.55	IX
10.	Scientists from KVK/university	37.75	XI	36.65	X	38.61	X
11.	Co-operative personnel	38.85	X	35.55	XI	36.66	XI

$rs = 0.72^{NS}$

and 77.22 respectively and as such were accorded 2nd and 3rd rank by the respondents. Interestingly cosmopolite channels i.e. TV (MPS 73.61) and Field trip (MPS 70.83) were accessed by livestock owners and accorded 4th and 5th rank. It is discouraging to note that Radio (MPS 41.38), Film show (MPS 40.55) and traditional media (MPS 35.55) were accessed by relatively much less no. of respondents for seeking information of livestock management practices in the study area.

The rank order correlation value between the rank accorded by tribal livestock owners of Pindwara and Abu road tehsils was found to be 0.96, which was statistically significant at 1 per cent level of significance. This indicates that respondents of Pindwara and Abu road tehsils have access and availability of different channels of information at the different magnitude for seeking information on livestock management practices.

The maximum access to veterinary hospital may be due to presence of veterinary hospitals in the area. The higher access to information channels i.e. farmer meeting and training may be because of livestock owners' participation in the meeting and training programs in the area. Similarly considerable access to TV, Field trip and Newspaper may be due to their access and availability to the respondents. Comparatively less access to Film show and Traditional Media were obvious because they are not in use now a day by the T.O.T. agencies.

Almost similar findings were reported by Gunawardana and Sharma (2006) who reported that farmer's meeting, radio, newspaper, TV and farm publications were the most preferred channel of agriculture information as perceived by the farmers.

CONCLUSION

Looking to the findings it can be suggested that the access and availability of cosmopolite sources viz. scientist from KVK/Universities be increased as they are competent and reliable. Similarly the access to cosmopolite channels viz. demonstration, Radio, film show and even the traditional media needs to be improved for effective transfer of management practices to livestock owners.

Table 2: Access and availability of channels of information for seeking information on livestock management practice

S.No.	Information Channels	Pindwara Tehsil		Aburoad Tehsil		Total	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Vety. Hospital	85.55	I	86.66	I	86.11	I
2.	Farmer's meeting	80	II	78.31	II	79.16	II
3.	Training	78.33	III	76.11	III	77.22	III
4.	T.V	72.22	V	75	IV	73.61	IV
5.	Field trip	75	IV	66.65	VI	70.83	V
6.	News paper	65	VI	68.85	V	66.94	VI
7.	Exhibition	58.33	VIII	64.40	VII	61.38	VII
8.	Demonstration	60	VII	62.22	VIII	61.11	VIII
9.	Radio	40.55	IX	42.20	IX	41.38	IX
10.	Film show	39.44	X	41.65	X	40.55	X
11.	Traditional media	33.30	XI	37.75	XI	35.55	XI

rs= 0.96**

REFERENCES

Aboyade, B.O. 1987. The provision of information for rural development. *Ibadan: Fountain Publications*.

Chauhan, M. and Kansal, S.K. 2014. Most preferred animal husbandry information sources and channel among dairy farmers of Punjab. *Indian Research Journal of Extension Education* **14**(4):33-36.

Gunawardana, A.G. and Sharma, V.P. 2006.Information source credibility among tribal and non-tribal farmers. *Rajasthan Journal of Extension Education* **14**: 82-85.

Mittal, S. and Kumar, P. 2000. Literacy, technology adoption, factor demand and productivity: An economic analysis. *Indian Journal of Agricultural Economics* **55(3):** 490–499.

NSSO (National Sample Survey Organization), 2005. Situation assessment survey of farmers: Access to modern technology for farming, 59th round (January–December 2003). Report no. 499(59/33/2), Ministry of Statistics and Programme Implementation, Government of India. New Delhi.

Sarvanan, R. 2011. A Report on tribal farmers personal and socio-economic information, communication pattern and information needs assessment. Retrieved from: e-Agrikiosk Pub.No**. 1**.

Tyagi, K.C. and Sohal, T.S. 1984. Factors associated with adoption of dairy innovations. *Indian Journal of Extension Education* **20**(3&4): 1-8.

Wilson 1999. Information seeking behaviour: an overview. shodhganga.inflibnet. ac.in/bitstream/10603/22103/8/08.

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ANALYSIS OF TRAINING NEEDS AMONG AGRICULTURAL EXTENSION PERSONNEL IN KOLLAM DISTRICT OF KERALA

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ABSTRACT

While planning training the first and foremost activity is to assess the training needs of the target group. The subject in this study are the 120 purposely selected Agricultural Assistants of Kollam district in Kerala. Training needs for Agricultural Assistants can be defined in terms of gap between job requirement and job performance. The data were collected and analyzed in the form of Training Need Index (TNI) and accordingly ranks were allotted. The result of the finding revealed that majority of Agricultural Assistants require training in the aspects of ICT (56.50%), Communication (53.13%) and technical skills (50.58%). In Information Communication Technology aspect top most priority was given to use of internet and email while in the aspect of communication skill and human relation training in communicating with farmers (58.33%) was most wanted by the respondents. Other important training aspects were new generation pesticides (66%), and project preparation (59.16%).

INTRODUCTION

Agriculture plays a vital role in India's economy. Over 58 per cent of the rural households depend on agriculture as their principal means of livelihood. Agriculture, along with fisheries and forestry, is one of the largest contributors to the Gross Domestic Product (GDP). As per estimates by the Central Statistics Office (CSO), the share of agriculture and allied sectors (including agriculture, livestock, forestry and fishery) was 15.35 per cent of the Gross Value Added (GVA) during 2015-16 at 2011-12 prices. The Department of Agriculture and Cooperation under the Ministry of Agriculture is responsible for the development of the agriculture sector in India. At the state level it is the responsibility of State Agricultural Departments. The Department of Agricultural Development and Farmer's Welfare with its Krishi Bhavan's in each panchayth is the agency for the grass root level development of agriculture and transfer of technology in Kerala. Each Krishi Bhavan has an Agricultural Officer (AO) and two Assistant Agriculture Officers to help in the AO in the functioning of Krishi Bhavan.

The Assistant Agriculture Officers help in disseminating the improved agricultural technologies of various disciplines including both agricultural and horticultural technologies to the farmers. The problems in boosting the production of crops are not merely due to lack of new technology and physical resources but it is largely attributed to the lack of proper human resource development, management and skilled manpower. With a view to achieve a high level of production, it is not enough to accelerate generation of scientific technologies but it is equally necessary to transfer the latest technology from the research system to the ultimate users i.e., the farmers which is possible by refreshing and updating the knowledge and skill acquired during the periodical pre-in-service training through systematic training courses. Training is essential to induce motivation, create confidence and inculcate efficiency in an individual. Training is also inevitable for imparting new knowledge and updating the skills of a person. Training need assessment is vital to the training process. Need assessment helps to identify present problems and future challenges to be met through training and development. Training need identification is a tool utilized to identify what educational courses or activities should be provided

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to employees to improve their work productivity. Training needs for extension personnel can be defined in terms of gap between job requirement and job performance (Mishra 1990). Here the focus should be placed on needs as opposed to desires of the employees for a constructive outcome (Singh *et al*., 2011). It is required to find out the needs of individual training on which they should build their professional competencies to carry out the assigned job in their organization (Kharde *et al.,* 2014).

The findings of the present study will help to understand the training needs of the Agricultural Assistants. It is expected to provide useful criteria for understanding the problems encountered by the Agricultural Assistants in their training need in the Agriculture Department. Also, the suggestions given by them will provide a platform for solving their problems and for better performance. Keeping this in view, the present study was undertaken to identify the Training needs of Agricultural Assistants of Agriculture Department.

RESEARCH METHODOLOGY

The present research study was carried out in Kollam district of Kerala. The population of the study is Agricultural Assistants working in Kollam district in the Department of Agriculture, Governmant of Kerala .Total 120 respondents were purposively selected. The interview schedule was prepared in simple language in order to get appropriate and accurate information. The data was collected by interviewing the respondents. Wherever necessary, the information of qualitative nature was converted into quantitative form. The data on the training needs were collected by assigning on a five point scale as per Likert technique i.e. strongly needed, needed, neutral, somewhat needed and not needed. Scores of 5, 4, 3, 2, and 1 were allotted against the selected training areas and the result won ranked accordingly. Finally the Training Need Index (TNI) was calculated with help of following formula.

$$TNI = \frac{\text{Total score obtained}}{\text{Maximum obtained score}} \times 100$$

RESULTS AND DISCUSSION

i. Training Needs: Perusal of Table 1 shows that maximum training needs of Agricultural Assistants was for ICT (56.50%), communication (53.13%) and technical skills (50.58%) they were ranked 1st, 2nd and 3rd. These were followed by managerial skills and others which were ranked 4th and 5th, respectively.

Table 1: Training needs of Agricultural Assistants in various aspects

n=120

S. No.	Particulars	Training Need Index	Rank
1.	Technical	50.58	3
2.	Managerial skills	49.95	4
3.	Communication	53.13	2
4.	ICT	56.50	1
5.	Others	1.50	5

ii. Training needs of Agricultural Assistants in technical aspects*:* Table 2 reveals various training needs in technical aspects. The most important aspects were new generation pesticides (66%), organic farming (63.66%) and new generation fungicides (62.33%) and were ranked 1st , 2nd and 3rd .These were followed by integrated crop management practices, cultural practices and soil testing and conservation with a training need index of 56.83%, 55.66% and 53.83%, respectively. Further the least important aspects as perceived by the responds were Coconut climbing device, use of transplanter and cool season crops. These were ranked 14th, 15th, and 16th, respectively.

iii. Training needs of Agricultural Assistants in the area of Managerial skill: Data in Table 3 shows that out of seven areas, top most training need was project preparation (59.16%), project implementation (58.16%) and marketing (55.16%). While only 42.83 % and 40% of the respondents needed training in farm records and

Table 2: Training needs of Agricultural Assistants in technical aspects

n=120

S. No.	Particulars	Training Need Index	Rank
1.	High yielding varieties	52.00	9
2.	Integrated crop management practices	56.83	4
3.	Cultural practices	55.66	5
4.	Organic farming	63.66	2
5.	Soil testing and conservation	53.83	6
6.	Irrigation	41.50	13
7.	Precision farming	52.50	8
8.	Protected cultivation	51.50	10
9.	Cool season crops	39.33	16
10.	New generation pesticides	66.00	1
11.	New generation fungicides	62.33	3
12.	Tiller	38.50	17
13.	Tractor	38.16	18
14.	Transplanter	41.50	15
15.	Coconut climbing device	43.16	14
16.	PP equipments	47.00	12
17.	Post harvest handling-Vegetables	52.83	7
18.	Post harvest handling- Fruits	48.66	11

Table 3: Training needs of Agricultural Assistants in the area of Managerial skill

n=120

S. No.	Particulars	Training Need Index	Rank
1	Farm planning	50.16	4
2	Farm records	42.83	7
3	Book keeping	40.00	8
4	Project preparation	59.16	1
5	SWOT	44.16	5
6	Marketting	55.16	3
7	Project implementation	58.16	2

book keeping procedures, respectively.

iv. Training needs of Agricultural Assistants in the area of communication skill and human relation aspects: Training needs of agricultural assistants were assessed for communication skills and human relation aspect in ten areas. The top most priority was given to training in communicating with farmers (58.33%), followed by extension work among the farmers (56.66%), effective transfer of technology (56.50%), arrange farm visit (56.16%) and layout and conduct of demonstrations (55.50%). The less important training need aspects were communication with officials and co-workers (54.83%), guide colleagues (51.16%), problem solving (49.33%), control meetings effectively (46.33 %) and select suitable aid for extension work (46%).

Table 4: Training needs of Agricultural Assistants in the area of communication skill and human relation aspects

n=120

S. No.	Particulars	Training Need Index	Rank
1.	Official and co-workers	54.83	6
2.	With farmers	58.83	1
3.	Problem solving	49.33	8
4.	Extension work among farmers	56.66	2
5.	Select suitable aid for extension work	46.00	10
6.	Arrange farm visit	56.16	4
7.	Demonstrations	55.50	5
8.	Control meetings effectively	46.33	9
9.	Guide colleagues	51.16	7
10.	Effective ToT	56.50	3

v. Training needs of Agricultural Assistants in the area of Information Communication Technology: Review of Table 5 reveals that training in the aspect of use of internet and email was given top most priority by 68.33% of

agricultural assistants from Kollam district. This was followed by use of MS office (66.33%), MS Excel (64.66%), e- Krishi (63.16%) servicing and software (61%) and power point (60.50 %).

Table 5: Training needs of Agricultural Assistants in the area of Information Communication Technology

n=120

S. No.	Particulars	Training Need Index	Rank
1	MS Office	66.33	2
2	MS Excel	64.66	3
3	Power point	60.50	6
4	Internet and email	68.33	1
5	Servicing and software	61.00	5
6	e-krishi	63.16	4

CONCLUSION

The study has pointed out the training needs required by Agricultural Assistants in the areas of ICT, Communication and human relation skills, technical skills, managerial skills and others. The Training Need Index ranged from 1.50% - 56.50% . For each separate aspects of technical skills, Managerial skill , communication skill and human relation aspects and Information Communication Technology the training need index ranged from 38.16% - 66.00%, 40.00% -59.16%, 46.00% - 58.83%, 60.50%- 68.33%, respectively. Hence it was perceived that majority of the respondent i.e Agricultural Assistants in Kollam district are to be given intensive trainings for their effective functioning. On the basis of these findings, the Agricultural Assistants should be made aware about their training needs through conducting refreshing and inservice trainings for them. It is, therefore, suggested that while organizing future trainings, priorities should be given to the above said areas to improve their work effectiveness.

The visits of the Agricultural Assistants may be arranged to the Agricultural University Campuses, Agricultural Research Stations and Krishi Vigyan Kendra with the financial support of Agriculture Department to keep them up-to-date about the recent knowledge and technologies.

REFERENCES

Singh, M.K., Ram, D. Sanatombikh and Prasad, A. 2011. Correlates of training needs assessment of Assistant Agriculture officers of Manipur. *Indian res. J. of Extn. Edu.* **11**(1): 120-121.

Kharde, P.B., Patil, S.D. and Potawade, B.T. 2014. Training Needs of Scientists of Agricultural University. *Ind. Res. J. Extn. Edu.* **14** (3): 103 107.

Mishra, D.C. 1990. New Directions In Extension Training. Directorate of Extension, Ministry of Agriculture. New Delhi.

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EFFECT OF NATURAL TURMERIC DYE ON COLOUR AND FASTNESS OF WOOL YARN

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ABSTRACT

Eco friendly technology is the key for sustainable development. India have been the source of earliest natural dyestuffs known to man. Natural dyes not only provide attractive colours to textiles but are a safe alternative for synthetic dyes too. Today the need to realize the importance of sustainable technology is more urgent. Protection of environment has become a challenge for the chemical industries worldwide. All over the world the environment restrictions are becoming stricter day by day. The present study was carried out at Department of Clothing and Textiles, College of Post Graduate Studies, G B Pant University of Agriculture and Technology, Pantnagar, Uttarakhand, India. Turmeric rhizomes were used as source for pure vegetable dye for yellow colour. The water soluble yellow dye from turmeric rhizomes (*Curcumin*) is very fugitive in nature. The hue becomes dull with exposure to time and temperature. To achieve the best dyeing results, a different method of dyeing was tried and tested. Observations proved that less temperature and reduced time of dyeing gave better results in terms of colour appeal. Dyeing of scoured wool samples was carried out in various ratios in order to optimize the variables. A number of shades were developed with good to excellent washing fastness, through variations in dyeing conditions only.

INTRODUCTION

Synthetic dyes are produced at high temperature and pressure from chemicals isolated from petroleum derivatives. During the manufacturing process of dyes many carcinogenic chemicals are used which leads to formation of toxic bi-products. These bi-products are discharged in the rivers, ponds or left in open. Hence, cause severe atmospheric pollution (Paul, 1996). This has threatened the ecological balance and called attention of the environmentalists to develop eco-friendly technologies to produce dyes from natural sources (Pruthi, 2007). The present study is aimed at developing 100 per cent natural bright yellow colour for dyeing of wool without the use of any synthetic stuffs as mordants. A number of shades were developed with good to excellent washing fastness through variations in dyeing conditions only. No synthetic chemical was used at any stage. Various studies have been carried out by different scientists on turmeric dye. However, optimizing the dyeing conditions for turmeric dye, using simultaneous dyeing and extraction technique for dyeing of wool, investigated in the present study have not been reported earlier.

RESEARCH METHODOLOGY

Collection of Raw materials and their preparation:

Plant materials: Common name: Turmeric, Botanical name: *Curcuma Longa*

Family: ginger family, **Zingiberaceae**. It is native to southern Asia, requiring temperatures between 20 and 30 °C (68 and 86 °F) and a considerable amount of annual rainfall to thrive.

Part used: Rhizomes, when not used fresh the rhizomes are boiled for about 30–45 minutes and then dried in hot ovens after which it is ready for sale in market for further use as a colouring agent for food and dyes. Dried Turmeric Rhizomes were collected from the local market complex in G. B. Pant University campus, Pantnagar, Udham Singh nagar, Uttarakhand. Rhizomes were dried in shade and pulverized in a powder form.

Wool:

White Australian Merino wool was purchased from Shree Gandhi Ashram, Haldwani,

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Uttarakhand.

Blue Wool standards:

Blue Wool standards were used (for fading along with samples) for testing colour fastness to light.

Gray Scale:

Colour fastness rating was done with Grey Scale for evaluating changes in colour and staining as per ISO recommendations (ISO 105-A02: 1993 and ISO 105-A-03).

Processing of wool: The scouring of wool was done according to procedure mentioned by Hover 1976. A detergent solution of 1 ml of Genteel with 100 ml of hot water was prepared. When it was cooled to luke warm, skeins of wool were immersed. Theses skeins were stirred with a wooden spoon for 30 minutes. Later skiens were taken out, rinsed with lots of warm water. This treatment was repeated for three to four times, every time the detergent quantity was reduced. The skiens were squeezed and rinsed with tap water, till they were freed of the traces of detergent (care was taken not to scrub wring or mingle the skeins as it might cause hardening and matting of wool). Washed skeins of wool were allowed to dry and finally weighed for further experimentation.

Optimization of different variables: A series of experiments were conducted in order to standardize the different variables; such as dyeing technique, concentration of the dye material , time for extraction of dye, time for dyeing, temperature for extraction and temperature for dyeing.

For dyeing of samples the MLR (Material Liquor Ratio) selected was 1:10. The Optical Density (OD)values of the dye solutions before and after dyeing were recorded. A sample of one ml was taken from each beaker and optical density was recorded by diluting it 20 times. The per cent absorption was calculated by the following formula:

% Absorption = OD before dyeing – OD after dyeing / OD before dyeing × 100

Dyed samples were judged by a panel of 15 judges visually on the criteria of luster, evenness of dye, depth of shade and overall appearance. From the total marks obtained the percentage ratings were calculated. Each optimized variable was used in further experiments where ever desired.

The final range of shades was tested for colour fastness to light and washing at the Department of Textile Technology, IIT Delhi.

Dyeing Techniques:

Technique I: Turmeric powder was tied in muslin bags (2 inch X 2 inch) with a thread to hold it. Pre soaked and weighed wool sample, and dye bag were put in a beaker containing 100 ml water. Beaker was placed in a boiling water bath (100p c). Simultaneous extraction and dyeing was carried out in glass beakers for one hour.

Samples were stirred and dye bags were pounded with a glass rod after every five minutes to ensure even dyeing and continuous extraction of dye from muslin bag. After one hour dye bags were taken out and dyed samples were allowed to cool in dye bath itself. Then the samples were rinsed under running water and dried in shade.

Technique II: In this technique the conventional method of dyeing has been used. The dye was extracted for one hour in a boiling water bath (100p c). The solution was then cooled and filtered. Pre soaked wool sample of 10 g was added to this dye solution and dyeing was carried out at 80p c for one hour. The samples were stirred with glass rod after every 10 minutes in order to obtain an even dyeing on sample. After one hour beakers were taken out of water bath and samples were allowed to cool in dye bath itself. Dyed samples were then rinsed under tap water and dried in shade.

According to results obtained Technique I was selected for Turmeric dye. For further experiments Technique I was used.

Measuring the Optical density while using Technique I

During further experiments while using technique I, each experiment was carried out as a pair of two. In each pair of two beakers, two dye bags with same contents and water were placed but presoaked

weighed wool sample was added only to one beaker and both beakers were placed in dye bath for extraction and dyeing. This was done in order to facilitate recording of the optical density before and after dyeing. Thus, for each experiment the number of specimen dye solutions was doubled. For example For optimization of concentration 3 different concentrations i.e. 1g, 2g, & 3g were tested. Two bags for each quantity- total 6 dye bags were placed in separate beakers to carry out the experiment.

Concentration of dye material: For optimization of concentration of Turmeric dye, 3 different concentrations i.e. 1g, 2g, & 3g were tested, Simultaneous extraction and dyeing was carried out for one hour at 100p c. The remaining process was repeated as explained earlier. Optical density was measured for all six solutions and dyed samples were evaluated by judges.

Time for simultaneous extraction & dyeing: Simultaneous extraction and dyeing was carried out with optimized concentration, for three different time durations i.e. 60, 120, 180 minutes respectively at 100p c. Rest of the procedure was done as mentioned earlier. Optical density was measured for all six solutions and dyed samples were evaluated by judges.

Temperature for simultaneous extraction & dyeing: Simultaneous extraction and Dyeing was carried out with optimum concentration of dye for optimized time duration at four different temperatures i.e. 40p c, 60p c, 80p c, 100p c. Optical density was measured for all eight solutions and dyed samples were evaluated by judges.

Preparation of Final samples: Final sample was prepared by dyeing the presoaked weighed wool sample with Turmeric using all optimized variables i.e. optimized dyeing technique, optimized concentration of dye material, optimized time for extraction and dyeing and optimized temperature for extraction and dyeing. This sample was prepared for final tests to colour fastness and washing.

As per the results of evaluation by judges the shades out of 13 shades were selected. Finally 9 different shades of yellow were included in the final range of shades. Further Tests of the final range of shades, for colour fastness to light and washing were done at the Department of Textile Technology, IIT Delhi.

Colour fastness Tests of dyed samples:

Colour fastness to Light: The dyed wool yarns were mounted on a 6 cm wide card board frame in asheet form (of parallel lengths) of 3x6 cm size. Along with these Blue wool standards were also mounted. A strip of thick black chart paper was pinned up so as to cover half portion of the specimen and standards. Thus samples half exposed were put inside Fadometer and faded as per ISO recommendations. The standards and specimen were checked after every few hours till a contrast between exposed and unexposed parts of specimen was equivalent to grade 3 on the Grey scale. The samples were compared with Blue wool standards and rated.

Colour fastness to washing: Yarns of test samples were made into sheet form of parallel length measuring 10x4 cm and placed between two pieces of undyed fabrics of same size. The fabric on one side was wool and on other side was cotton. These three layers were sewn from all sides to form a composite specimen. Soap solution prepared for testing washing fastness had 5 ml of Genteel per liter. Each composite sample was treated in the Launder'o meter for 45 minutes at a temperature of 50 ± 2p c. The liquor: material ratio was 50:1.The samples were removed from Launder'ometer, rinsed thoroughly under running tap water, dried and ironed.

The samples were graded on the basis of change in colour of the samples and also the staining of the adjacent fabrics with the help of Grey scales.

RESULTS AND DISCUSSION

Turmeric is one of the oldest natural colouring agents used throughout the world from ancient times. The rhizomes of the perennial turmeric are the source of colour. It is cultivated in almost all the parts of India Curcumin is the prime principal constituent of yellow

dye, along with other constituents like mono-desmethoxycurcumin and bidesmethoxycurcumin, which also contributes fewer amounts of pigment and flavour.

Under experimental trials, different methodologies were adopted for the extraction of colour and dyeing of wool. Figures and tables 1 to 4 show the results of the experiments.

Figure 1 & Table 1 shows the results of colourimetric analysis (at 380 nm) and visual analysis at various parameters explained earlier. As per the

Table 1: Percentage ratings of visual analysis and dye absorption percentage with different methods of dyeing for Turmeric (wave length- 380 nm)

Dyeing Technique	O.D. before dye-ing	O.D. after dye-ing	Per cent absor-ption	Per-cent-age of visual rating
Dyeing technique I	0.27	0.2	25.92	64.33
Dyeing Technique II	0.2	0.15	25	44.83

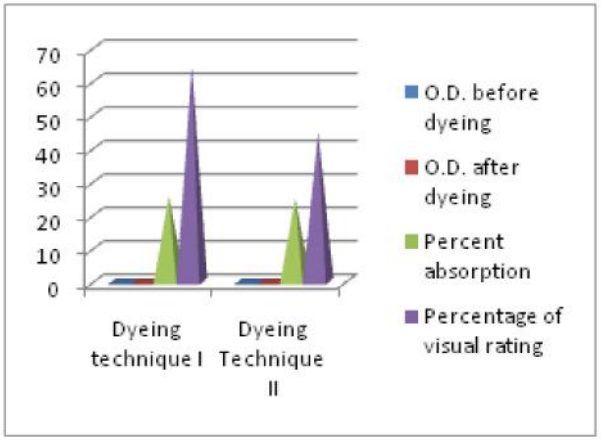

Figure 1: Percentage ratings of visual analysis and dye absorption percentage with different methods of dyeing for Turmeric (wave length- 380 nm)

Table 2: Percentage ratings of visual analysis and dye absorption percentage (at 380 nm) with different concentrations of dye for Turmeric

Conc. Of dye (g/100ml)	O.D. before dye-ing	O.D. after dye-ing	Per cent absor-ption	Per-cent-age of visual rating
1	0.24	0.18	25	44.33
2	0.26	0.19	26	67.33
3	0.25	0.18	28	54.5

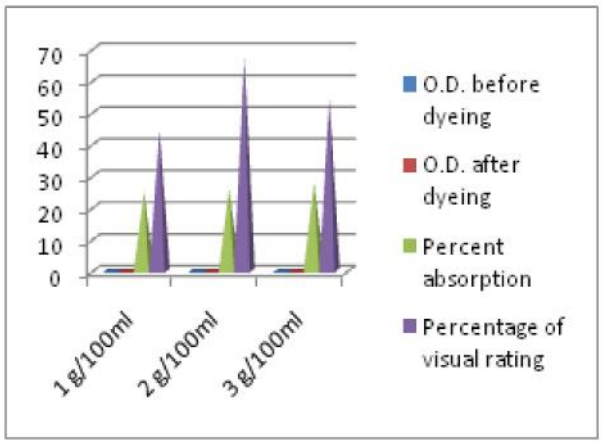

Figure 2: Percentage ratings of visual analysis and dye absorption percentage (at 380 nm) with different concentrations of dye for Turmeric

Table 3: Percentage ratings of visual analysis and dye absorption percentage (at 380 nm) at different time durations for Turmeric dye

Time for simul-taneous extrac-tion and dyeing (min.)	O.D. before dye-ing	O.D. after dye-ing	Per cent absor-ption	Per-cent-age of visual rating
60 min.	0.16	0.04	75	55.5
120 min.	0.13	0.09	30.76	55.3
180 min.	0.15	0.13	13.33	38.83

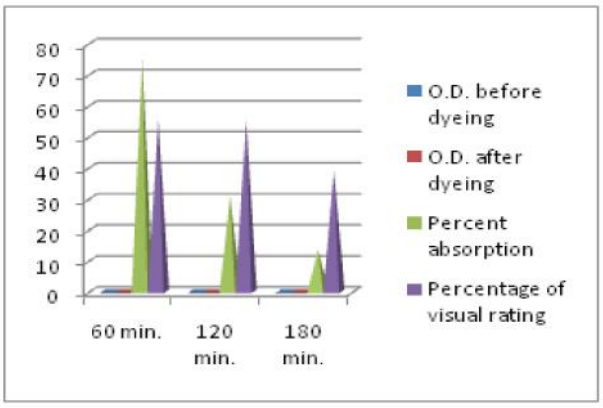

Figure 3: Percentage ratings of visual analysis and dye absorption percentage (at 380 nm) at different time durations for Turmeric dye

Table 4: Percentage ratings of visual analysis and dye absorption percentage (at 380 nm) at different temperatures for Turmeric dye

Temperature for simultaneous extraction and dyeing	O.D. before dye-ing	O.D. after dye-ing	Per cent absor-ption	Per-cent-age of visual rating
40ºc	0.25	0.11	56	72
60ºc	0.2	0.1	50	56.33
80ºc	0.16	0.1	37.5	47.66
100ºc	0.15	0.12	20	48.16

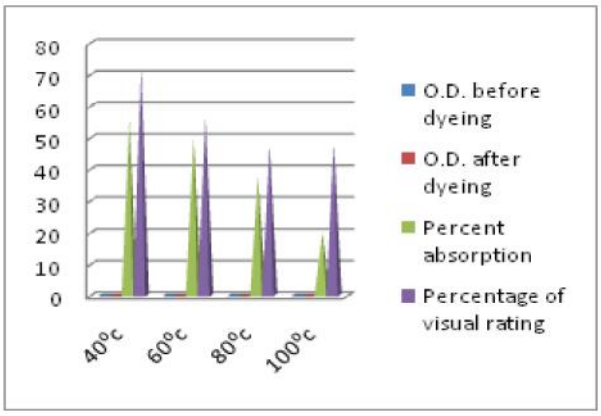

Figure 4: Percentage ratings of visual analysis and dye absorption percentage (at 380 nm) at different temperatures for Turmeric dye

results technique one was selected as appropriate for turmeric dye as this produced much bright hue as compared to dyeing technique II.

Fig 2 & Table 2 reveal the results of optimization of concentration of Turmeric dye. According to results 2gms of Turmeric per 100 ml of water for dyeing 10 gm of wool was found as optimum concentration.

Results of colorimetric analysis and visual analysis (to optimize the time for dyeing) show that 60 min. dyeing time is appropriate for Turmeric. Maximum dye absorption was found at 60 min. duration (Table 3 and Figure 3). Results show that dyeing beyond 60 min. makes the hue dull.

Fig 4 and Table 4 shows that 40p c temperature provides the best results for dyeing with Turmeric. Temperature beyond that made the hue more Greyish. The Dye absorption was also found maximum at 40p c. The results indicate that high temperature should be avoided for dyeing with turmeric if a bright hue is required.

Table 5 shows the various shades achieved through different dyeing procedures during optimization process. The sample VII Corn Silk has been dyed with all optimized parameters (Dyeing technique I, conc. of dye 2%, temperature 40p c, Dyeing time- 60 min.)

Table 6 shows the results of color fastness tests to Light and Washing. Most of the shades exhibited poor to fair fastness to light. The samples were found to be affected by light rapidly. The shades processed at high temperature exhibited a bit better colour fastness to light. For shades done at high temperature a grade of 3 (fair) was observed. Over all the range of light fastness grades were between 2 to 3 (poor to fair).

Samples showed better grades for colour fastness to washing (3-5). Best grades were observed for Flaxen, Ripe Hay and Pale flaxen (4-5) good to excellent for change in colour, good for staining on cotton (4) & good to excellent for staining on wool. Lowest ratings were observed for Lion Yellow. Rest of the shades got a satisfactory rating

Table 5: The different shades of yellow produced by variations in dyeing parameters

SN	Sample code	Sample	Description of Dyeing Procedure
I.	Pale Dijon		Dyeing technique I - simultaneous extraction and dyeing, Concentration of dye- 1%, temperature- 100°c, dyeing duration- 1 hour.
II.	Flaxen		Dyeing technique II - Dyeing post extraction Concentration of dye- 1%, Extraction temperature- 100°c, extraction duration- 1 hour, Dyeing temperature- 80°c, Dyeing time 1 hour.
III.	Dijon		Dyeing technique I - simultaneous extraction and dyeing, Concentration of dye- 2%, temperature- 100°c, dyeing duration- 1 hour.
IV.	Dandelion Yellow		Dyeing technique I - simultaneous extraction and dyeing, Concentration of dye- 3%, temperature- 100°c, dyeing duration- 1 hour.
V.	Straw Yellow		Dyeing technique I - simultaneous extraction and dyeing, Concentration of dye- 2%, temperature- 100°c, dyeing duration- 2 hours.
VI.	Lion Yellow		Dyeing technique I - simultaneous extraction and dyeing, Concentration of dye- 2%, temperature- 100°c, dyeing duration- 3 hours.
VII.	Corn Silk		Dyeing technique I - simultaneous extraction and dyeing, Concentration of dye- 2%, temperature- 40°c, dyeing duration- 1 hour.
VIII.	Ripe Hay		Dyeing technique I - simultaneous extraction and dyeing, Concentration of dye- 2%, temperature- 60°c, dyeing duration- 1 hour.
IX.	Pale Flaxen		Dyeing technique I - simultaneous extraction and dyeing, Concentration of dye- 2%, temperature- 80°c, dyeing duration- 1 hour.

of good to excellent (4-5) for colour change and staining as well.

CONCLUSION

Today the protection of environment have become a challenge for the chemical industries world wide. All over the world the environment restrictions are becoming stricter. The need to realize the importance and the technology of natural dye is more urgent. This is then led to returning to traditional and more natural way of life. Results of numerous experiments reveal that same dye produced different shades under different dyeing conditions. Standard recipes have been developed for each shade. A range of Flaxen to Dijon, Hay, straw, Dandelion, corn silk and Lion yellow were achieved (Table 5). Observations proved that less temperature and reduced time of dyeing give better results in terms of colour appeal. Whereas analysis of the shade cards after a prolonged time gap of shows that the

Table 6: Ratings for colour fastness to light and washing

S.No.	Sample	Ratings for Colour fastness to light	Colour fastness to washing		
			Ratings for colour change	Ratings for staining on cotton	Ratings for staining on wool
1.	Pale Dijon	2- 3	4	3-4	4
2.	Flaxen	3	5	4	4-5
3.	Dijon	2	4	3	4
4.	Dandelion Yellow	3	4-5	3-4	4
5.	Straw Yellow	3	3-4	5	3-4
6.	Lion Yellow	2	3	2	4
7.	Corn Silk	2	4	3-4	4
8.	Ripe Hay	3	5	4	4-5
9.	Pale Flaxen	2-3	4-5	4	4-5

high temperature and prolonged dyeing time produced shades with more durable dyeing. Thus any of the dyeing technique can be used as per the requirement of end product. These colours were used at Alps industries ltd. Ghaziabad, UP for dyeing cotton for their export orders. To improve the light fastness of these dyes, dyeing was carried out at fiber stage. Which improved the colour fastness to light up to grade 4 (a considerable improvement for colour fastness to light).

REFERENCES

Pruthi, N. 2007. Dyeing of Silk with Barberry bark. *Natural product Radiance*, 40-44.

Paul R, J. M. 1996. Classification Extraction and fastness properties. *Textile Dyer and printer* **31**(6): 16-24.

Sachan, K. & Kapoor V. P. 2007. Optimization of extraction and dyeing conditions for traditional turmeric dye. *Indian Journal of Traditional Knowledge* **6**(2): 270-278.

Umbreen, S., Ali. S., Hussain, T. & Nawaz, R. 2008. Dyeing properties of natural dyes extracted from Turmeric and their comparison with reactive dyeing. *Research Journal of Textile and Apparel* **12** (4) : 15-18.

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SOCIO-ECONOMIC IMPACT OF MANGO TECHNOLOGIES DEVELOPED BY DR. BSKKV, DAPOLI ON FARMERS

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ABSTRACT

The present investigation was conducted in Ratnagiri district of Konkan region with the objective to assess the socio-economic impact of recommended technologies of mango developed by Dr. BSKKV, Dapoli on farmers and to study the adoption. More than half of the respondents had 'high' adoption of recommended practices, followed by 45.00 per cent of the respondents who had 'medium' adoption of recommended practices of mango.At overall level more than half (56.00 %) of the respondents reported 'medium' impact of technologies, while 30.00 per cent and 14.00 per cent respondents had 'low' and 'high' impact of technologies, respectively. There was significant socio-economic impact was observed in the parameters like housing pattern, monthly thrift habit, annual spending pattern, change in yield and income, change in assets and change in social participation after adoption of recommended mango technology generated by Dr. BSKKV, Dapoli by the farmers.

INTRODUCTION

Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli was established in May 1972 with a view to conduct the need based, location specific research in the field of agriculture, fisheries and veterinary science. Konkan region of Maharashtra is predominated by major crops like mango and rice. Keeping this in view, it was thought to analyze the spread of improved technology of mango, so as to know where we are and where we ought to go in the present new economic environment. Data regarding impact of technology on mango growers are very scanty. Thus, the present investigation entitled 'socio-economic impact of technologies developed by Agricultural Universities on farmers with respect to major crop' was undertaken with the following objectives.

1. To study the adoption of recommended technologies of mango developed by Dr. BSKKV, Dapoli.
2. To assess the socio-economic impact of recommended technologies of mango developed by Dr. BSKKV, Dapoli on farmers.

RESEARCH METHODOLOGY

The study was conducted in Ratnagiri district of Konkan region because this district is having maximum area under mango crop. Two tehsils namely Rajapur and Ratnagiri having highest area under mango from among all tehsils were purposively selected. From these two tahsils, five villages were selected randomly and from each selected village ten mango growers were selected. Thus, the sample consists of 100 mango growers. Practicing mango growers having at least 15 to 20 years old trees on at least 1 acre area were considered for selection as respondent. The data were collected from respondents by personal interview schedule. The data collected were analyzed and tabulated suitably.

RESULTS AND DISCUSSION

The findings of the present study are presented hereunder:

1. Adoption of recommended mango technologies by the farmers

It can be seen from Table 1 that 52.00 per cent of the respondents had 'high' adoption of recommended practices, followed by 45.00 per cent of the respondents who had 'medium' adoption of recommended practices of mango. Only 3.00 per cent of the respondents had 'low' adoption.

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The average adoption index was 60.72.

Table 1: Adoption of recommended technologies of mango developed by DBSKKV, Dapoli by the farmers

n=100

S.No.	Adoption group	Number	Percentage
1.	Low (up to 33.33)	3	03.00
2.	Medium (33.34 to 66.66)	45	45.00
3.	High (66.67 and above)	52	52.00
	Average (Index) : 60.72	**100**	**100.00**

The major practice wise adoption of recommended technologies of mango is presented in the Table 2.

Majority of the mango growers adopted the recommended practices namely 'improved mango varieties' (97.00 %), 'plant population' (70.00 %), 'organic fertilizer' (32.00 %), 'chemical fertilizer' (68.00 %), 'plant protection (78.00 %), 'mechanization' (63.00 %) and 'harvesting technology' (72.00 %) to the fullest extent.

The partial adoption was observed in the recommended practices namely 'organic fertilizer' (54.00 %), 'chemical fertilizer' (32.00 %), 'plant population' (30.00 %), 'plant protection' (20.00 %). Majority (65.00 percent) of the respondents not adopted fruit processing technologies recommended by the University.

2. Socio-economic impact of recommended technologies: The information regarding socio-economic impact after adoption of recommended technologies developed by Dr. BSKKV, Dapoli are presented in Table 3.

It is seen from Table 3 that 44.00 per cent of the respondents had reported change in their expenditure on education at 'medium' level, while 23.00 per cent had 'no change' in their expenditure on education due to adoption of mango technology. Majority (60.00 per cent) respondents reported change in their social participation at 'medium' level, while 23.00 per cent reported 'no change' in their social participation after adoption of the technologies. Regarding annual spending pattern, large number of (80.00 %) respondents stated that their annual spending pattern was at 'medium level' due to adoption of technologies. More than two fifth (63.00 %) respondents reported 'medium' change in income from selected crop and 27.00 per cent reported 'low' change in income from selected crop. More than three fifth (62.00 %) of the respondents had reported 'medium' change in their housing pattern and 31.00 per cent stated 'high' change in housing pattern. More than half (55.00 %) of the respondents had 'medium' change in employment status while 24.00 per cent respondents reported 'no change' in employment status. Almost

Table 2: Major practice wise adoption of recommended technologies of mango

S.No.	Practices	Adoption		
		Full	**Partial**	**No**
1.	Improved mango varieties	97 (97.00)	3 (3.00)	-
2.	Plant population	70 (70.00)	30 (30.00)	-
3.	Organic fertilizer	32 (32.00)	54 (54.00)	14 (14.00)
4.	Chemical fertilizer	68 (68.00)	32 (32.00)	-
5.	Plant protection	78 (78.00)	20 (20.00)	2 (2.00)
6.	Mechanization (Tools, sprayers, implements etc.)	63 (63.00)	12 (12.00)	25 (25.00)
7.	Harvesting	72 (72.00)	22 (22.00)	06 (6.00)
8.	Fruit processing	23 (23.00)	12 (12.00)	65 (65.00)

Table 3: Socio-economic impact of recommended technologies on selected parameters

S.No.	Impact parameter	Number	Percentage
1.	**Change in expenditure on education**		
	No change (0)	23	23.00
	Low (up to 33.33)	22	22.00
	Medium (33.34 to 66.66)	44	44.00
	High (66.67 and above)	11	11.00
	Average (Index) : 36.29	**100**	**100.00**
2.	**Change in social participation**		
	No change (0)	23	23.00
	Low (up to 33.33)	09	09.00
	Medium (33.34 to 66.66)	60	60.00
	High (66.67 and above)	08	08.00
	Average (Index) : 42.18	**100**	**100.00**
3.	**Change in annual spending pattern**		
	No change (0)	-	-
	Low (up to 33.33)	7	07.00
	Medium (33.34 to 66.66)	80	80.00
	High (66.67 and above)	13	13.00
	Average (Index) : 54.52	**100**	**100.00**
4.	**Change in income from selected crop**		
	No change (0)	-	-
	Low (up to 33.33)	27	27.00
	Medium (33.34 to 66.66)	63	63.00
	High (66.67 and above)	10	10.00
	Average (Index) : 45.21	**100**	**100.00**
5.	**Change in house / housing pattern**		
	No change (0)	3	03.00
	Low (up to 33.33)	4	04.00
	Medium (33.34 to 66.66)	62	62.00
	High (66.67 and above)	31	31.00
	Average (Index) : 60.08	**100**	**100.00**
6.	**Change in employment status**		
	No change (0)	24	24.00
	Low (up to 33.33)	10	10.00
	Medium (33.34 to 66.66)	55	55.00
	High (66.67 and above)	11	11.00
	Average (Index) : 37.34	**100**	**100.00**
7.	**Change in occupation**		
	No change (0)	24	24.00
	Low (up to 33.33)	07	07.00
	Medium (33.34 to 66.66)	59	59.00
	High (66.67 and above)	10	10.00
	Average (Index) : 41.29	**100**	**100.00**
8.	**Change in assets**		
	No change (0)	2	2.00
	Low (up to 33.33)	23	23.00
	Medium (33.34 to 66.66)	69	69.00
	High (66.67 and above)	06	6.00
	Average (Index) :44.12	**100**	**100.00**
9.	**Change in monthly thrift habit**		
	No change (0)	-	-
	Low (up to 33.33)	11	11.00
	Medium (33.34 to 66.66)	57	57.00
	High (66.67 and above)	32	32.00

	Average (Index) : 56.72	**100**	**100.00**
10.	**Change in area**		
	No change (0)	42	42.00
	Low (up to 33.33)	15	15.00
	Medium (33.34 to 66.66)	36	36.00
	High (66.67 and above)	07	07.00
	Average (Index) : 28.80	**100**	**100.00**
11.	**Change in land utilization pattern**		
	No change (0)	42	42.00
	Low (up to 33.33)	15	15.00
	Medium (33.34 to 66.66)	36	36.00
	High (66.67 and above)	07	7.00
	Average (Index) : 28.80	**100**	**100.00**
12.	**Change in yield**		
	No change (0)	-	-
	Low (up to 33.33)	35	35.00
	Medium (33.34 to 66.66)	53	53.00
	High (66.67 and above)	12	12.00
	Average (Index) : 45.24	**100**	**100.00**

equal number of the respondents stated 'low' and 'high' change in their employment status.More than half (59.00 %) of the respondents reported 'medium' change in occupation, while 24.00 per cent respondents stated 'no change' in occupation.

More than three fifth (69.00 %) of the respondents had 'medium' change in their assets while 23.00 per cent respondents opined 'low' change in assets. More than half (57.00 %) of the respondents made 'medium' change in their monthly thrift habit and 32.00 per cent stated 'high' change in their monthly thrift habit.More than two fifth (42.00 %) of the respondents reported 'no change' in area, whereas 36.00 per cent and 15.00 per cent respondents reported 'medium' and 'low' change in area, respectively.

More than two fifth (42.00 %) of the respondents reported 'no change' in their land utilization pattern. More than half (53.00 %) of the respondents reported 'medium' change in their yield and 35.00 per cent respondents stated 'low' change in yield.

Overall impact of recommended technologies are depicted in the Table 4.

Table 4: Overall impact of recommended technologies

S.No.	Overall impact category	Number	Percentage
1.	Low (up to 33.33)	30	30.00
2.	Medium (33.34 to 66.66)	56	56.00
3.	High (66.67 and above)	14	14.00
	Average (Index) : 46.04	**100**	**100.00**

At overall level more than half (56.00 %) of the respondents reported 'medium' impact of technologies, while 30.00 per cent and 14.00 per cent respondents had 'low' and 'high' impact of technologies, respectively. The average impact index was 46.04.

CONCLUSION

Study has brought out that significant socio-economic impact was observed in the parameters like housing pattern, monthly thrift habit, annual spending pattern, change in yield and income, change in assets and change in social participation after adoption of recommended mango technology generated by Dr. BSKKV, Dapoli by the farmers.

REFERENCES

Anonymous, 2006. Study of non-cash (non-monetary) inputs adopted by farmers for rice and

mango crops. A sub-committee report of Department of Extension Education, College of Agriculture, Dapoli submitted to Dr. B.S.K.K.V., Dapoli, Dist. Ratnagiri (M.S).

Anonymous, 2013. Socio-economic impact of technologies developed by Agricultural Universities on farmers with respect to major crop. A sub-committee report of Department of Extension Education, College of Agriculture, Dapoli submitted to Dr. B.S.K.K.V., Dapoli, Dist. Ratnagiri (M.S).

Borate, H.V., Mahadik, R.P., Hake, A.D. and Sawant, P.A. 2012.Knowledge and adoption of sapota growers in Thane district.*International Research Journal of Agricultural Economics and Statistics* **3**(1): 159-161.

Choudhary, H., Bangar G.S. and Narpat Singh. 2011. Adoption of recommended kinnow production technology. *Rajasthan Journal of Extension Education* **19**: 190-193.

Choudhary, M.R. and Kadam, A.L. 2000.Factors influencing resource management by orange growers.*Maharashtra Journal of Extension Education* **19**:243-245.

Chougule, M.R. 2000. A study on adoption behaviour of cashew growers with reference to high yielding varieties of cashew. M.Sc. (Ag.) thesis submitted to Dr. B.S. Konkan KrishiVidyapeeth, Dapoli (M.S.).

Pawar A.M. 2013 Knowledge and use of eco-friendly management practices for Mango growers of Konkan region. Ph.D.(Agri) thesis submitted to Dr. B.S.K.K.V., Dapoli, Dist. Ratnagiri (M.S).

Singh M.S. 2005.A study of knowledge and adoption of paclobutrazol technology by mango growers in Ratnagiri district. M.Sc.(Agri) thesis submitted to Dr. B.S.K.K.V., Dapoli, Dist. Ratnagiri (M.S).

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IMPACT ANALYSIS OF CHICKPEA CFLDs ON PRODUCTIVITY ENHANCEMENT AND ADOPTION LEVEL IN ALWAR DISTRICT OF RAJASTHAN

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ABSTRACT

Chick pea (*Cicer arietinum*) is the leading pulse crop in India. However, the average productivity of chick pea in the district (qt ha^{-1}) is very low as compared to potential yield of new varieties (25qt ha^{-1}). The productivity of this crop is low in the district due to poor adoption of improved technologies of chick pea by the farmers. The KVK, Navgaon Alwar has carried out 140 FLDs on chick pea (GNG-1581 and CSJ-515) in 14 adopted villages during 2015-16 to 2017-18 to exhibit latest proven technologies & to know the productivity & economics of demonstrations compared with farmer's practices. The average yield of three years data was recorded and found that 18.27 qt ha^{-1} in CFLDs and 15.89 qt ha^{-1} in farmers practice with an additional yield of 2.38 qt ha^{-1} and productivity increased by 15.17 per cent. The average technology gap and extension gap were found 6.43 and 3.17 qt ha^{-1} respectively. The result shows positive effect of CFLDs of HYVs & new proven technologies of Chick pea over the existing practices towards enhancing the productivity of Chick pea in the district.

INTRODUCTION

Gram commonly known as chick pea or Bengal gram is the most important pulse crop in India. It plays an important role in National food security and sustainable agriculture enriching the soil through biological nitrogen fixation. Chickpea occupies about 38 per cent of area under pulses and contributes about 50 per cent of the total pulse production of India. It is used for human consumption as well as for feeding to animals.

The average yield of chickpea in Rajasthan is 852 kg ha^{-1} and in Alwar district 1082 kg ha^{-1} in year 2015-16 (*Agricultural Statistics at a Glance*, 2016). The low yield of chickpea is due to the reason that the farmers had a low knowledge & adoption of improved package of practices of gram. There is urgent need to increase the production of pulses. Recognizing the important role of Krishi Vigyan Kendra (KVK) in transferring new technologies to the farmers the Ministry of Agriculture, GOI has allotted cluster Front Line demonstrations of chickpea crop in each *rabi* season from 2015-16 to 2017-18 for three years regularly under National Food Security Mission for boost up & enhancing the production & productivity of pulses through conducting CFLDs with complete new package of practices & different technological interventions. Therefore, keeping this view in mind a study entitled Impact analysis of Chickpea CFLDs on Productivity Enhancement and Adoption level in Alwar district of Rajasthan was carried out to know the collision of these demonstrations with following objectives:

1. To study the production performance of demonstrations as compare to local check.
2. To study economic analysis of profitability.
3. To find out the extent of Adoption & Adoption gap of technology interventions of CFLDs before & after KVK activities.

RESEARCH METHODOLOGY

The present study was conducted in five panchayat samittee of Alwar district of Rajasthan. All 140 partner farmers of chickpea demonstrations under

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NFSM from 14 adopted villages of KVK were taken purposely to compare the production, productivity & profitability and to identify the Technology gap & Extension gap and to know the extent of adoption of the scientific cultivation practices of chickpea before and after contact with KVK. The yield data of each CFLDs and control plots were collected each year from each farmers and average where demonstration conducted during *rabi* season 2015-16 to 2017-18. The KVK scientists visited the CFLDs field regularly on different critical stages of crops and also organized On/Off campus training programmes and extension activities during these years to ensure timely application of nutrients, weedicides & plant protection measures and also to give other suggestive measures to the farmers and collect the feedback information on each stage for further improvement in research and extension programme.

The data were collected through personal interview schedule consisting of set of questions, which were asked to the CFLD farmers by the investigator in face to face situation to give their response about each improved production technology of chickpea. The collected information was grouped and tabular analysis was done for calculating the technological gap & extension gap in yield by using the suitable statistical tools.

RESULTS AND DISCUSSION

1. The effect of FLD programme on production performance of chickpea: The production performance of technological demonstrations of chickpea were obtained during last three years (2015-16 to 2017-18) and presented in Table 1

Technology Gap= Potential Yield – Demonstration Yield

Extension Gap= Demonstration Yield – Control Plot Yield

Table 1 indicates that maximum average demonstration yield 20.20 q ha^{-1} was recorded in rabi 2017-18, followed by 18.31 q ha^{-1} in 2016-17 and 17.20 q ha^{-1} in *rabi* 2015-16 which were found higher over local check 16.08 q ha^{-1} 15.50 q ha^{-1}, 14.60 q ha^{-1} respectively. It clearly shows that 17.80% yield increase over farmer's practice during the *Rabi* season 2015-16, followed by 11.24% and 16.48% in each study year due to use of HYVs, better quality input and scientific backup by KVK scientists time to time. The level of yield is considerably low under farmer's practice because of poor adoption of improved practices depending upon the amount of risk involved in terms of cost, skill and knowledge about the improved practices. The finding is in line with the findings of Balai *et al.* 2012 in Rapeseed and Mustard crop and Sharma and Choudhary (2014) in wheat FLDs**.** The average technology gap and extension gap were found 6.43 and 3.17 q ha^{-1}, respectively.

From the results it is evident that the performance of improved Variety was found to be better than the local check under same environment conditions.

2. Economic analysis of chickpea FLD as compare to farmers practice: Economics of Chickpea production under Cluster Front Line

Table 1: Production performance of technology demonstration of chickpea during rabi 2015-16 to 2017-18

Year	Demo. Variety	No. of Farmers	Potential yield (qha^{-1})	Yield (qha^{-1}) Demo.	Farmer's practice	% Increase (qha^{-1})	Tech. gap gap (qha^{-1})	Extension (%)	Tech. index
Rabi-2015-16	GNG-1581	30	25	17.20	14.60	17.80	7.80	2.60	31.20
Rabi-2016-17	GNG-1581	40	25	18.31	15.50	11.24	6.69	2.81	11.24
Rabi-2017-18	CSJ-515	70	25	20.20	16.08	16.48	4.80	4.12	16.48
Overall		**140**	**25**	**18.57**	**15.39**	**15.17**	**6.43**	**3.17**	**19.64**

Demonstration was recorded and the results of the study have been presented in Table 2. The results of economic analysis of chickpea production reveals that Cluster Front Line Demonstrations recorded higher gross return (78440 Rs ha^{-1}) and net return (52425 Rs ha^{-1}) with higher cost benefit ratio (2.99) as compared to local check.

Similarly, in other study years the net profit from improved practices was observed more than farmer's practice as a result of CFLDs showed positive impact of demonstrations, trainings & other supportive activities of KVKs. Similar findings were also reported by Asiwal, *et al.* (2014) in Groundnut crop, Joshi *et al.* (2014) in wheat crop and Meena *et al.* (2012) in Mung bean.

3. Extent of adoption, change in adoption and adoption gap of\ technology interventions of FLDs before & after KVK activities: Data presented in Table 3 indicate that the extent of adoption, change in adoption of chickpea production technologies in the adopted villages before the activities of KVK were recorded very low due to lack of knowledge. Similarly adoption gap remain stand due to some constraints.

Table 3 indicate that after conducting the FLDs and trainings on chickpea by KVK the change in extent of adoption of new technological interventions were increased up to 27.78% in case of Seed rate, followed by Seed treatment (26.43%), HYVs (15.56%), Fertilizers management (13.58%), only 11.43% in weed management & adoption change recorded in Plant protection measures (9.29%). More adoption gap were found in practices like Plant protection measures (57.85%), followed by weed management (51.42%), Fertilizer management (40.0%) and Seed treatment

Table 2: Economic analysis of chickpea FLD as compare to farmers practice

Year	Av. Cost of cultivation (Rs. /ha)		Av. gross return (Rs. /ha)		Av. Net return (Rs. /ha)		B:C Ratio	
	Demon.	Local	Demon.	Local	Demon.	Local	Demon	Local
Rabi-2015-16	24471	21863	64200	55100	39729	33237	2.62	2.52
Rabi-2016-17	26218	22627	77240	64000	51022	41373	2.94	2.82
Rabi-2017-18	27355	23782	93880	75752	66525	51970	3.43	3.18
Average	**26015**	**22757**	**78440**	**64951**	**52425**	**42193**	**2.99**	**2.84**

Table 3: Adoption level & Adoption gap of technology interventions under NFSM

N=140

S.No	Technology interventions	Adoption level				Change in adoption %	Adoption gap (%)
		Before KVK		After KVK			
		N	%	N	%		
1	HYV	75	53.33	96	68.89	15.56	**31.42**
2	Seed rate	73	52.22	112	80.00	27.78	**20.00**
3	Seed treatment	53	37.85	90	64.28	26.43	**35.71**
4	Fertilizer management	65	46.42	84	60.0	13.58	**40.00**
5	Weed management	52	37.14	68	48.57	11.43	**51.42**
6	PP measures	46	32.85	59	42.14	9.29	**57.85**

(35.56%) due to some constraints of practices.

CONCLUSION

It may be concluded that positive impact was observed after conducting FLDs and trainings in adopted villages on chickpea under NFSM was the change in extent of adoption of new technologies were increased upto 27.78% in case of Seed rate, HYVs 15.56, Fertilizer management 13.58%, only 11.43% in weed management & 9.29% adoption change recorded in plant protection measures.

The average technology gap and extension gap were found 6.43 and 3.17 q ha^{-1} respectively, which shows positive direction of CFLDs in enhancing the production & profitability of pulses with improvement in socio-economic status of the farmers.

REFERENCES

Annonymous 2016. Government of India, Ministory of Agriculture & Farmers Welfare, Department of Agriculture, Cooperation and Farmers Welfare, Directorate of economics and statistics pp. 174.

Asiwal, B.L., Husain, A., Akhter, J. and Ram, L. 2014. Impact analysis of Groundnut FLDs Technology on extent of adoption, enhancing the productivity & profitability in Sikar district of Rajasthan. *Agric. Update* **9**(4): 562-565.

Balai, C.M., Meena, R.P., Meena, B.L. and Bairwa, R.K. 2012. Impact of frontline demonstrations on rapeseed and mustard yield improvement. *Indian Res. J. Extn Edu.* **12**(2): 113-116.

Joshi, N.S., Bariya, M.K., and Kunjadia, B.B. 2014. Yield gap analysis through frontline demonstrations in wheat crop. *International J. of Sci. and Res. Pub.* **4**(9): 1-3.

Meena, O.P., Sharma, K.C., Meena, R.H. and Mitharwal, B.S. 2012. Technology transfer through FLDs on Mungbean in semi-arid region of Rajathan. *Raj. J. of Extn. Edu.* **20**: 182-186.

Sharma, R. and Choudhary, P.C. 2014. Improvement in wheat productivity through frontline demonstrations. *Ind. J. Extn. Edu.& R.D.* **22**: 36-41.

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EXTENT OF USE OF ICTs BY CLUSTERBEAN GROWERS IN BIKANER DISTRICT OF RAJASTHAN

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ABSTRACT

The Present study was conducted in Bikaner district of Rajasthan. Data were collected through a well structured interview schedule which was developed keeping in view of the objectives of the study. The collected data were coded, classified and tabulated. Findings revealed that extent of use of mobile was highest in majority of the practices for getting information, followed by internet and Kisan Call Centres in the study area.

INTRODUCTION

India holds second position among the countries about high population in the world with approximate 1.25 billion people. Around, 70 per cent live in rural area and their main occupation is agriculture. The main base is agriculture which continues to be the occupation and way of life for more than half of Indian population even today making single largest contribution to the GDP of our nation. Sustainable prosperity of the farmers and the agricultural labour holds the key for improving the overall human resource development scenario in the country. There is a need to increase production and productivity in agriculture. Hence, the Indian farmers need to be updated with the latest knowledge about new techniques of farming, new cultivars, farm machinery, market and trade situation etc. The extension personnel of the department of agriculture disseminating the technology and message to the farming community through various extension methods. Thus, the ICT plays an increasingly important role in linking the research- extension-market continuum towards developing professional competencies and entrepreneurial capabilities among specialists and farming communities respectively. Information and Communication Technology (ICT) is a global term that includes all technologies for the manipulation and communication of information encompassing: radio, television, computers, internet, cell phones, and network hardware, satellite systems and so on, as well as various services and application associated with them. ICTs infact encompasses any medium for recording and broadcasting information like magnetic disk, optical disk, CD/ DVD, flesh memory etc.

RESEARCH METHODOLOGY

Based on the extensive review of literature, discussion with experts, the study was conducted in Bikaner district of Rajasthan. The independent variables covering differential characteristics of farmers viz., age, education, farming experience, land holding, social participation, information seeking behaviour, extension contact, economic status, achievement motivation, scientific orientation and innovativeness were selected and two dependent variables such as extent of use of ICTs and attitude towards use of ICTs were studied with the help of schedules and scale developed. Data was collected through a well structured interview schedule which was developed keeping in view of the objectives of the study. The collected data were coded, classified and tabulated.

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RESULTS AND DISCUSSION

1. Extent of use of ICTs by registered users

The extent of use of ICT tools by the registered users to get information is presented in the Table 1.

Table 1 indicates that all the ICT tools were not regularly used by the registered users. With regard to soil health management, mobile was used occasionally by a little more than half of the users (51.25%) and regularly by 48.25 per cent of the users. Internet was used occasionally by little more than half of users (52.50%) followed by regularly (37.50%) and never (10.00%). In case of kisan call center 23.75 per cent users use it occasionally and 76.25 per cent registered users never use it. For Agromet Advisory Services, mobile was used regularly by majority of the users (98.75%) and occasionally by 01.25 per cent of the users. Similarly internet was used regularly by more than three fourth users (81.25%), occasionally by 03.75 per cent and never by 15.00 per cent of users. In case of kisan call center 52.50 per cent users use it occasionally, 05.00 per cent regularly and 42.50 per cent registered users never use it.

With regard to cultivation aspects mobile was used regularly by 90.00 per cent users and occasionally by 10.00 per cent; whereas internet was used regularly by a little more than two third (70.00%) of the users and occasionally by 30.00 per cent of the users. Kisan call center was used occasionally by 41.25 per cent of the users; whereas 58.75 per cent users never use it. For pest and disease management, mobile was used regularly by majority of the users (86.25%); whereas 6.25 per cent of the users occasionally use it. Similarly internet was used occasionally by nearly half of the users (45.00%), regularly by 31.25 per cent and never by 23.75 per cent of users respectively. In case of KCC, 62.50 per cent registered users use kisan call centre occasionally, 17.50 per cent regularly and 20.00 per cent never use it.

With regard to marketing information and price trend, mobile and internet were used regularly by 55.00 and 36.25 per cent users respectively; whereas, 41.25 and 52.50 per cent users use them occasionally respectively. Kisan call center was used occasionally by the 03.75 per cent users, regularly by 03.75 per cent and 92.50 per cent users never use it.

2. Extent of use of ICTs by non registered users

The extent of use of ICT tools by the non registered users to get information was studied and presented in the Table 2.

To get information regarding soil health management, mobile was used occasionally by a little more than half of the non-users (52.50%) and regularly by 32.50 per cent of the non-users. Internet was never used by 60 per cent of non-users followed by occasionally (21.25%) and regularly (18.75%). The kisan call center was occasionally used by 15.00 per cent non-users; whereas, 85.00 per cent non-users never use it. For Agromet Advisory Services, mobile was used regularly by 31.25 per cent non-users, occasionally by 31.25 per cent and 37.00 per cent never use it. Internet was used regularly by 12.50 per cent non-users; whereas, 18.75 per cent non-users use it occasionally and 68.75 per cent non-users never use it. Similarly 80.00 per cent non-users never use kisan call centre and 20.00 per cent use it occasionally.

With regard to cultivation aspects mobile was used regularly by 26.25 per cent of non-users, occasionally by 28.75 per cent and 45.00 per cent non-users never use it; whereas internet was used regularly by 07.50 per cent of non-users, occasionally by 25.00 per cent and 67.50 per cent non-users never use internet. For seeking information about cultivation aspects kisan call centre was not used regularly by a non-users, only 22.50 per cent of non-users used it occasionally. For pest and disease management, mobile was used regularly by 42.50 per cent of non-users, occasionally by 50.00 per cent and 7.50 per cent non-users never use mobile for seeking information on pest and disease management. In case of internet 11.25 per cent of non-users used it regularly, 61.25 per cent

Table 1: Distribution of the registered users according to the extent of use of ICTs tools for getting information (n=80)

S. No.	Type of Information	ICTsTools	Regularly		Occasionally		Never	
			F	%	F	%	F	%
1.	Soil Health Management	Mobile	39	48.75	41	51.25	-	-
		Internet	30	37.50	42	52.50	08	10.00
		KCC	-	-	19	23.75	61	76.25
2.	Agromet Advisory Services	Mobile	79	98.75	01	01.25	-	-
		Internet	65	81.25	03	03.75	12	15.00
		KCC	04	05.00	42	52.50	34	42.50
3.	Cultivation Aspects	Mobile	72	90.00	08	10.00	-	-
		Internet	56	70.00	24	30.00	-	-
		KCC	-	-	33	41.25	47	58.75
4.	Input Availability and Prices	Mobile	15	18.75	46	57.50	19	23.75
		Internet	-	-	38	47.50	42	52.50
		KCC	-	-	06	07.50	74	92.50
5.	Seed and Sowing	Mobile	20	25.00	47	58.75	13	16.25
		Internet	09	11.25	60	75.00	11	13.75
		KCC	-	-	21	26.25	59	73.75
6.	Integrated Nutrient Management	Mobile	-	-	57	71.25	23	28.75
		Internet	-	-	18	22.50	62	77.50
		KCC	-	-	17	21.25	63	78.75
7.	Irrigation Management	Mobile	20	25.00	53	66.25	07	8.75
		Internet	17	21.25	25	31.25	38	47.50
		KCC	-	-	11	13.75	69	86.25
8.	Disease and Pest Early Warning System	Mobile	08	10.00	36	45.00	36	45.00
		Internet	-	-	38	47.50	42	52.50
		KCC	-	-	04	05.00	76	95.00
9.	Pest and Disease Management	Mobile	69	86.25	05	06.25	06	7.50
		Internet	25	31.25	36	45.00	19	23.75
		KCC	14	17.50	50	62.50	16	20.00
10.	Harvesting and Threshing	Mobile	-	-	47	58.75	33	41.25
		Internet	-	-	12	15.00	68	85.00
		KCC	-	-	03	03.75	77	96.25
11.	Seed Production	Mobile	-	-	27	33.75	53	66.25
		Internet	-	-	18	22.50	62	77.50
		KCC	-	-	-	-	80	100.00
12.	Credit and Finance Information	Mobile	-		52	65.00	28	35.00
		Internet	-		24	30.00	56	70.00
		KCC	-	-	-	-	80	100.00
13.	Crop Insurance	Mobile	03	03.75	54	67.50	23	28.75
		Internet	-	-	44	55.00	36	45.00
		KCC	-	-	-	-	80	100.00
14.	Marketing Information & Price Trend	Mobile	44	55.00	33	41.25	03	3.75
		Internet	29	36.25	42	52.50	09	11.25
		KCC	03	03.75	03	03.75	74	92.50

Table 2: Distribution of the non registered users according to the extent of use of ICTs tools for getting information (n=80)

S. No.	Type of Information	ICTsTools	Regularly		Occasionally		Never	
			F	%	F	%	F	%
1.	Soil Health Management	Mobile	26	32.50	42	52.50	12	15.00
		Internet	15	18.75	17	21.25	48	60.00
		KCC	-	-	12	15.00	68	85.00
2.	Agromet Advisory Services	Mobile	25	31.25	25	31.25	30	37.50
		Internet	10	12.50	15	18.75	55	68.75
		KCC	-	-	16	20.00	64	80.00
3.	Cultivation Aspects	Mobile	21	26.25	23	28.75	36	45.00
		Internet	06	07.50	20	25.00	54	67.50
		KCC	-	-	18	22.50	62	77.50
4.	Input Availability and Prices	Mobile	06	07.50	38	47.50	36	45.00
		Internet	-	-	15	18.75	65	81.25
		KCC	-	-	-	-	80	100.00
5.	Seed and Sowing	Mobile	15	18.75	36	45.00	29	36.25
		Internet	-	-	21	26.25	59	73.75
		KCC	-	-	03	03.75	77	96.25
6.	Integrated Nutrient Management	Mobile	-	-	25	31.25	55	68.75
		Internet	-	-	11	13.75	69	86.25
		KCC	-	-	-	-	80	100.00
7.	Irrigation Management	Mobile	15	18.75	25	31.25	40	50.00
		Internet	03	03.75	20	25.00	57	71.25
		KCC	-	-	09	11.25	71	88.75
8.	Disease and Pest Early Warning System	Mobile	-	-	19	23.75	71	88.75
		Internet	-	-	-	-	80	100.00
		KCC	-	-	-	-	80	100.00
9.	Pest and Disease Management	Mobile	34	42.50	40	50.00	06	07.50
		Internet	09	11.25	49	61.25	22	27.50
		KCC	03	03.75	10	12.50	67	83.75
10.	Harvesting and Threshing	Mobile	03	03.75	12	15.00	65	81.25
		Internet	-	-	03	03.75	77	96.25
		KCC	-	-	03	03.75	77	96.25
11.	Seed Production	Mobile	-	-	15	18.75	65	81.25
		Internet	-	-	03	03.75	77	96.25
		KCC	-	-	-	-	80	100.00
12.	Credit and Finance Information	Mobile	06	07.50	30	37.50	44	55.00
		Internet	-	-	15	18.75	65	81.25
		KCC	-	-	03	03.75	77	96.25
13.	Crop Insurance	Mobile	06	07.50	16	20.00	58	72.50
		Internet	-	-	12	15.00	68	85.00
		KCC	03	03.75	06	07.50	71	88.75
14.	Marketing Information & Price Trend	Mobile	33	41.25	38	47.50	09	11.25
		Internet	12	15.00	26	32.50	42	52.50
		KCC	-	-	03	03.75	77	96.25

Table 3: Distribution of respondents according to the extent of use of ICTs

S.No.	Category	Users (n=80)		Non-users (n=80)		Overall (n=160)	
		F	%	F	%	F	%
1.	Low (below 54.75)	08	10.00	34	42.50	42	26.25
2.	Medium (54.75 to 75.93)	38	47.50	43	53.75	81	50.62
3.	High (above 75.93)	34	42.50	03	03.75	37	23.13
	Total	**80**	**100**	**80**	**100**	**160**	**100**

Mean=65.34, SD=10.59

occasionally and 27.50 per cent non-users never use it. Kisan call center was never used by 83.75 per cent of non-users; whereas, 12.50 per cent of non-users used it occasionally and 03.75 per cent non-users use it regularly.

With regard to marketing information and price trend, mobile and internet were used regularly by 41.25 per cent and 15.00 per cent of non-users respectively; whereas, 47.50 per cent and 32.50 per cent non-users use them occasionally respectively. Kisan call center was used occasionally by 03.75 per cent of non-users; whereas, 96.25 per cent of non-users never use it.

It is evident from Table 3 that 47.50 per cent of the users belonged to medium extent of use, followed by high (42.50%) and low (10.00%) extent of use of ICTs. In case of non-users more than half of the respondents belonged to medium (53.75%) extent of use, followed by low (42.50%) and high (03.75%) extent of use of ICTs. On the whole, half of the respondents belonged to medium (50.62%) extent of use, followed by low (26.25%) and high (23.13%) extent of use of ICTs. The extent of use of ICTs can be increased by giving some additional training to impart skills in the utilization of ICT tools. The result is in accordance with Madhubabu (2008).

CONCLUSION

It is concluded that 47.50 per cent of the users belonged to medium extent of use of ICTs, followed by high (42.50%) and low (10.00%) extent of use. In case of non registered users a little more than half of the respondents belonged to medium (53.75%) extent of use of ICTs, followed by low (42.50%) and high (03.75%) extent of use. On the whole, half of the respondents belonged to medium (50.62%) extent of use, followed by low (26.25%) and high (23.13%) extent of use of ICTs. Majority of the farmers belonged to medium level of extent of use of ICTs and had a moderately favourable attitude towards ICTs use.

REFERENCES

Agrawal, S., Singh, S.R.K. and Rajan, P. 2014. Correlation of technical knowledge of *Kisan Mobile Sandesh*. *Hind Agri-Horticultural Society* **9** (2): 237-242.

Gawande, R.P., Milind, C., Ahire and Sandip, D. P. 2009. Mass media utilization pattern and constraints faced by cotton growers. *Journal of Communication Studies* **27**(2): 69-77.

Hiremath, S.U. and Balasubramanya. 2010. Socio-politico characteristics of televiewing rural women. *The Andhra Agricultural Journal* **57**(2): 189-193.

Madhubabu, K. 2008. A study on training intervention of Extension Education Institute on the capacity building of functionaries of developments. Ph.D. Thesis, submitted to Acharya N.G. Ranga Agricultural University, Hyderabad, India.

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CONSTRUCTION OF ATTITUDE SCALE FOR TRIBAL FARMERS ABOUT ICT USE FOR SEEKING AGRICULTURAL INFORMATION

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ABSTRACT

To determine the attitude of tribal farmers towards ICT use for transfer of agricultural technology, an attitude scale was developed by the using Likert technique of summated rating. The scale consisted of 49 statements in which positive and negative statements were arranged on five point continuum and finaly 30 statements were selected for the study purpose. These five points were strongly agree, agree, undecided, disagree and strongly disagree comprising score 5,4,3,2,1 for positive statements and 1,2,3,4,5, for negative statements. The effectiveness of ICT use for transfer of agricultural technology mainly depends upon the tribal farmers, which in turn is reflected by their attitude towards it.

INTRODUCTION

Information and communication technology in agriculture (ICT in agriculture), also known as e-agriculture, is developing and applying innovative ways to use ICTs in the rural domain, with a primary focus on agriculture. ICT in agriculture offers a wide range of solutions to some agricultural challenges. It is seen as an emerging field focusing on the enhancement of agricultural and rural development through improved information and communication processes. In this context, ICT is used as an umbrella term encompassing all information and communication technologies including devices, networks, mobiles, services and applications; these range from innovative Internet-era technologies and sensors to other pre-existing aids such as fixed telephones, televisions, radios and satellites. E-agriculture continues to evolve in scope as new ICT applications continue to be harnessed in the agriculture sector. More specifically, e-agriculture involves the conceptualization, design, development, evaluation and application of innovative ways to use ICTs in the rural domain, with a primary focus on agriculture. Provisions of standards, norms, methodologies, and tools as well as development of individual and institutional capacities, and policy support are all key components of e-agriculture.

Attitude is operationally defined as the mental disposition of an individual to respond favourably or unfavourably to a psychological object. Attitude in the present study is defined as "the degree of positive or negative feelings, opinion, belief and action associated with the Information and Communication technology, where people can differ in varying degrees." Attitude of an individual plays important role in determining one's behaviour with respect to a particular psychological object. As corollary of this fact the attitude of tribal farmers towards ICT use for transfer of agricultural technology will largely determine the nature and extent of their involvement and participation in developmental activities. Attitude is the degree of positive effects of tribal farmers towards ICT use for transfer of agricultural technologyhas immense relevance to their uses. Studies shown that uses of ICT use for transfer of agricultural technology depends upon the favourable attitude towards them. There is need to develop standardised scale to know the degree of attitude towards ICT uses. The investigation was undertaken with the specific

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objective to construct the attitude scale towards ICT use for transfer of agricultural technology in Southern Rajasthan.

RESEARCH METHODOLOGY

In the present study, an attempt has been made to develop a scale, which can scientifically help in measuring the attitude of the farmers towards Information and Communication Technology.There are several techniques available for constructing attitude scale but all of them are not equally useful for the present study. While looking into the need of present study and effectiveness of the available techniques of constructing scales Likert's summated rating scale was considered most appropriate, as it requires less number of items and number of judges to start with. It is as relatively less time consuming as compared to other techniques. The steps followed for scale construction are as follows:

a) Collection of items: The first step in the construction of attitude scale was to obtain statements which elicits the attitude about ICTs. Hence, a set of items and statements were collected based on review of literature, discussions with the ICT experts and extension spacialists.

b) Editing of items: The statements were carefully edited following the criteria given by Likert (1932) and Edwards (1957). The statements which were ambiguous, irrelevant and not conforming to the suggested criteria were deleted. At this stage, the number of statements got reduced to 49. Again the statements were rewritten in the light of comments of experts. After editing, the total number of statements left were 49, it was ensured that equal number of positive and negative statements were selected.

c) Selection of items: The statements were formulated in such a way that they expressed the positive or negative and neutral attitude. In order to get a five point continuum, five alternative response categories ranging from strongly agree to strongly disagree were assigned to each statement. After editing, the total number of 49 statements were retained, it was ensured to select equal number of positive and negative statements.

d) Item Analysis: For item analysis, the items were first administered to sample of 24 farmers of the study area. These were those who were not included into targeted respondents. The responses from them were elicited on a five point continuum v*iz.* strongly agree (SA), agree (A), undecided (UD), disagree (DA) and strongly disagree (SDA), If the item was positive (Favorable to the subject under study), SA, A, UD, DA and SDA were given the numerical values of 5, 4, 3, 2 and 1 respectively. Reverse scores were assigned for negative statements. The score for each individual respondents on the scale was computed by summating the weights of individual's item response.

Considering the total score earned by each farmer, they were arranged in descending order. Then, 25 per cent of the subject with the highest total score and also 25 per cent of the subjects with the lowest total score were selected. These two groups provided the criterion groups as "high" and "low" groups to evaluate the individual item. The critical ratio (t- value) for each item was worked out by the formula given by Edwards (1957).

$$t = \frac{\bar{X}_H - \bar{X}_L}{\sqrt{\frac{\sum X_H - \bar{X}_H^2 + \sum X_L - \bar{X}_L^2}{n(n-1)}}}$$

Where :

$$(X_H - X_H)^2 = X_H^2 - \frac{(\sum X_H)^2}{n}$$

and

$$(X_L - X_L)^2 = X_L^2 - \frac{(\sum X_L)^2}{n}$$

where,

$\sum X_H^2$ = Sum of the squares of the individual scores in the high groups

$\sum X_L^2$ = Sum of the squares of the

individual scores in low groups

$\bar{X}_H$ = The mean score on a given statement for the high group

$\bar{X}_L$ = The mean score on a given statement for the low group

n = Number of subjects (Respondents) in each group

The 't' value is a measure of the extent to which a given item differentiates between the high group from the low group.

d) Final selection: The items having 't' value greater than 1.75 were selected for inclusion in the final format of the scale. Through this procedure, 30 items retained and included in final format of attitude scale.

e) Reliability of test: The format of the scale consisting 30 items was split down into two equal halves on the basis of odd & even numbers of items and was administered to 24 farmers. Thus, two sets of scores were obtained and then scores were correlated with each other. The correlation coefficient for two sets of scores was 0.45. Thus, it inferred that product moment correlation coefficient produces reliability coefficient of half the test. This coefficient under estimates the reliability of the full length scale which provides a larger sample of the content domain and also tends to produce a wider range of scores, both of which have the effect of raising the reliability estimate. Hence, the above coefficient needs to be corrected to give the stepped- up reliability of the whole measure or to give the reliability of the full length test. The correction factor used for full length reliability coefficient according to Spearman – Brown prophecy formula is as under;

Spearman-Brown prophecy formula:

$$r_{tt} = \frac{2 r_{1/2\,1/11}}{1 + r_{1/2\,1/11}}$$

Where,

r_{tt} = The reliability coefficient of the whole test

$r_{1/2\,1/11}$ = The reliability coefficient of the half test

The equation may also be written as follows:

Reliability of the whole test =

$$\frac{2 \times \text{reliability of the half test}}{1 + \text{reliability of the half test}}$$

The value of r_{tt} came to be 0.62 indicating reliability of the scale

F) Validity of the scale: To test the validity of the scale, content and paired 't' test for validity of the tool were examined. The process used was same as in validity of involvement test. The result of paired 't' test, which was greater than critical value at the 0.05 level of significance ('t'-value 2.72). Thus, test was found to be significant at 0.05 level of significance and used in the study as valid tool.

RESULTS AND DISCUSSION

The attitude scale was developed in the final format of the interview schedule for administration to the sampled farmers. The scale consisted of 30 items, out of which 15 were positive and 15 were negative. The scale for administration was provided with five response categories viz. "Strongly agree" "agree" "undecided", "disagree" and 'strongly disagree" with scores 5, 4, 3, 2 and 1 for positive statements and reverse for the negative statements. The list of final attitude statements with 't' value is given in Table 1.

CONCLUSION

It can be concluded that finally selected items are highly relevant to ICT application and statistically fit for the measuring attitude about ICT application in agriculture. The reliability and validity values of the scale show the precision and consistency of the scale therefore, it can be concluded that the entire scale is highly reliable and valid for further application. This scale can be used to measure the attitude of tribal farmers beyond the study area with suitable modifications.

Table 1: Attitude statments for use of ICTs for seeking agricultural information with 't' value

S. No.	Items/ Statements	't' value
1.	ICT is quick medium for getting agricultural technology (+)	2.90
2.	Information on weather forecasting through ICT not saves farmers from production losses (-)	1.93
3.	The agricultural information obtained through ICT tools is outdated (-)	4.42
4.	Information received through ICT is not matching to the real field situation (-)	2.07
5.	ICT tools can contribute significantly to the livelihood generation of farmers (+)	1.93
6.	ICT is boon to the farmers living in the remote areas (+)	2.44
7.	Use of ICT by farmers is simply waste of time (-)	2.69
8.	The agricultural information received through ICTs is not need specific (-)	3.53
9.	ICTs reduce the social isolation among farming community (+)	7.05
10.	Language is a big constraint in getting information through electronic media (-)	2.39
11.	ICT helps in risk management in agriculture (+)	3.10
12.	ICT tools facilitate farmers to get remunerative price of their produce (+)	2.66
13.	ICT tool are not effective to convince farmers for adoption of agricultural innovation (-)	4.53
14.	Use of ICT is still dream for poor illiterate farmers (+)	2.23
15.	Information received through ICT is more reliable and trustworthy (+)	3.35
16.	ICT provide general recommendations to the farmers (-)	2.79
17.	ICT improve decision making capacity of farmers (+)	4.77
18.	The contribution of ICT in boosting up agricultural production is negligible (-)	2.57
19.	ICT benefits equally to resource poor and rich farmers (+)	2.83
20.	Farm planning through ICT is generally faulty (-)	2.04
21.	ICT is costly and time consuming affair (-)	2.57
22.	Easy access to ICT tools in the rural areas is the necessity of the day (+)	2.39
23.	Literacy is constraining farmers to use ICT tools (-)	3.14
24.	Feedback of the farmers problem is very fast in ICT application (-)	3.06
25.	ICT tools are effective means to boost agricultural knowledge of farmers (+)	3.95
26.	ICTs motivate farmers towards commercialization (+)	3.30
27.	ICT is quick solution providing technology for agricultural problems (+)	4.39
28.	ICT is a big propaganda, useless for the farming community (-)	4.02
29.	ICT acquaint farmers about market prices fluctuations (+)	3.95
30.	Frequent power failure is not the hurdle in use of ICT tools (+)	3.13

REFERENCES

Edward, A.L. 1957. Techniques of attitude scale construction. New York : Appleton Century Crafts, Inc. **13**(16): 153-157.

Kerlinger, F.N. 2004. Foundations of Behavioral Research. 2nd ed. Surjeet Publications, Delhi.

Likert, R.A. 1932. A Technique for the measurement of attitude scales. Psychology, New York, No.140.

Verma, S.R., Sharma, F.L., Chayal, K. and Kaushik, M.K. 2013. Attitude of extension personnel towards application of information and communication technology in Agriculture. *Rajasthan Journal of Extension Education* **20**: 102-107.

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QUALITY EVALUATION OF KULFI SAMPLES SOLD IN THE MARKET OF BIKANER CITY

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ABSTRACT

Dairy products are universally known for their nutritional and therapeutic values. Kulfi is the popular Indian frozen concentrated milk product, which is an ice cream like product, has been quoted in literature in different ways like kulfi, kulffi, kulafi, kulfy, kulphy. Kulfi which is one of the most popular and nutritious dairy product can sometimes become a potential source of health hazard, by causing food poisoning outbreaks or by acting as a carrier of pathogens or by adulteration. The present study was attempted to evaluate the quality of kulfi. For this, samples were collected in triplicates in previously sterilized containers, from five prominent shops of Bikaner city. The average moisture, crude protein, fat, total ash, carbohydrate, energy, calcium and phosphorus content was ranged from 42.36-57.20 gm %, 6.56-9.28 gm%, 10.13-18.56 gm%, 3.35-4.35 gm%, 15.01-35.16 gm%, 233-273 Kcal, 683-718mg%, and 736-901 mg% respectively. Forty percent and 20 percent samples were noted to be of satisfactory quality with respect to SPC and faecal streptococcal count respectively. Presence or absence of adulterants like starch and metanil yellow were also detected, but all the samples were found to be devoid of starch but in 20 percent samples the inedible color that is metanil yellow was present . With respect to the possibility of adulteration and microbial contamination, quality of kulfi remains in question.

INTRODUCTION

Kulfi is popular Indian frozen dessert; it is produced by concentrating whole milk to about two folds followed by addition of sugar and freezing it in aluminium or plastic moulds, usually of conical shape. Kulfi is also known as qulfi, kulfa, kulphy etc. (Pandit, 2004), is one of the most popular and nutritious dairy product can sometimes become a potential source of health hazard, by causing food poisoning outbreaks or by acting as a carrier of pathogens or by adulteration. There are many causes for microbial contamination and adulteration of ice cream being mainly the poor quality of ingredients, improper processing or pasteurization, prolong aging of mix at low temperature, improper cleaning and sanitizing the equipments, improper handling and storage of the finished product (Yadav *et al.*, 1993 and Pooran *et al.*, 2012). With respect to the possibility of adulteration and microbial contamination, quality of kulfi remains in question. An attempt was therefore made in the present investigation to study the quality of kulfi with respect to nutritional, adulteration and bacteriological aspects.

RESEARCH METHODOLOGY

Samples of kulfi (kesar) were procured in triplicates and in previously sterilized containers from five different prominent shops of Bikaner city (Rajasthan). All the samples were immediately brought to laboratory under cold conditions and stored in refrigerator till used for analysis

Analysis of the kulfi samples was carried out using standard methods for moisture, crude protein, total ash, fat, carbohydrate, energy (AOAC, 1995), calcium (Talptra *et al.*, 1940), and phosphorus (Gupta *et al.*, 1988). Bacteriological qualities were assessed on the basis of standard plate count (APHA, 1960), staphylococcal count (Chapman, 1946), psychrophilic count (APHA, 1978), coli form count (APHA, 1960) and E. coli count (APHA, l960) and faecal streptococcal count (NCFA, 1968). The presence of adulterants, if any, like inedible colour (metanil yellow) and exogenous

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starch were analyzed by using the methods prescribed by AOAC (1995) and Plummer (1971) respectively.

RESULTS AND DISCUSSION

a) Nutritional Analysis : The average moisture, crude protein, fat, total ash, carbohydrate, energy, calcium and phosphorus content of kulfi samples ranged from 42.36-57.20 gm per cent, 6.56-9.28 gm per cent, 10.13-18.56 gm per cent, 3.35-4.35 gm per cent, 15.01-35.16 gm per cent, 233-273 Kcal, 683-718 mg per cent and 736-901 mg per cent respectively (Table I). Statistically significant difference at 1 per cent level was found between the kulfi samples for all the above nutrient contents. Values of these nutrient content were noted to be comparable with the standards, prescribed by PFA (2000).

b) Bacteriological Examination : On the basis of ISI (1964) standard, only 40 per cent and 20 per cent of kulfi samples were found to be satisfactory with respect to SPC and faecal streptococcal count. Hundred percent of kulfi samples were noted to be of unsatisfactory grade with respect to presence or absence of staphylococcal count, psychrophlic count and E.coli count. On the basis of ISI (1964) standard, 80 per cent of kulfi samples were found to be of unsatisfactory quality with respect to coliform count (Table 2).

c) Adulteration analysis : Results of the adulterant analysis showed that all the kulfi samples analyzed were found to be free from adulterants with respect to inedible color (metanil yellow) and exogenous starch as per suggestions of the established standards (PFA, 2000), except one sample which was adulterated with metanil yellow (Table 3).

CONCLUSION

Overall quality of kulfi samples when adjudged on the basis of their nutritional, bacteriological and adulteration analysis, the ice cream was found to be nutritious as well as free from exogenous starch but metanil yellow was present in very small amount in only one sample of kulfi. But on the basis of bacteriological examination all the kulfi samples under study, had high percentage of microbial count, indicating significance of sanitary methods used during processing, handling, storage and distribution of milk and milk products.

Table 1 : Nutrient composition of kulfi samples

Sample Number	Moisture gm%	Protein gm%	Fat gm%	Ash gm%	Carbohydrate gm%	Energy KCal	Calcium mg%	Phosphorus mg%
Sample I	57.20	6.56	16.88	4.35	15.01	238	690	901
Sample II	42.36	8.75	10.13	3.60	35.16	267	718	773
Sample III	51.20	9.28	11.25	3.35	24.92	238	683	736
Sample IV	50.96	7.44	18.56	3.92	19.12	273	708	798
Sample V	55.84	8.31	14.06	3.49	18.30	233	698	737
SEM	0.105	0.096	0.069	0.182	0.241	0.973	4.66	23.77
CD value	0.332	0.302	0.22	0.57	0.76	3.07	14.69	74.91

CD : Critical difference

Table 2: Bacteriological examination of kulfi samples

Sample	SPC/g or ml	Quality	Stephy-lococcal Count / gm or ml	Quality	Psychro-phlic count/g or ml	Quality	Coliform Count/g or ml	Quality	E.Coli count/g or ml	Quality	Faecal Strepto-coccus Count/g or ml	Quality	Overall bacterial quality
Standard	<2.5 x105 (ISI,1964)	S	Zero	S	<5x104 (Mergyl,1984)	S	<100 (ISI,1964)	S	Zero	S	Zero	S	S
Sample I	4x104	S	2x103	US	8.5x104	US	1.8x103	US	1.5x104	US	9x102	US	US
Sample II	2.5x106	US	8x103	US	1.2x104	US	1.8x103	US	4x104	US	1.6x102	US	US
Sample III	8.2x105	US	4.5x103	US	1x105	US	0.09x103	S	3.1x104	US	0	S	US
Sample IV	1.2x105	S	2x103	US	1x106	US	3.5x102	US	5x102	US	1.8x102	US	US
Sample V	3x107	US	3.7x103	US	9x104	US	1.6x103	US	3.4x102	US	2.8x102	US	US
Percentage of S/US samples	60%US 40%S		100%US		100%US		80%US 20%S		100%US 20%S		80% US		100%US

S : Satisfactory

US:Unsatisfactory

Table 3: Detection of presence/absence of adulterants in kulfi samples

Sample Number	Adulterants	
	Starch	**Color (Metanil Yellow)**
Sample I	Absent	Absent
Sample II	Absent	Absent
Sample Ill	Absent	Slight pink color present
Sample IV	Absent	Absent
Sample V -	Absent	Absent

REFERENCES

American Public Health Association, 1960. Standard methods for the examination of dairy products. 10th ed. inc., New York.

American Public Health Association, 1978. Standard methods for the examination of dairy products. 14th ed. Inc., New York.

A.O.A.C., 1995. Official Methods of Analysis. International Washington, D.C. USA. 16th ed, 3rd rev. vol. (II).

Chapman, 0.11., 1946. A single culture medium for selective isolation of plasma coagulating staphylococci and for improved testing for chromogenesis, plasma coagulation, mannitol fermentation and stone reaction. *J Bart*, **51**:409.

Gupta. P.C.; Khatta, V.K.; Mandal, A.B., 1988. Estimation of phosphorus content in food stuff. A manual on analytical techniques in animal nutrition. Haryana Agricultural University, Hissar, Directorate of Publications.

Indian Standards Institution, 1964. Indian standard specification for ice cream. IS: 2802.

Mergyl, M., 1984. Choice milk: Experimental checking of production and purchase. *Pnimysal*, **35**(6): 307-309. (Dairy Sci. Abst., 48: 1501).

Nordic Committee on Food Analysis, NCFA. 1968. Publication of royal veterinary and Agricultural University, Copenhagen, Denmark. No. 68.

Pandit, P. 2004. Technology studies on the manufacture of kulfi using artificial sweeteners. M. Tech. thesis, National Dairy Research Institute, Karnal, India

Plummer, T.D. 1971. Iodine test for polysaccharides. An Introduction to Practical Bio-chemistry, 3rd edition, pp. 177.

Pooran, A.; Seepersadsingh, N.; Georges, K. and Adesiyun, A. 2012. Evaluation of the bacteriological quality of ice cream sold in Trinidad; *Journal of Food, Agriculture & Environment* **10**(2): 39-45.

Prevention of Food Adulteration, 2000. Act 1954. With prevention of food adulteration rules 1955 amendment up to 2000 date 20-11-2000 and commodity index. Commercial Law Publishers (India) Pvt. Ltd.

Talpatra, S.K.; Roy, S.L. and Sen, K.C. 1940. Estimation of calcium, phosphorous, sodium and potassium in food stuffs. *Indian Journal of Veterinary Science* **10**: 243.

Yadav, J.S.; Grover, S. and Batish, V.K. 1993. Microbiology of Indigenous milk products. A comprehensive Dairy Microbiology. 1st edition. 277, 530.

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PROBLEMS OF FARMERS IN UTILIZATION OF KNOWLEDGE GAINED THROUGH DOORDARSHAN TELECAST AGRICULTURAL PROGRAMME

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ABSTRACT

The present study was mainly focused on the problems faced by the farmers in applying the knowledge gained through telecasted agricultural programme. It was also aimed to see the socio-economic and personal profile of the viewers of agricultural programme telecasted through Doordarshan Kendra Guwahati. A total of 120 of farmers were selected as respondents for the study. The study included 5 parameters which represent some selected characteristics of the agricultural programme viewers. The study revealed that lack of crop insurance facilities., information is not timely, electricity problem, lack of microfinance and credit facilities, lack of Post Harvest Technological facilities, non availability of seeds and other resources, lack of irrigation facilities, absence of near-by regulated markets, lack of transportation and storage facilities were some of the problems faced by the farmers in applying the knowledge gained through telecasted agricultural programme.

INTRODUCTION

Nearly half of the available human resources in India are farmer. Majority of them are living in rural areas and are illiterates. Hence, there is an urgent claim for diffusion of useful technical knowhow among them to improve socio-economic status and increase their knowledge level. This offers tremendous opportunity for use of electronic media in disseminating information. So, television has been acclaimed to be the most effective media for diffusing the scientific knowledge to masses. It offers vitality and newness, which attract attention, create interest and stimulate a desire to learn.

Various mass media are in use, out of that Television, Radio, Farm literature and Newspaper are prominent in our country. The objective of communication of the agricultural information to farmers is not only to create awareness among them but also to impart new ideas that change their behavior and mode of farming. Further the purpose of any communication is to create desired impact on target audience, which depends on their activity behavior. In this background the present study was conducted to find out the problems faced by the farmers in applying the knowledge gained through telecasted agricultural programme through Doordarshan Kendra Guwahati.

RESEARCH METHODOLOGY

The present study was conducted in the Jorhat district of Assam. Two agricultural sub-divisions i.e Jorhat and Majuli were selected purposively. From each of the sampled sub-division, three A.E.O. circles were selected randomly and from each of the A.E.O. circle, one VLEW circle was selected randomly. Thus, from each VLEW circle, 20 farmers were selected randomly and ultimately 120 of farmers were selected as respondents for the study.

RESULTS AND DISCUSSION

It was seen from Table 1 that 45.00 per cent of the agricultural programme viewers belonged to the age group of 36-50 years. The age groups of 36-50 years were consisted of those farmer viewers who were young, energetic and involved themselves in farming as a profession, so in this range of age group the respondents were found to be somewhat more

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in the study area.

It was evident from the table 1 that 40.00 per cent of respondents earned in range of Rs. 52,000-77,000 per annum. So, it can be understood from the table that almost all the respondents within the study area were hardly able to reap the benefit of the farming profession though most of them were farmers by profession and possessed the optimum level of operational land holding.

It was noted that 100.00 per cent of the respondents were belonged to male category because they were very much interested in the farming sector and were reluctant to view the agricultural programme telecasted through Doordarshan Kendra Guwahati as compared to the female as shown in table 1.

Table 1 also shows that 79.16 percent of the respondents mainly practiced rice based agricultural enterprise, 19.16 percent practiced it partially and 1.68 percent not practiced rice based agricultural enterprise. Livestock based agricultural enterprises were partially practiced by majority (51.66%) followed by 27.50 percent who practiced it mainly and not practiced by 20.84 percent whereas, 40.00 percent of the respondents not engaged in fishery based agricultural enterprises followed by 37.50 percent mainly engaged themselves in fishery based agricultural enterprises and the rest 22.50 percent engaged themselves partially. Vegetable based agricultural enterprises is mainly practiced by 43.34 percent of the respondents followed by 32.50 percent who didn't practiced and the rest 24.16 percent partially practiced it. Others such as apiary, sericulture etc. was practiced by some of the respondents in the following percentage as follows mainly by 4.16 percent, partially by 37.50 percent and not practiced by 58.34 percent (majority). During the interview and survey it was seen that rice based agricultural enterprises were mainly practiced by the farmers of the Teok and Nakasari from Jorhat sub-division and Kamalabari and Garamur from Majuli sub-division, whereas vegetable based agricultural enterprises were mainly practiced by the farmers of the Jhengrai (Majuli)

Table 1: Frequency and percentage distribution of the respondents according to their socio-economic and personal characteristics

(n=120)

S. No.	Variable	Frequency	Percentage (%)
1	Age		
	Up to 35	39	32.50
	36 to 50	54	45.00
	51 and above	27	22.50
2	Income level		
	Below Rs. 25,000.	25	20.83
	Rs. 25,000-51,000.	37	30.83
	Rs. 52,000-77,000.	48	40.00
	Rs. 78,000 and above.	10	8.34
3	Gender		
	Male	120	100.00
	Female	0	0.00
4	Agricultural Enterprises		
	(i) Rice based		
	Mainly	95	79.16
	Partially	23	19.16
	Not Practiced	2	1.68
	(ii) Livestock based		
	Mainly	33	27.50
	Partially	62	51.66
	Not Practiced	25	20.84
	(iii) Fishery Based		
	Mainly	45	37.50
	Partially	27	22.50
	Not Practiced	48	40.00
	(iv) Vegetable based		
	Mainly	52	43.34
	Partially	29	24.16
	Not Practiced	39	32.50
	(v) Others (apiary, sericulture)		
	Mainly	5	4.16
	Partially	45	37.50
	Not Practiced	70	58.34
5	Operational land holding		
	0.13 – 1.00 ha.	21	17.50
	1.01 – 2.00 ha.	62	51.66
	2.01 – 3.00 ha.	28	23.33
	Above 3.00 ha.	9	7.51

and Alengmora (Jorhat). Apiary and sericulture were mainly practiced by the farmers of the Garamur (Majuli) region because the crops they used to grow were not only provide support to their family but also provide suitable conditions for rearing of the Bee and Silkworms.

As observed from the Table 1 that majority (51.66%) of the respondents belonged to category of land holding 1.01–2.00 ha in overall sample, followed by 23.33 percent with land holding of 2.01–3.00 ha. The land holding of 0.13–1.00 ha and above 3.00 ha was possessed by 17.50 percent and 7.51 percent respectively in overall sample.

Problems faced by the farmers is given in Table 2. It could be seen from Table 2 that the majority (78.33%) of the respondents mentioned that electricity was one of the main problem faced by them and it was ranked 1st amongst their major problems according to them lack of electricity made them unable to use their water pump set in the field whenever required then it effects in regular viewing of the programme by them which breakage the flow of continuous information provided to them as a result sometimes they used to fall in difficulties for applying the little knowledge in their field inspite of having the interest, followed by lack of transportation and storage facilities as pointed out by majority (60.83%) with 2nd ranking, due to this problem the farmer viewers were unable to sell their product in the desired market which sometimes lead them to earn less profit as a result they used to face distress sale. Next was lack of irrigation facilities by majority (57.50%) occupied the 3rd rank in the problem list, due to this problem the farmer viewers were not able to apply the required quantity of water to their crops as shown in the agricultural programme, then lack of crop insurance facilities as mentioned by 48.33 percent of the respondents occupied the 4th rank in order of problems. The next problem of lack of microfinance and credit facilities was mentioned by (47.50%) the farners, which had occupied 5th ranking, according to them though they were able to understand the information provided through the telecasted programme yet they were unable to apply it because they didn't have immediate cash in their hand for this they couldn't apply many measures that were shown to them and it was opined that most of them were unaware about the credit facilities, non availability of seeds and other resources was mentioned by 46.66% of the respondents with 6th ranking, according to them they used to get sufficient knowledge regarding the application of the information but they failed to apply it only because they were not able to get required material for application, followed by problem of lack of Post Harvest Technological facilities was expressed by 40.00% of the respondents and ranked 7th, due to that they were unable to preserved

Table 2: Distribution of respondents according to the problems faced by them, in applying the knowledge gained through telecasted agricultural program

(n=120)

S.No.	Particulars	Frequency	Percentage	Rank
1.	Electricity problem	94	78.33	I
2.	Lack of transportation and storage facilities	73	60.83	II
3.	Lack of irrigation facilities	69	57.50	III
4.	Lack of crop insurance facilities	58	48.33	IV
5.	Lack of microfinance and credit facilities	57	47.50	V
6.	Non availability of seeds and other resources	56	46.66	VI
7.	Lack of Post Harvest Technological facilities	48	40.00	VII
8.	Information is not timely	43	35.83	VIII
9.	Absence of near-by regulated markets	25	20.83	IX
10.	Lack of nearby Factories and Industries	22	18.33	X

their perishable goods and they had to sell it in a very non-reasonable price which made them to face distress sale ultimately heavy loss, then 8th ranked problem was that 35.83 percent of the respondents expressed that the information was not timely i.e., sometimes unwanted and useless information as perceived by the farmer viewers were provided which lead to the non application of the information, absence of near-by regulated markets as cited by 20.83% farmers was ranked in 9th position, fell them in danger of facing loss and they were ultimately unable to get their absolute price for their products, lastly lack of nearby Factories and Industries was expressed by 18.33 per cent respondents, which stood in the 10th rank because of this they didn't like to go for large scale production which made them unable to apply new information and technology that were shown through the telecasted agricultural programme.

CONCLUSION

It is concluded that the major problems faced by the viewers include lack of crop insurance facilities., information is not timely, electricity problem, lack of microfinance and credit facilities, lack of irrigation facilities, absence of near-by regulated markets, lack of transportation and storage facilities, lack of nearby factories and industries. The following suggestions can be put forwarded for solving these problems:

REFERENCES

Mishra, B.C. 1978. Utilization of various sources of Agricultural Information by the farmers of Sitamarhi (Bihar). *Interaction* **41**(1&2): 84-88.

Pillia, S .S., Waghdhare, K. W. and Wakade, W.T., 1987. Viewing behaviour and habits of rural televiewers. *Maharashtra J. Extn. Edu.* **6**: 185-187.

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YIELD GAP ANALYSIS OF CEREAL AND PULSE CROPS IN JAMMU PROVINCE OF J&K STATE

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ABSTRACT

In this paper, an attempt has been made so as to ascertain whether districts falling in Jammu province of J&K state are self sufficient in food grain production or not and simultaneously to find out the gaps so as to fix priorities for KVKs falling under the aegis of SKUAST-Jammu so as to make Jammu province self sufficient in food grain production.

INTRODUCTION

Yields of crops must increase substantially over the coming decades to keep pace with global food demand driven by population and income growth. Ultimately global food production capacity will be limited by the amount of land and water resources available and suitable for crop production and by biophysical limits on crop growth. Quantifying food production capacity on every hectare of current farm land in a consistent and transparent manner is needed to inform decisions on policy, research, development and investment that aim to affect future crop yield and land use, and to inform on-ground action by local farmers through their knowledge networks. The challenges of global agriculture have been analysed exhaustively and the need has been established for sustainable improvement in agricultural production aimed at food security in a context of increasing pressure on natural resources (Cassman 2012; Connor and Mínguez 2012). Whereas, the importance of R&D investment in agriculture is increasingly recognised, better allocation of limited funding is essential to improve food production (Sumberg 2012; Connor and Mínguez 2012; Hall *et al*. 2013). In this context, the common and often large gap between actual and attainable yield is a critical target. Realistic solutions are required to close yield gaps in both small and large scale cropping systems worldwide; to make progress in this direction.

In India, it is the Indian Council of Medical Education (ICME) that sets up Nutrition Advisory Committees or Expert Groups and recommend the "Dietary Allowances" in respect of energy (Calories), proteins, fats, minerals, iron, vitamins etc. for various age groups within the population including special groups like infants, pregnant/nursing mothers, children etc. and at the same time recommend dietary allowance by activity groupings also. These Committees/Expert Group also recommend weighted average per capita requirements for the population of the country as a whole, to enable the policy makers plan for production or procurement of the required quantities of various foodstuffs. For the sustainable development of Jammu province, gap analysis of food grains has been done as per the norms fixed by Indian Council of Medical Education. This exercise will enable the planners to fix their priorities for sustainable development of individual district in particulars and Jammu Province as a whole.

RESAERCH METHODOLOGY

Data of ten districts of Jammu Province were collected from Statistical digest of 2011 and from Department of Agriculture, J & K Govt. Jammu regarding population, area under various crops and their production levels. In this paper, an attempt has been made so as to ascertain whether districts falling in Jammu province are self sufficient in food grain production or not and simultaneously to find out the gaps so as to fix priorities for KVKs falling under the aegis of SKUAST-Jammu so as to make Jammu province self sufficient in food grain production.

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RESULTS AND DISCUSSION

Data in Table 1 show that as per Indian Council of Medical Education (ICME) 0.475 kg of cereals (rice/wheat/maize) is required per capita per day. Besides, 0.080 kg of pulses is required per capita per day. Data in Table 2 show that districts Kathua, Reasi, Rajouri, Udhampur and Ramban were surplus in maize whereas, districts Samba, Jammu, Poonch, Doda and Kishtwar were deficit in maize. With regard to paddy, districts Kathua, Samba and Jammu were surplus, whereas districts Reasi, Rajouri, Poonch, Udhampur, Ramban, Doda and Kishtwar were deficit. It is pertinent to mention here that large area of Jammu, Kathua and Samba districts are plain and have assured irrigation facilities, whereas Reasi, Rajouri, Poonch, Udhampur, Ramban, Doda and Kishtwar are mostly hilly terrains which make them unsuitable for paddy cultivation. Also, with regard to wheat, districts Kathua, Samba, Jammu, Rajouri, Poonch and Udhampur were surplus whereas districts Reasi, Ramban, Doda and Kishtwar were deficit.

Table 1: Food consumption per capita per day as per ICME (Indian Council of Medical Education)

Food item	Comprises of	Kg/day/person
Cereals	Maize	0.475
	Wheat	
	Rice	
Pulses		0.080

Data in Table 3 show that all the districts of Jammu province are deficit in pulse production. This might be due to the reason that the farmers prefer cereal crops over pulse crops. Farmers grow pulses only on marginal lands. Lack of knowledge about scientific cultivation of pulses is another reason for low adoption of pulses among farmers; thereby resulting in deficit production of pulses. Further, a perusal of data presented in Table 3 shows that there is mismatch between requirement and production of pulses in all the districts of Jammu province which clearly indicates that there is immense scope of increasing the area, production and productivity of pulses in Jammu province.

CONCLUSION

In Jammu Province the districts Samba, Jammu, Poonch, Udhampur, Doda and Kishtwar lag in maize production. The new hybrid varieties may be tested on large scale through demonstrations on farmers' fields by the concerned KVKs in small patches of 1-2 kanal/s area so that the farmers can see the performance of these hybrids . This will give a big boost in agriculture sector. In the irrigated belts of Reasi, Rajouri, Poonch, Udhampur, Ramban, Doda and Kishtwar districts as per the suitability, paddy varieties may be introduced and demonstrations through KVKs concerned may be taken on priority. As far as wheat productivity is concerned, the six districts of Jammu province were self sufficient in wheat productivity whereas districts Reasi, Ramban, Doda and Kishtwar were deficit. For this, short duration varieties of wheat in Kishtwar and Doda districts, whereas in Reasi and Ramban districts, cultivation of improved varieties may be taken on priority. Regarding pulses, evolution, multiplication and use of improved seeds of various pulses should be taken up by concerned KVKs of the districts. Adopting cropping systems like mixed cropping or intercropping for growing pulses between widely spaced crops such as sugarcane, maize, potato, bajra etc. both under irrigated and rainfed conditions should be promoted. Farmers should be educated to adopt efficient plant protection measures. Besides, they should be motivated to grow pulses on relatively fertile lands rather than growing them on marginal lands. Trainings on improved package of practices of cereals and pulses should be imparted to the farmers for better adoption of the recommended technology. Promotional literature should be prepared and made available to the farmers and extensional personnel, preferably in vernacular.

Table 2: Gap analysis of food grains (cereals) of Jammu province

S.No.	District	Population	Cereals Requirement (Tons / annum)			Production (Tons)			Excess/ deficit (Tons)		
			Maize	Paddy	Wheat	Maize	Paddy	Wheat	Maize	Paddy	Wheat
1	Kathua	664803	40341.08	34578.10	40341.10	47588.10	76012.10	82260.20	7247.02*	41434.06*	41919.12*
2	Samba	354254	18425.60	21496.57	21496.60	8397.50	31805.70	50117.90	10028.1**	10309.17*	28621.37*
3	Jammu	1763966	61165.52	122331.00	122331.00	23379.30	147282.30	147695.20	37786.1**	24951.16*	25364.20*
4	Reasi	321959	27909.82	13954.90	13954.90	31896.00	3038.00	12757.00	3986.2*	10916.9**	1197.91**
5	Rajouri	628186	70792.64	27227.90	10891.20	103500.00	17593.00	73183.30	32707.5 *	9634.94**	62292.30*
6	Poonch	484333	62978.42	16794.20	4198.60	41273.10	6830.00	21495.90	31705.3**	5765.7**	17297.30*
7	Udhampur	597252	51774.28	25887.10	25887.10	64123.60	14786.20	37807.30	12349.3*	11100.3**	11920.20*
8	Ramban	279390	29063.55	12109.80	7265.90	32300.00	3486.00	4642.00	3236.45*	8623.81**	2623.89**
9	Doda	416278	43303.32	18043.05	10825.80	32294.10	4074.30	4537.90	11009.18**	22700.18**	6287.93**
10	Kishtwar	248063	25804.75	10751.98	6451.20	17869.60	2002.70	3389.28	7935.17 **	9275.26**	3061.91**

*Excess, ** Deficit

Table 3: Gap analysis of pulses of Jammu province of J&K state

S.No.	District	Population	Requirement (Tons/annum)	Production (Tons)	Deficit Tons
1.	Kathua	6,64,803	19,412.25	1361.86	18,050.39**
2.	Samba	3,54,254	10,344.22	518.56	9,825.65 **
3.	Jammu	17,63,966	51,507.81	3776.77	47,731.03**
4.	Reasi	3,21,959	9,401.20	246.12	9,155.07**
5.	Rajouri	6,28,186	18,343.03	311.40	18,031.63**
6.	Poonch	4,84,333	14,142.52	25.68	14,116.84**
7.	Udhampur	5,97,252	17,439.76	2342.95	16,216.74**
8.	Ramban	2,79,390	8,158.18	N.A	8,158.18**
9.	Doda	4,16,278	12,155.32	1572.46	10,582.86**
10.	Kishtwar	2,48,063	7,243.44	706.85	6,536.59**

** Deficit

REFERENCES

Anonymous, 2012. Digest of Statistics 2011-12. Directorate of Economics and Statistics. Government of Jammu & Kashmir.

Cassman, K.G. 2012. What do we need to know about global food security? *Food Security* **1**: 81-82.

Connor, D. J. and Mínguez, M. I. 2012. Evolution not revolution of farming systems will best feed and green the world. *Food Security* **1**: 106-113.

Hall, A. J., Feoli, C., Ingaramo, J. and Balzarini, M. 2013. Gaps between farmer and attainable yields across rainfed sunflower growing regions of Argentina. *Field Crops Research* **143**: 119-129.

Sumberg, J. 2012. Mind the yield gaps. *Food Security* **4**: 509-518.

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ADOPTION AND CONSTRAINTS OF KHARIF PULSE PRODUCTION TECHNOLOGY IN WESTERN RAJASTHAN

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ABSTRACT

The study was conducted in two districts namely, Jodhpur and Nagaur of the western Rajasthan. Two Panchayat Samities from each district, two villages from each Panchayat Samities and 15+15 of green gram and moth bean growing farmers from each village were selected randomly. Thus, the sample was 240. Data were collected through special developed interview schedules and analyzed. Study revealed that majority of the farmers adopted high yielding varieties, seed treatment, application of Urea/ NPK in standing crop,interculture operation and plant protection measures to a lesser extent. The study reported that the various constraints in kharif pulses cultivation which are namely, Less availability of newly release variety' (72.38%), Lack of processing facilities for pulses (45.40%), lack of knowledge on location specific improved varieties of kharif pulses (57.00%), problem of insect, pest and disease (80.66%) and pulse crop get damaged due to unfavorable weather conditions (70.22%) and which were major causes of poor pulse productivity.

INTRODUCTION

India being the largest producer (18.5 million tons) and processor of pulses in the world also imports around 3.5 million tons annually on an average to meet its ever increasing consumption of around 22.0 million tons. India ranks first in both area and production of all important pulses grown during kharif, viz. pigeon pea, green gram, mothbean, cowpea etc. the cool-season food legumes, viz. chickpea, pea, lentil, fababean. Pulses are used for food for humans and other animals.

Cultivation of pulses has been a traditional practice in India but, this practice has declined in recent decades due to substitution by the major cereal crops particularly rice and wheat since the advent of green revolution. Consequences of decreased pulse cultivation in the region include reduced opportunities for ameliorative effects of legumes on sustainability of cropping system and decreased local accessibility of legumes (pulses) as a nutritious dietary component. Due to large benefits of pulses for human health, the United Nations has proclaimed 2016 as the International Year of Pulses. Thus, due attention is required to enhance the production of pulses not only to meet the dietary requirement of protein but also to raise the awareness about pulses for achieving nutritional, food security and environmental sustainability. Pulses are important component to sustain the agriculture production as the pulse crops possess wide adaptability to fit into various cropping systems and being leguminous in nature have been known for their soil ameliorative effects since time immemorial. Thus, to increase the production and productivity of pulse crops in India, there is great need to identify the technological gaps existing between recommended and farmers' adopted pulse production technology so that appropriate measures can be taken and after evaluating the gap, an emphasis can be made on new improved pulse production technologies, which will lead to increase production and productivity of pulse crops.

In view of aforementioned, the present study was conducted in Jodhpur and Nagaur districts of Rajasthan to analyze the status of pulses production technology, constraints in cultivation of pulses and the possibilities of increasing production in the district.

RESEARCH METHODOLOGY

The study was conducted in two districts namely

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Jodhpur and Nagaur of western Rajasthan. Two Panchayat Samities, namely Luni and Osian from Jodhpur district, Jayal and Nagaur Panchayat Samiti from Nagaur district were selected randomly. From each Panchayat Samiti two villages and from each village 15 farmers of green gram and 15 farmers of moth bean were selected randomly. Thus, the sample was 120 green gram farmer's and 120 moth bean growing farmers for the study. The data were collected through specially developed interview schedules. For studying the extent of adoption 12 important cultivation practices were considered. Scores '0' & '1' assigned to non-adoption, and full adoption respectively. On this basis total adoption score of each respondents was worked out and the respondents were classified by cumulative square root frequency technique into low, medium and high adoption level.

The extent of adoption was calculated by the adoption index developed by Karthikeyan (1994). The adoption index of the farmers for the selected practices was worked out by using the following formula.

$$AI = \frac{\text{Respondents total score}}{\text{Total possible score}} \times 100$$

A list of nineteen major constraints related to kharif pulses were identified based on the farmer's perception on input, marketing, technical and production aspects of green gram and moth bean cultivation. Response were recorded in two point continuum i.e. yes or no and further measured by using frequency and percentages and ranks were given to them based their percentage.

RESULTS AND DISCUSSION

A. Extent of adoption of pulse production technology

The responses received from the respondents were categorized as low (up to 33.33 %), medium (33.34 to 66.66 %) and high adoption (above 66.66 %). Practice wise extent of adoption of green gram and moth bean production technology is presented in Table 1.

Data presented in Table 1 show that majority (45.83%) of the farmers belonged to medium adoption category in the use of high yielding varieties of Green gram crop. However, 37.50 per cent belonged to low adoption category and 16.66 per cent farmers belonged to high adoption category. Whereas the same pattern of adoption was reported in case of Moth bean majority (51.66%) of the farmers belonged to medium adoption category. However, 40 % in low category and 10% farmers belong to high adoption category. Similar findings reported by Singh, B. (2015) and Singh, *et al.* (2003). Low adoption might be due to non-availability of high yielding varieties of seed, lack of knowledge and high cost of seed.

In case of recommended seed rate, majority (50%) of the farmers of both crops were found in high adoption category and 29.16 per cent farmers of green gram were found in medium adoption category whereas, 27.50 per cent Moth bean farmers were in low adopter category. Similar findings also reported by Singh *et al.* (2003). With regards to seed treatment, majority of the Green gram and moth bean farmers (68.33&73.33 % respectively) belonged to low adoption category. The above finding is conformity with the finding of Singh and Chauhan (2010). Possible reason might be due to lack of knowledge, technical guidance and high cost of fungicides. Regarding time of sowing, 54.16 & 51.66 per cent Green gram and moth bean farmers were found in medium adoption category followed by high (41.66%) and low adoption category (38.33%) in Green Gram and Moth bean respectively. Low adoption might be due to lack of moisture in the field, lack of sowing implements and lack of knowledge.

A critical examination of Table 1 indicates that majority (60% Green gram) of the farmers belonged to high adoption category and 67.50% Moth bean farmers belonged to low adoption category in the method of sowing. The above findings are in conformity with the findings of Singh *et al.* (2003) and Singh (2011). It was found that majority of the farmers adopted recommended spacing in higher level. Similar findings of high adoption of spacing

Table 1: Extent of adoption of Kharif pulses production technology

n=240

Name of Practices	Adoption Level of Green Gram (N=120)						Adoption Level of Moth Bean (N=120)					
	Low		Medium		High		Low		Medium		High	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1. High yielding varieties	45	37.50	55	45.83	20	16.66	48	40.00	62	51.66	12	10.00
2. Recommended seed rate	25	20.83	35	29.16	60	50.00	33	27.50	25	20.83	62	51.66
3. Seed treatment	82	68.33	32	26.66	06	05.00	88	73.33	32	26.66	00	00.00
4. Time of sowing	05	04.16	65	54.16	50	41.66	46	38.33	62	51.66	12	10.00
5. Method of sowing-line	15	12.5	32	26.66	72	60.00	81	67.50	39	32.50	00	00.00
6. Spacing	20	16.66	32	26.66	68	56.66	69	57.50	51	42.50	00	00.00
7. Method of application of DAP	52	43.33	45	37.50	23	19.16	98	81.66	22	18.33	00	00.00
8. Application of Micro nutrient- Zinc Sulphate	67	55.83	46	38.33	08	06.66	89	74.16	31	35.83	00	00.00
9. Application of Urea/ NPK in standing crop	26	21.66	76	63.33	18	15.00	43	35.83	68	56.66	09	07.50
10. Intercultural operation-weeding	18	15.00	63	52.50	39	32.50	22	18.33	65	54.16	43	35.83
11. Plant protection measures	47	39.16	38	31.66	35	29.16	88	73.33	25	20.83	07	05.83
12. Post-harvest technology	45	37.50	58	48.33	17	14.16	26	21.66	76	63.33	18	15.00

reported by Singh and Chauhan (2010).

With regards to Method of application of DAP, majority of the farmers (43.33 % in Green gram and (81.66% in Moth bean) were found in low adoption category. Whereas in case of Application of Micro nutrient- Zinc Sulphate, majority of the farmers (55.83 % in Green gram and 74.16% in Moth bean) were found in low adoption category. Possible reason for low adoption might be high cost of fertilizers, lack of knowledge and lack of finance.

Table 1 indicates that majority of the farmers (52.50% in Green Gram and 54.16% in Moth bean) were found in medium adoption category followed by high (32.50% in Green Gram and 35.83% in Moth bean) and low adoption category (15.00 % in Green Gram and 18.33% in Moth bean) in case of interculture and weeding. In case of plant protection measures, 39.16 & 73.33 per cent Green Gram and Moth bean farmers respectively belonged to low adoption category. The above findings are inconformity with the findings of Singh and Chauhan (2006), Singh and Chauhan (2010) and Singh (2011). It might be due to lack of knowledge, lack of technical guidance and high cost of plant protection chemicals.

A perusal of Table 2 reveals that overall majority of the farmers (50.83 %) had low adoption of moth bean production technology. The percentage of medium and high adoption was 38.34 and 10.83 per cent respectively. Whereas, in case of green gram 40.84 per cent farmers had medium level of adoption category followed by low and high level

Table 2: Distribution of respondents according to their overall adoption of pulse production technology

S.No.	Adoption Frequency	Green Gram		Moth bean	
		Frequency	Percentage	Frequency	Percentage
1.	Low adoption(up to 33.33 %)	36	30.00	61	50.83
2.	Medium adoption(33.34 to 66.66 %)	49	40.84	46	38.34
3.	High adoption(above 66.66 %)	35	29.16	13	10.83
	Total	**120**	**100**	**120**	**100**

of adoption. These findings are supported by Singh and Chauhan (2006), Singh and Chauhan (2010),Singh (2011) and Singh *et al.* (2012).

B. Constraints Analysis in Kharif Pulse Cultivation

The data presented in Table 3 indicate that among the various constraints pertaining to inputs and found that less availability of newly release variety was perceived as the most serious constraint (severity 72.38%). Which is followed by Improved seeds and fertilizers are costly (severity 70.34%) and ranked second. It is also evident that inadequate credit facilities for purchasing necessary inputs (severity 50.40%) was recorded most third serious constraint. Improved seeds are not available sufficiently (severity 47.34%) which ranked fourth and good quality seeds and fertilizers are not available on time was ranked last (severity 46.00%) serious constraint by the pulse growers, respectively. During the course of investigation it was observed that small and marginal farmers depend on locally available inputs but these are sub-standards as well as not available on time which increase the constraints in adoption of kharif pulses in the study area. Constraints pertaining to Marketing shows that 'Lack of processing facilities for pulses' was found to be a most serious constraint (severity 45.40%), as it is ranked first by the farmers. Whereas 'Loading and unloading charges has to be borne by the growers'(severity 40.00%) has ranked second serious constraint, Lack of cooperative marketing organization (severity 30.33%) has ranked third serious constraints by the kharif pulse growers and Lack of knowledge about proper place of marketing is ranked last with its severity was 10.00 per cent. On the one hand, there is need for providing pulse storage facilities to the farmers, marketing processing for reasonable market price of kharif pulses crop is very necessary in the study area. It has to be rated that unawareness about marketing constituted a definite cause of undue frustration among the farmers. So, there is a need for providing marketing education to the farmers in the study area of Jodhpur and Nagaur district. Almost similar findings were obtained by Mishra and Rahul (2008).

The data in Table 3 revealed that lack of knowledge on location specific improved varieties of kharif pulses (severity 57.00%) was considered to be most serious constraint as it is ranked first by the farmers. Lack of knowledge about seed treatment (severity 53.33%) was ranked as second serious constraint, whereas lack of demonstration and training (severity 45.40%),' lack of knowledge about insect, pest and disease control' (severity 44.44%) were ranked third and fourth constraints. In the study area Lack of knowledge regarding improved agronomical practices of pulse growers was ranked last its severity with 40.00 per cent in constraints pertaining to Technical aspects.

Further analysis of Table 3 indicate that Problem of insect, pest and disease (severity 80.66%) has been viewed as most serious constraint and it was ranked first by the kharif pulse growers. kharif pulse crops get damaged due to unfavourable weather conditions has been the second serious constraint (severity 70.22%) followed by Incidence of weeds menace has been the third serious constraint (severity 61.36%), re-sowing due to bad weather was the

Table 3: Constraints related to Kharif Pulse Cultivation

n-240

S.No.	Types of Constraints	Severity	Rank
A	**Input constraints**		
1	Less availability of newly release variety	72.38%	I
2	Improved seeds and fertilizers are costly	70.34%	II
3	Inadequate credit facilities for purchasing necessary inputs	50.40%	III
4	Improved seeds not available sufficiently	47.34%	IV
5	Good quality seeds and fertilizers are not available on time	46.00%	V
B	**Marketing constraints**		
1	Lackof processing facilitiesforpulses	45.40%	I
2	Loading and unloading charges has to be bear by the growers	40.00%	II
3	Lack of cooperative marketing organization	30.33%	III
4	Lack of knowledge about proper place of marketing	10.00%	IV
C	**Technical constraints**		
1	Lack of knowledge on location specific improved varieties of kharif pulses	57.00%	I
2	Lack of knowledge about seed treatment	53. 33%	II
3	Lack of demonstration and training	45.40%	III
4	Lack of knowledge about insect, pest and disease control	44.44%	IV
5	Lack of knowledge regarding improved agronomical practices of pulse growers	40.00%	V
D	**Production constraints**		
1	Problem of insect, pest and disease	80.66%	I
2	Pulse crops get damaged due to unfavorable weather conditions	70.22%	II
3	Incidence of weeds menace	61.36%	III
4	Re-sowing due to bad weather	60.66%	IV
5	Shortage of irrigation water' due to erratic power supply	40.42%	V

fourth serious constraint (severity 60.66%) and shortage of irrigation water due to erratic power supply (severity 40.42 %), was ranked fifth constraint in the order of production constraints. These are major constraints in adoption by kharif pulse growers in the study area of Jodhpur and Nagaur district. During the survey researcher observed bacterial blight and hairy caterpillar of kharif crops and problem of weeds in the locality which reduces the yield. Kharif pulse crops get damaged and re-sowing due to bad weather conditions is concerned it may have to be done on occasions as a matter of need arising out of circumstances beyond one's control. However, remote sensing data may be of some value in overcoming the problem of re-sowing. Obviously, the meteorologists need to come out with suitable recommendation for sowing time in the study area.

CONCLUSION

From the findings it can be concluded that majority of the farmers belonged to medium adoption category. The findings of the study clearly revealed that Less availability of newly release variety and improved seeds and fertilizers are costly, inadequate credit facilities for purchasing necessary inputs,

improved seeds are not available sufficiently, Lack of processing facilities for pulses, Lack of knowledge about proper place of marketing, Lack of cooperative marketing organization, Lack of knowledge on location specific improved varieties of pulse, Lack of knowledge about seed treatment, Lack of demonstration and training, Problem of insect, pest and disease, kharif pulses crops get damaged due to unfavourable weather conditions were major constraints as perceived by the respondents in adoption of kharif pulses cultivation in Jodhpur and Nagaur District.

REFERENCES

Karthikeyan, C. 1994. Sugar factory registered growers an analysis of their involvement and impact. M.Sc thesis (unpublished) submitted to T.N.A.U, Coimbatore.

Singh, B. 2011. Factors influencing the adoption of mung bean production technology in arid zone of Rajasthan. *Raj. J. Extn. Edu.* **19**: 173-177.

Singh, B. and Chauhan,T.R. 2010. Adoption of mungbean production technology in arid zone of Rajasthan. *Indian Res. J. Extn. Edu* **10**(20): 73-77.

Singh, B. and Chauhan, T.R. 2006. Factors influencing the adoption of moth bean production technology in arid zone of Rajasthan. *J. Arid legumes* **3**(1): 34-38.

Singh, B., Singh, R. and Chauhan, K.N.K. 2003. Adoption and constraints in moth bean production technology in arid zone of Rajasthan. *Advances in Arid Legumes Research.* A.Henry, D.Kumar and N.B.Singh Published for Indian Arid Legumes Society & Scientific Publishers (India), Jodhpur, 510-14.

Mishra, R. 2008. A study on technological gap and constraints in cultivation of gram in Panagar block of Jabalpur district (M.P.). M.Sc. (Ag.) Thesis submitted JNKVV, Jabalpur.

Singh Bhagwan 2015 Association Between Farmer's Characteristics And Adoption Of Moth Bean Production Technology *In Arid Zone, Ind. J. Ext. Educ. & R.D.* **23** : 15-18.

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INFORMATION SEEKING BEHAVIOR OF TRIBAL GUAVA FARMERS IN SAWAI MADHOPUR DISTRICT OF RAJASTHAN

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ABSTRACT

Mass media plays an important role in increasing better functioning & creates awareness about new technologies. The present study was undertaken in Sawai Madhopur district of Rajasthan in order to know the information seeking behavior of Guava farmers & to find out the association of selected independent variables with the information seeking behavior of Guava farmers. The district is mainly dominated by Meena tribals that are engaged mainly in Guava & Chilli cultivation. A sample of 100 tribal Guava farmers was selected randomly from 10 villages having highest area under Guava plantation. The study leads to the conclusion that majority (76%) of both types of Guava farmers i.e. peripheral & distant were having medium level of information seeking behavior followed by 13 per cent having low & 11 per cent were having high level of information seeking behavior. There was no significant difference between the peripheral & distant Guava farmers in their information seeking behavior. The study also revealed that there was significant association between the information seeking behavior of total Guava farmers (both peripheral & distant) & their age, education level, social participation, size of land holding, farm power, innovation proneness & annual income. Similarly non- significant association was found between the information seeking behavior with the family size & farming experience of the Guava farmers.

INTRODUCTION

Modernization of Indian agriculture greatly depends on creation of farm technology & its dissemination. India is well equipped in agricultures technology, but full use of available technology is not being made in many areas of the country. By & large, the research remain unused in laboratories & it does not reach to the farmers. Besides this agriculture technology is changing at an increasing rate. Hence, it is necessary to select quick system of communication to keep farmers in tune with the fast developments in research technology. As majority of population in our country is engaged & depend on agriculture, we have to assess & make available latest technologies which turn agriculture to be efficient. Mass media plays an important role in increasing better functioning & creates awareness about new technologies. Farmers seek information from trainings, conferences, exhibitions, campaigns, bulletins, seminars, radio, television, newspapers, friends & neighbors, research stations, KVKs, village extension workers etc. for the promotion of agriculture production.

The personal characteristics of Guava farmers play an important role in acceptance of new technology from any source or channel. Today is the era of information explosion. Innumerable information is generated, synthesized & disseminated at every moment. Information technology has revolutionized the transfer of information through new ways i.e. internet, e-mail etc. Information from any part of the world could be made available through IT thereby changing the world into global village. Therefore, the farmers should also be equally privileged to get informed of farm related information without delay. Keeping all these points in mind the present study "Variables affecting the information seeking behavior of the Guava farmers in Sawai Madhopur district of Rajasthan " was carried out.

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RESEARCH METHODOLODY

The present study was undertaken in Sawai Madhopur district of Rajasthan. Sawai Madhopur tehsil was selected purposely due to having highest number of orchards, area & production of Guava fruit in the district. The Guava orchards in the area were mainly owned by Meena tribals. A list of all Guava growing villages in the tehsil was prepared out of which 10 villages having highest area under Guava cultivation were selected randomly for the study purpose. From the selected villages a sample of 100 Guava farmers was selected by random sampling technique in such a manner that the number of Guava farmers selected were proportional to the total number of Guava farmers of the respective village. Data were collected by personal interview method, the data collected were classified, tabulated & inferences were drawn after subjecting the data to appropriate statistical analysis which led to the following major findings.

RESULTS AND DISCUSSION

(A) Information seeking behavior of the Guava farmers: The data in Table 1 explain that majority of both types of Guava growers (76%) were having medium level of information seeking behavior followed by 13 per cent having low & only 11 per cent were having high level of information seeking behavior. The data in table also shows that majority of the peripheral Guava farmers (85.11 per cent) were having medium level of information seeking behavior followed by 12.76 per cent peripheral Guava growers having low level of information seeking behavior & only 2.13 per cent peripheral Guava growers were having high level of information seeking behavior. In case of the distant Guava growers 67.32 per cent having medium level of information seeking behavior followed by 18.87 per cent were having high level followed by 13.21 per cent were having low level.

The analysis of data further indicates that the 'Z' value between the scores of the information seeking of the peripheral & distant Guava farmers was -0.74 which was non-significant. Which shows that there was no significant difference between the peripheral & distant Guava farmers in their information seeking behavior. The findings are in line with the findings obtained by Girase and Desai (2003).

(B) Association of the selected independent variables with the information seeking behavior of Guava farmers: The association between the information seeking behavior of Guava farmers & selected independent variables viz. age, education level, social participation, size of land holding, farm power, family size, farming experience, innovation proneness & annual income were measured by computing "coefficient of correlation"(r). The data have been presented in Table 2. A critical examination of the data presented in Table-2 revealed that the Guava farmers education level, social participation, size of land holding, farm power, innovation proneness & annual income were found positively & significantly correlated with their

Table 1: Distribution of peripheral & distant Guava farmers according to their information seeking behavior

Level of information seeking behavior	Peripheral Guava farmers		Distant Guava farmers		Total Guava farmers		'Z'
	f	%	f	%	f	%	
Low (Below 181.93)	6	12.76	7	13.21	13	13.00	
Medium (181.94 to 212.11)	40	85.11	36	67.92	76	76.00	0.74NS
High (Above 212.11)	1	2.13	10	18.87	11	11.00	
Total	**47**	**100**	**53**	**100**	**100**	**100**	

X = 197.02, S.D. = 15.09,NS = Non-significant

Table 2: Association between the information seeking behavior of Guava growers & selected independent variables

Sr. No	Independent Variables	Peripheral Guava farmers (n = 47)	Distant Guava farmers (n = 53)	Total Guava farmers (n = 100)
1.	Age	-0.473**	-0.192 NS	-0.224*
2.	Education level	0.541**	0.308*	0.358**
3.	Social participation	0.076 NS	0.343	0.269**
4.	Size of land holding	0.104 NS	0.432**	0.284**
5.	Farm power	0.308*	0.588**	0.457**
6.	Family size	0.143 NS	0.047 NS	0.140 NS
7.	Farming experience	-0.246 NS	0.067 NS	-0.016 NS
8.	Innovation proneness	0.143 NS	0.280*	0.262**
9.	Annual income	0.214 NS	0.572**	0.487**

*=Significant at 0.05 level of probability, NS= Non-significant, **= Significant at 0.01 level of probability.

information seeking behavior at 0.01 level of probability, while the age of the Guava growers was found negatively & significantly correlated with their information seeking behavior at 0.05 level of probability.

This leads to the conclusion that there is significant association between the information seeking behavior of the Guava farmers & their age, education level, social participation, size of land holding, farm power, innovation proneness & annual income.

The family size of the Guava farmers was positively & non-significantly associated with their information seeking behavior whereas their farming experience was negatively & non-significantly associated with their information seeking behavior. A critical examination of the data presented in table also reveal that the peripheral Guava growers' age, education level was found negatively & significantly correlated with their information seeking behavior at 0.01 level of probability. Their farm power was found positively significant at 0.05 level of probability. This leads to the conclusion that there is significant association between the information seeking behavior the peripheral Guava farmers & their age, education level & farm power. While their social participation, size of land holding, family size, farming experience, innovation proneness & annual income were non-significantly associated with the information seeking behavior. From these observations it is concluded that there is no significant association between the information seeking behavior of the peripheral Guava farmers & their social participation, size of land holding, family size, farming experience, innovation proneness & annual income.

A critical examination of the data presented in Table-2 also revealed that the distant Guava farmers education level, social participation & innovation proneness were positively & significantly correlated at 0.05 level of probability & their size of land holding farm power & annual income were positively & significantly correlated at 0.01 level of probability with the information seeking behavior. This leads to the conclusion that there is a significant association between the information seeking behavior of the Guava farmers & their education level, social participation size of land holding, farm power, innovation proneness & annual income. Age, family size & farming experience of distant Guava farmers were non-significantly associated with their information seeking behavior, which leads to the conclusion that there is no significant association between the information seeking behavior of distant

Guava farmers & their age, family size & farming experience. These results are in accordance with the results obtained by Dhayal *et al*. (2012).

CONCLUSION

The study leads to the conclusion that majority (76 per cent) of both types of Guava farmers i.e. peripheral and distant were having medium level of information seeking behavior followed by 13 per cent having low & only 11 per cent were having high level of information seeking behavior. There was no significant difference between the peripheral & distance Guava farmers in their information seeking behavior.

REFERENCES

Dhyal, B.L., Khan, I.M. & Jangid, M.K. 2012. Information seeking behavior of ber growers in Jaipur district of Rajasthan. *Rajasthan Journal of Extension Education* **20**: 57-60.

Girage, K.A. & Desai 2003. Communication behavior of tribal farmers selected under training & visit system. *Maharashtra Journal of Extension Education* **12**: 47:50.

Pal, P.P, Sundarambal, P., Bihari, B., Kumar, R., Prakash, N.& Kumar, N. 1999. Information Seeking behavior of tribal farmers in Meghalaya. *Indian Journal of Hill farming* **12**(1): 124-125

Meera, S.N. & Jhamtani, A. 2004. Future projection of use of information technology in agriculture development in India. *Indian Journal of Extension Education* **40**: 1-7

Patil, B.N. & Kulkarni , B.R. 1995. Socio-economic status, social participation & extension contact associated with listening behavior of rice farmers about Ultam kheti. *Maharashtra Journal of Extension Education* **12**: 255-258

Riram, R., Talukdar, R.K. & Mishra, P .1998. Information Seeking behavior of rice farmers of East- Siany district of Arunachal Pradesh. *Journal of agricultural Science Society North East-India* **11**(1) : 118-120.

Solanki, G.K. & Kadam K.R. 1993. Information Seeking behavior of farmers. *Maharashtra Journal of Extension Education* **12**: 125-128.

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DOCUMENTATION OF NATURAL PLANTS HAVING MEDICINAL PROPERTIES FOR TEXTILE APPLICATIONS

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ABSTRACT

An interestingly new attempt has been taken up as an exploratory study to explore herbs & plants having different beneficial properties for different textile applications. This study has been conducted in Udaipur district of Rajasthan using various sources of information, such as resource persons, manuals, bulletins, magazines, journal, internet, etc. to explore the usefulness of various herbs & plants along with their parts in terms of medicinal, dyeing and finishing properties. Some of the valuable natural plant resources are turmeric, henna, ratan jot, arjuna, lavender, eucalyptus, thuja, kesula, manjistha, manjuphal, amaltash, etc. This collected information have been documented according to different categories like common name of herb, family, scientific name, their medicinal properties such as anti-microbial, anti-septic, mosquito repellent, anti-UV, anti-fungal etc. and its application in the field of textiles. It is suggested to validate scientifically documented natural plants with their medicinal values and wider applicability among the textile applications.

INTRODUCTION

Most of the textile industries are using harmful chemicals, pigments, synthetic dyes and finishes in textiles applications such as in the processing of fiber, dyeing and finishing of the fabrics. These are the major pollutants that affect the soil and water, found toxic to the aquatic eco-system, toxic waste, skin allergy and other harmful effects to human body (Eichlerova et al., 2007 and Kumar, 2013). India is being one among world's twelve mega diversity countries with the plant kingdom ,a rich source of diverse natural products, including natural dyes and finishes (Siva, 2007).

Long before prehistoric period, there are the various types of plants which have been used for the medicinal purposes. Earlier, the term "herb" was considered only those that come under the non-woody plants like trees and shrubs while now days "herb" refers to any part of the plant such as flowers, fruits, seeds, bark, leaf, roots or stem as well as non-woody plant. These medicinal plants are also used as flavonoid, perfume, food or medicine and in certain spiritual activities. Ancient Unani manuscripts described the use of herbs. In ancient civilization, India was known as rich repository of medicinal and aromatic plants. These plants are eco-friendly and non-toxic, having many nutrients like vitamins (Vit. A, D, E, K, B, C etc.), minerals (iron, calcium, phosphorus, sulpher etc.) and other beneficial properties for human beings like antimicrobial, mosquito repellent, antifungal, anti-inflammatory and antiseptic. They were used in coloring, cosmetics, inks, drugs, food, textiles as well as natural protein fibers like wool, silk and cellulosic fiber like cotton, linen, and kapok and in many other textile activities such as natural thickening agents, mordanting, dyeing, printing, finishing, etc. The present study has been undertaken to explore and document the herbs with their medicinal properties and wider applicability among the textile applications.

RESEARCH METHODOLOGY

The present study has been carried out in college of Home Science, MPUAT, Udaipur district of Rajasthan. In this study the researcher has explored various plant sources based on the availability, having different medicinal properties and also used in textile applications i.e. in thickening, stiffening, mordanting, dyeing and finishing etc. through extensive review using secondary sources like published reports, manuals, bulletins, magazines, journals and internet.

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RESULTS AND DISCUSSION

Table 1: Herbs with their medicinal values and application in textiles

Local & English name	Botanical name	Family	Parts use	Medicinal properties	Uses in textiles
Aloevera	Aloe barbadensis miller	Asphodelaceae	Leaves	Used in cosmetology, Dermatology, anti-inflammatory, antiviral, anti-aging, antiseptic, antimicrobial, anti-UV	Used in fabric finishing
Ashok	Saracaindica	Fabaceae	Flowers, bark	Anti-skin cancer activity	Dyeing & finishing of the textiles
Arjun tree	Terminalia arjuna	Combretaceae	Bark, leaves	Cardioprotective/cardiotonic, used in the treatment of wounds, hemorrhages and ulcers, anti-microbial, helps to fight stress, antioxidant	Dyeing of textiles and production of tassar silk, a wild silk of commercial importance
Amaranth	Amaranthustricolor	Amaranthaceae	Flower, fruit, seeds, leaves	Anti-microbial, antioxidant, prevents osteoporosis, gastro-intestinal benefits, prevents atherosclerosis, improves vision, prevent hair loss	Deep red dye
Amltash,	Cassia fistula	Fabaceae	Flowers, leaves, fruit, seeds	Anti-inflammation, anti-microbial, antioxidant, analgesic, antiviral, antipyretic, antifungal, anti-tumor, hepato-protective, hypo-glycemic activities.	As thickening agent, stiffing agent, dyeing
Amla, Indian gooseberry	Phyllanthus emblika	Phyllanthaceae	Fruit	Diarrhea, antidiabetic, anti-inflammatory, hypo lipidemic, strengthen hair root, antibacterial, antioxidant, eye care, anti-ulcerogenic, reduces ageing	Mordanting, dyeing and printing

Baheda, Myrobalan	Terminaliabellirica	Combretaceae	Fruit	Anthelmintic, antibacterial, anti-asthmatic, useful in headache, piles chronic diarrhea, skin and heart diseases, vaginal infections and low cholesterol	Dyeing & finishing of the textiles
Chandan, Red Sandal wood	Pterocar-pussantalinus	Fabaceae	Wood	Anti-microbial, antipyretic, anthelmintic, hemorrhage, anti-hyperglycaemic anti-inflammatory, aphrodisiac, diaphoretic	Dyeing & finishing of the textiles
Clove	Syzygiumaromaticum	Myrtaceae	Buds	Anti-microbial, antipyretic, mosquito repellent, improves appetite, helps in digestion	Mosquito repellent and antimicrobial finish, pest control
Eucalyptus	Eucalyptus globulus	Myrtaceae	Leaves	Headache, antioxidants, anti-UV, anti-microbial, insect repellent, used in dental care, anti-fungal, pain reliever, enhance the immune system	As dyeing and finishing
Harda, Myroblan	Terminalia chebula	Combretaceae	Fruit	Skin disease, improve appetite, helps in digestion, helps nervous irritability, antiallergenic, antibacterial, anti-fungal, antioxidant	Mordanting, dyeing and finishing
Haldi, Turmeric	*Curcuma longa*	Zingiberaceae	Root,Rhizome,Leaves	Antioxidant, antibiotic, antitumor, antiamyloid, ant ischemic andanti-inflammatory properties	Dyeing and finishing, pest control
Henna	Lawsoniainermis	Lythraceae	Leaves	Anti-microbial, mosquito repellent, anti-UV, anti parasitic and anti inflammatory properties	Used as a dye to hair, skin and fabric

Gurhal, Hibiscus	Hibiscus rosa-sinensis	Malvaceae	Flower, leaves	Anti-bactarial, mosquito repellent, used for cough treatments, alopecia, dysmenorrhea, heart disease, laxative, neuro-protective action, anti-diarrhea, anti-diabetic, wound healing,	Dyeing and finishing
Kesula, Bastard Teak	Butea monosperma	Fabaceae	Flower, leaves, bark	Anthelmintic, anti-diabetic, anti-conceptive, thyroid inhibitory, anti-convulsive, anti-stress, anti-fertility, anti-diarrheal, anti-estrogenic, anti-microbial, anti-asthmatic, anti-fungal, radical scavenging, hepatic disorders, viral hepatitis, diarrhea and anti-UV	Dyeing, printing, thickening
Katha, Cutch Tree	Acacia catechu	Fabaceae	Wood	Anti-microbial, Infectious diseases, organ-specific disorders, antibacterial, anti-fungal, anti-oxident	Dyeing and mordanting
Lavender	Lavandula angustifolia	Lamiaceae	woody shrubs leaves	Mosquito repellent, antibacterial, skin disease, antiviral, liver disorder, antiseptic, anti-microbial, anti-inflammatory	Dyeing and Mosquito repellent finish
Lemon balm	Melissa officinalis	Lamiaceae	leaves	Disorders of gastrointestinal tract, nervous system, liver, bile, aromatherapy	Mosquito repellent finish
Lemongrass, Citronella	Cymbopogoncitratus	Poaceae	Grass's oil,	Insect repellent	Mosquito repellent finish, aromatherapy
Marigold	Calendula officinalis L.	Asteraceae	Flowers	Antibacterial, antifungal, skin problems, improve eyesight, powerful healing, antioxidant, anti-inflammatory, antiviral, anticancer and antiseptic.	As dye & Anti-microbial , Mosquito repellent finish

Mulethi, Sweetwood	Glycyrrhiza glabra	Fabaceae	Roots, leaves	Antimicrobial, cough, bronchisris, refrigerant, thirst, asthma, abdominal colic, heahache	Fabric dyeing and finishing
Manjuphal, Manjakani	Quercus infectoria	Fagaceae	Galls	Astringent, anti-diabetic, anti-tremorine, larvicidal, local anesthetic, antiviral, antibacterial, anti-fungal, anti-cariogenic, anti-inflammatory, treatment of toothache and gingivitis	Dyeing& finishing of the textiles
Manjistha, Madder	Rubiacordifolia	Rubiaceae	Roots	anti-inflammatory, Urolithiasis, removes pimples, freckles, immune-modulatory, antiseptic,Antimicrobial, blood purifier, anti-UV	Dyeing& finishing of the textiles
Neem	Azadir achtaindica	Meliaceae	Leaves, bark, fruit, flower	Skin disease, antiviral, liver disorder, antiseptic, antimicrobial, mosquito repellent, antibacterial, anthelmintic, antiviral, antifungal, anticancer, antidiabetic, and sedative.	Fabric dyeing, finishing and prevent insects eating the clothes
Orange peel	Citrus sinensis (L.) Osbeck	Rutaceae	Peel	Reduce cholesterol level, reduce weight, anti-spasmodic, mosquito repellent, antibacterial, antifungal, inhibit breast cancer and colon cancer	Dyeing and finishing to the textiles, pest control
Pomegranate	Punicagranatum	Lythraceae	Peel	Antibacterial, ntioxidant, antimutagenic, use in dietary supplements	Mordanting, dyeing, printing and finishing
Peppermint	Mentha × piperita	Lamiaceae	Leaves	Insect repellent, antimicrobial, antifungal, Skin disease	As finishes, pest control

Rosemary	Rosmarinus officinalis	Lamiaceae	Leaves, flowers	Mosquito repellent, anti-microbial, improve memory, antibacterial, anti-inflammatory	Dyeing & finishing of the textiles
Rattan jot, Orchanet	Alkane tinctoria	Boraginaceae	Roots	Antiaging, anti-microbial, anti-UV, antioxidant activity, anti-inflammatory, used for diarrhea, nail, gastric ulcers and hair treatment	Dyeing & finishing of the textiles
Saffron	Crocus sativus	Iridaceae	Flower, thread	Antiseptic, anti-depressant, anti-oxidant, anticonvulsant, anti-microbial, used in depression, skin disorders	Dyeing & finishing of the textiles
Thuja	Thujaorientalis	Cupressaceae	Leaves	Anti-microbial, anti-inflammatory, anti-fungal, anti-UV and help in hair growth	Dyeing & finishing of the textiles
Tulsi, Basil	Ocimumtenuiflorum	Lamiaceae	Leaves,	Skin disease, antimicrobial, anti-fungal, insect repellent, chromic fever, protection from mosquitos, cold cough, malaria, arthritis, insect bite etc	Dyeing, finishing

Table 1 clearly depicts that many herbs & plants have very good properties like antimicrobial, antifungal, insect repellent, anti-inflammatory, anti-UV etc. Moreover some plants are considered very useful in treatment of many health problems like cough, heart disease, diabetes, hair fall control, hair strength, skin diseases, wound healing, etc. Some medicinal plants contemplated as important source of nutrients and as a result recommended for therapeutic values such as Aloe, Ginger, Neem, Tulsi and Turmeric cure several common ailments. In many parts of the country, these herbs are considered as home remedies. Lots of consumers use basil leaves as sanctified things like food of lord Vishnu, and use it on daily bases such as for tea in cold, development of medicines and in their other activities. Apart from that, these herbs play a vital role in textiles applications like natural dyeing, printing, finishing, thickening, stiffening, etc. Now a days these herbs are also very essential source of pharmaceutical manufacturing. Findings are supported by the results of Kumar et al. (2009), Anitha et al. (2011) and Chandurkar et al. (2015)

CONCLUSION

As our life style is moving toward modern technology, we are being tech-savvy and moving away from nature. As the herbs are also come from nature, they are eco-friendly, free from side effects, and locally available. Traditionally herbs were used in Ayurveda and ailments related to different seasons. These herbs have enormous medicinal and nutritional values and a very good use in the field of textiles. There is a great need to promote these herbs. If promoted, it would help to reduce the poverty in rural areas. Therefore, it is important to aware rural people regarding small entrepreneurial activities which could improve their health and economic status.

REFERENCES

Anitha R., Ramachandran T., Rajendran R. and Mahalakshmi M. 2011. Microencapsulation of lemon grass oil for mosquito repellent finishes in polyester textiles. *Elixir Bio Physics* **40**: 5196-5200

Chandurkar, P., Murab T., Ahakey N., Tripathi N. and Choudhary, A. 2015. Antimicrobial activity of aqueous, acetone and methanol extracts of Calendula officinalis L. (Marigold) flower. *International Journal of Pure & Applied Bioscience* **3**(2): 386-388

Chandrasekaran, K., Ramchandran, T. and Vigneswaran, C. 2012. Effect of medicinal herb extracts treated garments on selected diseases. *Indian Journal of Traditional Knowledge* **11**(3): 493-498

Babu, D.P., Subhasree, R.S. 2009. Antimicrobial Activities of Lawsoniainermis- A Review. *Academic Journal of Plant Sciences* **2**(4): 231-232

Kumar, S.V., Anna, J.L., Vijayeeswarri, J., and Swaminathan, G., 2009. Ultrasound assisted enhancement in natural dye extraction from beetroot for industrial applications and natural dyeing of leather. *Ultrasonics Sonochemistry* **16**(6): 782-789

Eichlerova, I., Homolka, L., Nerud, F., 2007. Decolorization of high concentrations of synthetic dyes by the white rot fungus Bjerkanderaadusta strain CCBAS 232. *Dyes Pigments* **75**(1): 38-44

Siva, R. 2007. Status of natural dyes and dye-yielding plants in India. *Current science* **92**(7): 916-925.

http://www.alwaysayurveda.com/crocus-sativus/

http://www.planetayurveda.com/library/arjuna-terminalia-arjuna

https://www.nhp.gov.in/introduction-and-importance-of-medicinal-plants-and-herbs_mtl

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EXTENT OF ADOPTION OF RECOMMENDED PRODUCTION TECHNOLOGY OF BRINJAL AMONG THE BRINJAL GROWERS

Vishnu Kumar* and Akshaya Ghintala**

ABSTRACT

The study revealed that majority (62.50 %) of the brinjal growers had medium extent of adoption, followed by 21.67 per cent and 15.83 per cent of the brinjal growers had low and high level of adoption, respectively. The non-cost and low cost inputs in the package of practices were adopted more by the respondents. The independent variables like education, extension contact and knowledge had positive and highly significant correlation with adoption of recommended production technology of brinjal crop by brinjal growers. Whereas size of family and social participation had negative and non-significant relationship with adoption behavior of the brinjal growers.

INTRODUCTION

Agriculture is the largest private enterprise in India and will continue to be the life line of the Indian economy even in foreseeable future. It contributes nearly 22.00 per cent to national gross domestic product (G.D.P). In food sector, alone agriculture contribute about 250 thousand crores rupees annually and also provide direct employment to about 234 million people.

Horticulture sector cover only 8.00 per cent of total crop area in the country and it contribute 24.50 per cent to G.D.P. and 54.55 per cent to export earning in agricultural sector (Chadha, 2002).

Looking to the production of brinjal scenario in the world, China is dominated as it produces 44.17 per cent of the world brinjal production followed by India 25.57 per cent. Ethiopia produce 6.31 per cent and Mexico produce 5.40 per cent of the total world production of brinjal with rank of third and fourth, respectively. The other important producer countries are Turkey 3.76 per cent, Indonesia 3.68 per cent, Pakistan 3.57 per cent, Thailand 2.51 per cent and Egypt 2.36 per cent. (FAO, UNESD, 2006).

The scope to increase the productivity of brinjal to its potential would substantiate the need for promotion of brinjal cultivation technology in the farmer's field. One way by which extension scientists can contribute to this task is to find out better ways and means of promoting brinjal cultivation technology among the group of clientele.

The current advances in brinjal production technology have demonstrated that to improve the practices have great potential for increasing the brinjal production. Therefore, raising the efficiency of the growers is essential for getting desired profit from the brinjal cultivation. Understanding that, no detail study has yet carried out in this regards so, to know the adoption pattern of recommended practices of brinjal crop a study on "Extent of adoption of recommended production technology of Brinjal among the Brinjal growers of Banaskatha district of Gujarat state.'' was under taken with following specific objectives.

1. To find out the extent of adoption of recommended production technology of brinjal among the brinjal growers.
2. To ascertain the association between the selected characteristics of brinjal growers and their extent of adoption of recommended production technology of brinjal.

RESEARCH METHODOLOGY

Banaskantha district, where the study was chosen for the study. Palanpur and Deesa talukas of

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Banaskantha district were purposively selected, because these talukas have more brinjal growing area as compared to other talukas. Twelve brinjal growing villages were randomly selected from these two talukas. For this study 120 brinjal growers who had minimum 3 years of experience in brinjal cultivation were selected randomly. To know the various characteristics of brinjal growers a scale developed by Pareek and Trivedi (1963) was used with some modifications.

Measurement of adoption was done by using scale developed by Supe (1969) with slight modification. The data were collected with the help of well-structured, pre-tested, English version interview scheduled through personal contact and data were compiled, tabulated and analyzed to get draw the conclusion. A simple ranking technique was applied to measure the constraints faced by brinjal growers. The statistical tools used were percentage, mean score, standard deviation and coefficient of correlation value.

RESULTS AND DISCUSSION

Extent of adoption of recommended production technology of brinjal among the brinjal growers: Adoption is a decision making mental process to continue use of an innovation. In this study it means acceptance of full use of recommended production technology by brinjal growers. It is rigidly stated that the adoption of recommended package of practices is an instrument for making agriculture a better and more profitable enterprise. Considering this fact, an attempt has been made to find out the extent of adoption of recommended production technology of brinjal by the brinjal growers. On the basis of score obtained by the brinjal growers the adoption quotient was calculated with the help of formula developed by Sen Gupta (1967) for each respondent. The respondents were classified into three categories on the basis of $\pm$ S.D. from the mean (X). The classification in the respect is presented in Table 1.

It is clear from Table 1 that majority of the respondents (62.50 %) had medium level of overall adoption quotient regarding recommended production technology of brinjal, followed by 21.67 per cent and 15.83 per cent of the respondents had low and high extent of overall adoption quotient respectively. The probable reason might be that there is growing awareness about the advantage of the vegetable crops production and gaining popularity day by day among the farming community. This finding is in the line with the findings reported by Kadu (2009) and Rathod (2009).

Table 1: Distribution of brinjal growers according to adoption of production technology of brinjal

(n=120)

S. No.	Extent of adoption quotient	Number	Percent
1.	Low (< 45.31)	26	21.67
2.	Medium (45.32 to 63.37)	75	62.50
3.	High (>63.37)	19	15.83
	Total:	**120**	**100.00**

Mean= 54.34, S.D. = 9.03

Practice wise extent of adoption: Table 2 shows that among the different recommended brinjal production technologies, cent per cent of the respondents were adopted technologies namely irrigation and inter-culturing and ranked first. Preparation of land (92.5 %), recommended variety (91.25 %), time of sowing (76.67 %), spacing (71.67 %) and type of soil (67.50 %) were also adopted higher by the respondents and ranked second, third, fourth, fifth & sixth, respectively. While low extent of adoption of technology was observed in basel fertilizers, nursery management, weeding, insect pest control, top dressing of fertilizers in ascending order.

From the above discussion, it can be concluded that considering the no-cost and low cost inputs in the package of practices were adopted more by the respondents. The recommended varieties were adopted higher due to the product choice of consumers in particular area of Banaskantha district. The findings are in somewhat conformity with the findings of Patel *et al.* (2009-10).

Association between the selected

Table 2: Practice wise adoption of recommended brinjal production technology by brinjal growers

(n = 120)

S.No	Recommended practices	Total maximum score	Total obtained score	Obtained mean score	Rank
1	Type of Soil	240	162	67.5	VI
2	Nursery management and Transplanting	1320	744	56.36	IX
3	Time of sowing	120	92	76.67	**IV**
4	Preparation of land	240	222	92.5	**II**
5	Recommended variety	240	219	91.25	**III**
6	Spacing	240	172	71.67	**V**
7	Fertilizers				
	Basal fertilizer	600	348	58.00	VIII
	Top drasing	1200	448	37.33	XII
8	Irrigation	120	120	100	**I**
9	Inter-culturing	120	120	100	**I**
10	Weeding	840	449	53.45	X
11	Insect pest control	1800	810	45.00	XI
12	Disease control	1200	420	35.00	XIII
13	Harvesting	600	378	63.00	VII

characteristics of brinjal growers and their extent of adoption: The results in this regard are depicted as under:

Age and extent of adoption: It is apparent from the data presented in the Table 3 that the age of the brinjal growers had positive and significant correlation (0.0192*) with their extent the adoption of recommended production technology of brinjal.

Education and extent of adoption: The data presented in Table 3 reflect that the extent of adoption of the brinjal growers regarding recommended production technology had positive and highly significant (0.2477**) correlation with their level of education, which indicate that education play an important role in influencing the adoption of new technology by brinjal growers.

Size of family and the extent of adoption: As reveal from data presented in Table 3 that there was non-significant association (0.1763^{NS}) between size of family and extent of adoption of recommended production technology of brinjal. This shows that size of family is not an important variable which influence on adoption level of brinjal growers regarding brinjal production technology.

Social participation and the extent of adoption: The data presented in Table 3 clearly indicate that social participation by the brinjal growers had positive but non-significant correlation (0.194^{NS}) with their extent of adoption of recommended production technology of brinjal.

Size of land holding and the extent of adoption: The data presented in Table 3 clearly indicate that size of land holding of the brinjal growers had positive and significant association (0.1977*) with their extent of adoption of recommended production technology of brinjal.

Annual income and the extent adoption: It is apparent from the data presented in the Table 3 that annual income of the brinjal growers had positive and significant correlation (0.1815*) with their extent of adoption of recommended production technology of brinjal.

Extension contact and extent of adoption: The data presented in Table 3 clearly indicate that extension contact of the brinjal growers had positive and highly significant correlation (0.2321**) with their extent of adoption of recommended production technology of brinjal.

Table 3: Relationship between the characteristics of brinjal growers and their adoption of recommended production technology brinjal

(n = 120)

S. No.	Independent Variables	Correlation-Coefficient ('r' value)
1	Age	0.1926*
2	Education	0.2447**
3	Size of family	0.1713 (NS)
4	Social participation	0.0194 (NS)
5	Land holding	0.1977*
6	Annual income	0.1815*
7	Extension contact	0.2321**
8	Sources of information utilization	0.1912*
9	Scientific orientation	0.1880*
10	Level of knowledge	0.6468**

NS = non significant, * = significant at 0.05 level, ** = significant at 0.01 level

Sources of information and extent of adoption: The data depicted in Table 3 show that the sources of information utilization of the brinjal growers had positive and significant correlation (0.1912*) with their extent of adoption of recommended production technology of brinjal.

Scientific orientation and adoption: It is apparent from the data presented in Table 3 that scientific orientation of the brinjal growers had positive and significant correlation (0.1880*) with their extent of adoption of recommended production technology of brinjal which indicate that scientific orientation had positive influence on adoption of brinjal production technology.

Level of knowledge and extent of adoption: It is obvious from the data presented in Table 3 that the extent of adoption of brinjal growers regarding recommended production technology of brinjal had positive and highly significant correlation (0.6468**) with their level of knowledge. It indicates that as knowledge level of brinjal growers increases, the adoption level also increases.

CONCLUSION

The study revealed that majority (62.50 %) of the brinjal growers had medium extent of adoption; followed by 21.67 per cent and 15.83 per cent of the brinjal growers had low and high level of adoption, respectively. The non-cost and low cost inputs in the package of practices were adopted more by the respondents.

REFERENCES

Anonymous, 2006. Food and agricultural organization (FAO, UNESD, 2006).

Chadha, K. L. 2002. Hand Book of Horticulture. *ICAR Publication*, New Delhi.

Kadu, B.D. and Saiyad, A.S. 2009. A study on adoption of recommended production technology of brinjal by brinjal growers in Anand district of Gujarat state. M.Sc. (Agri.) Thesis (Unpub.), Gujarat Agricultural University, Anand.

Pareek, U. and Trivedi, G. 1963. Factor analysis of socio-economic status of farmers in India. *Rural India*. 30**:** 311-321.

Patel, G.R.; Chauhan, N.M.; and Tandel, B.M. 2009-10 Impact analysis of training regarding scientific cultivation of brinjal. *Guj. J. Extn. Edu*., XX-XXI**:** 37-38.

Rathod, J. J. 2009. A study on adoption of recommended plant protection measures by chilli growers in Anand district of Gujarat state. M.Sc. (Agri.) Thesis (Unpub.), A.A.U., Anand campus, Anand.

Sengupta, T. 1967. A simple adoption scale used for farmers for high yielding programme of rice. *Indian journal of Extension Education,* 3 (3): 107-115

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COMPREHENSION OF PAMPHLET ON 'WASTE DISPOSAL AT HOUSEHOLD LEVEL' BY RURAL WOMEN

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ABSTRACT

An effectively disposed waste, generated at household level increases the health of community and environmental quality of the country.The present paper attempts to study comprehension of pamphlet developed on 'Waste disposal at household level'. The study was conducted in randomly selected Girwa panchayat samiti of Udaipur district of Rajasthan state. A sample of 30 literate rural women was selected for comprehension of pamphlet. Personal interview technique was used for data collection. The findings of the study revealed that the overall comprehension of pamphlet was found to be very good with mean per cent score 95.07. The title of the pamphlet i.e. 'घरेलू स्तर पर कचरा प्रबंधन' was understood by all the respondents, while content and illustrations were comprehended by majority of the respondents.

INTRODUCTION

Water, sanitation and waste management are important driving forces for community health. Sustaining effective solid waste management practices is crucial for environmental sanitation. The ever-increasing quantity of waste is a growing environmental concern in both rural and urban parts of India. Most of the waste generated at household consists of wastes from kitchens, gardens, cattle sheds, agriculture, and materials such as metal, paper, plastic, cloth, bottles, packaging in general, and a wide variety of other items, including products which may be toxic.Waste management practices especially the municipal solid waste can differ for developed and developing nations for urban and rural areas, and for residential, commercial and industrial producers. Waste collection methods vary widely among different countries and regions. Domestic waste collection services are often provided by local government authorities or by private companies in the urban cities (Sebastian, 2010). But in many places especially in rural areas, solid wastes generated at home are either burnt or disposed in open places such as lands, forests, wild life habitats, water resources, road sides, public places and low lying areas which negatively affects to the scenic beauty of the environment and increases the risk of health problem.

Community participation has a direct bearing on efficient Solid Waste Management. Yet, the municipal authorities have failed to mobilize the community and educate citizens on the rudiments of handling waste and proper practices of storing it in their own bins at the household, shop and establishment level (Asnani, 2006). Waste can be properly disposed or reused and money could also be generated through proper disposal.Thus, there is a need of appropriate communication aids developed on waste disposal practices with the specific features of easy readability and comprehension so that these can be easily understood by the users and can be used as ready reference for awareness generation. Therefore, the present study was planned to field test the pamphlet on waste disposal at household level for its comprehension by rural women.

RESEARCH METHODOLOGY

The study was conducted in randomly selected Girwa panchayat samiti of Udaipur district of Rajasthan. A sample of 30 literate rural women (15 from each village) was taken from two villages

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namely Kanpur and Bhoiyon ki Pacholi from Girwa panchayat samiti for testing the comprehension of developed pamphlet.Personal interview technique was used for data collection.

RESULTS AND DISCUSSION

1. Designing of Pamphlet

In order to design pamphlet on 'Waste disposal at household level' the content was collected from literature and approved by subject matter specialists. The pamphlet was designed using graphic designing software i.e. Corel Draw. It was then evaluated by panel of experts from relevant field on various criteria i.e. relevance to topic, subject matter coverage, layout, subtitle, continuity/ sequence, accuracy, language, illustration, size of pamphlet and overall presentation. The mean weighted score for all criteria ranged from 3.6 to 4.6 out of 5, indicating that all the criteria were rated good to excellent. None of the criterion was rated as fair or poor. The overall mean weighted score of the pamphlet was 4.04 which indicate that the pamphlet was evaluated very good by the experts. The details regarding experts evaluation of pamphlet is presented in Figure 1.

2. Comprehension of Pamphlet by the respondents

The designed pamphlet was comprehended by 30 literate rural women. Pamphlet contained one title, 12 key messages and 14 illustrations.The pamphlet covers information related to ill effects of waste, types of waste and its management at household level.

A. Comprehension of Title: The title of the pamphlet i.e. 'घरेलू स्तर पर कचरा प्रबंधन' was comprehended by all the respondents, indicating excellent comprehension of the title.

B. Words perceived difficult to comprehend: Only one word i.e. 'प्रबंधन' was found difficult to comprehend by some of the respondents (27%), rest all the words were completely understood by all the respondents (100%).

C. Comprehension of content: Pamphlet on 'Waste management at household level' covers the information related to ill effects of waste, types of waste and its management at household level. Perusal of Table 1 depicts that the message

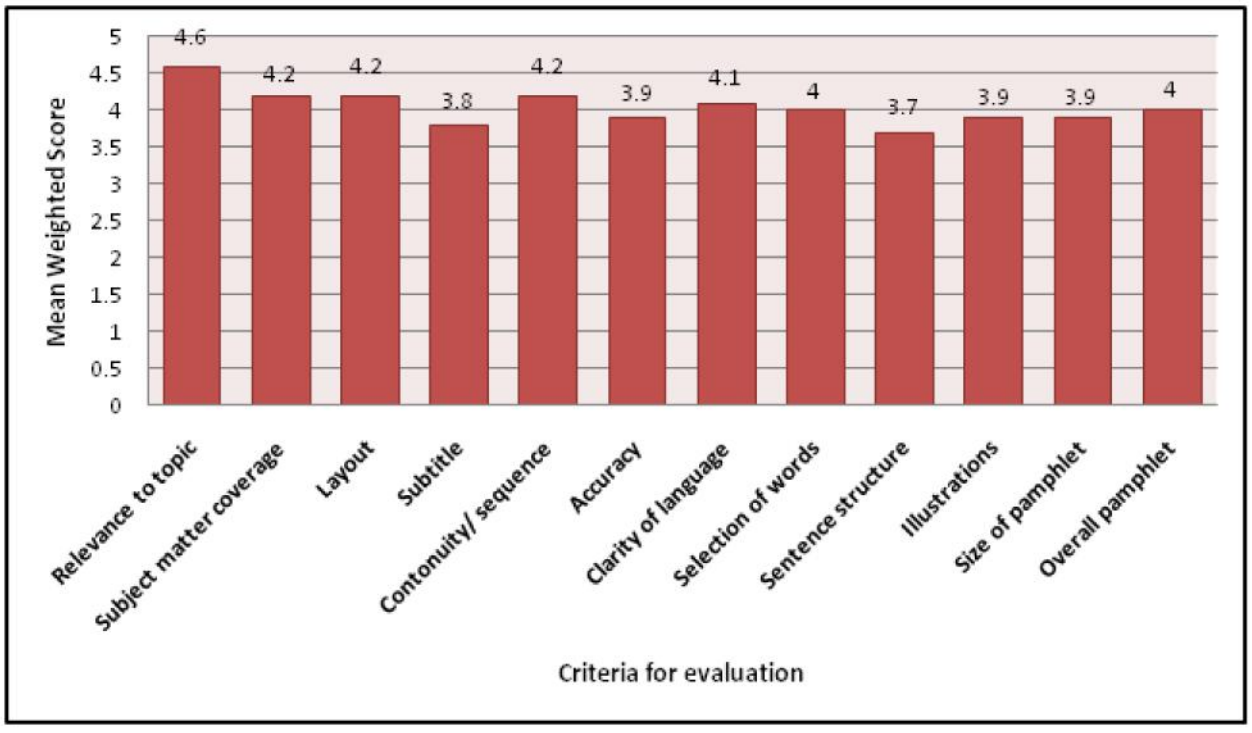

Fig. 1 : Evaluation of developed pamphlet on various criteria by experts

dumping of waste in open causes pollution, diseases and affects soil fertility were clearly understood by all the respondents. Message related to garbage produced from house, kitchen, field and livestock was understood by most of the respondents (96.67%). There are various ways of managing waste at household level such as use of dustbins, separate dustbins for dry and wet garbage, collecting and disposing scrap to ragman, reusing items, avoiding unnecessary use of electric appliances, avoiding use of plastic bags and using jute bags. All these messages related to waste management at household level were understood by all the respondents except one message i.e. preparation of compost from kitchen waste which was comprehended by 86.67 per cent respondents. The reason for such finding might be that the respondents used kitchen waste to feed the cattle and the message was depicting a process with certain steps, hence it was perceived difficult to understand.

In general, the comprehension of all messages by the respondents was found very good as all the 12 messages were understood by majority of the respondents (86.67 to 100%). The reason for such findings might be that the messages were simple and conveying single idea so majority of the respondents comprehended them easily.

D. Comprehension of illustrations: Data in Table 2 reveal the comprehension of illustrations used in the pamphlet on 'Waste disposal at household level' by the respondents.It was found that out of 14 illustrations, 10 were completely understood by all respondents (100%). Three illustrations i.e. 'agriculture waste', 'recycling of kitchen waste into compost' and 'reuse of sacs'were also understood by most of the respondents (96.67%). Only one illustration i.e. 'animal waste' was comprehended by 86.67 per cent respondents. Rest of the respondents comprehended it as a heap of soil. It can be concluded that all the illustrations used in the pamphlets were understood by majority of the respondents.

Table 1: Comprehension of messages in pamphlet on 'Waste disposal at household level' by the respondents

n=30

S. No.	Key messages	Frequency	Percentage
1.	Ill effects of dumping waste		
	i. Pollution (air, water etc.)	30	100
	ii. Causes diseases	30	100
	iii. Affects soil fertility	30	100
2.	Garbage produced from house, kitchen, field and livestock	29	96.67
3.	Waste management at household level		
	i. Use of dustbins help in maintaining sanitation	30	100
	ii. Use of separate dustbins for wet and dry garbage	30	100
	iii. Collection and disposing scrap to ragman	30	100
	iv. Preparation of compost from kitchen waste	26	86.67
	v. By reusing items, resources can be saved	30	100
	vi. Avoid unnecessary use of electric appliances	30	100
	vii. Avoid use of plastic bags	30	100
	viii. Use of jute bags for carrying items	30	100

Table 2: Comprehension of illustrations in the pamphlet on 'Waste disposal at household level' by the respondents

n=30

S.No.	Illustrations	Frequency	Percentage
1.	Avoid dumping of garbage in open	30	100
2.	Use of separate dustbins for wet and dry garbage	30	100
3.	Garbage pile	30	100
4.	Kitchen waste	30	100
5.	Agriculture waste	29	96.67
6.	Animal waste	26	86.67
7.	Separate dustbins for wet and dry garbage	30	100
8.	Collection of scrap	30	100
9.	Proper disposal of scrap to ragman	30	100
10.	Recycling of kitchen waste into compost	29	96.67
11.	Mixed dry and wet waste in a container	30	100
12.	Reuse of sacs in plantation	29	96.67
13.	Use jute or cloth bag	30	100
14.	Do not use plastic bags	30	100

E. Overall comprehension: The overall comprehension was assessed by judging comprehension of title, words, content and illustration. For this, one score was assigned to each item. Total score of each respondent for pamphlet was calculated and then mean per cent score was calculated. For overall comprehension, the pamphlet obtained mean per cent value 95.07 which is close to maximum score i.e. 100. This indicates a very good comprehension of pamphlet. The reason for such finding could be use of simple language, easily understandable and self-explanatory content, appropriate and easy illustrations.

CONCLUSION

The pamphlet developed on 'Waste disposal at household level' was evaluated as very good by the experts with mean weighted score 4.04. The comprehension of title, content and illustration of pamphlet were also found to be very good. Thus, the prepared pamphlet can be utilized by any welfare organization or extension worker as a standardized communication material to generate awareness among people regarding waste disposal at household level.

REFERENCES:

Asnani, P.U. 2006. Solid Waste Management.India Infrastructure Report 2006 Urban Infrastructure. Oxford University Press, New Delhi. pp 178-189.

Kumar, A and Anand, S. 2017.Community perception towards solid waste management in NCT of Delhi, India.International Journal of Research and Review.4: 47-55.

Sebastian K.V. 2010. A study on the entrepreneurial traits and characteristics of waste pickers and their contributions to the economy and ecology.M.Phil thesis submitted to Christ University, Bangalore.

Sharma, R. 2009. Development and field testing of instructional material on 'Entrepreneurship development' for rural women. Ph.D. Thesis submitted to MaharanaPratap University of Agriculture & Technology, Udaipur, Rajasthan.

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IMPACT OF NAIP WITH SPECIAL REFERENCE TO HIGH YIELDING VARIETY INTERVENTIONS IN WHEAT CULTIVATION IN BANSWARA DISTRICT OF RAJASTHAN

Santosh Devi Samota*, Dr. K.L. Dangi and Jeewan Ram Jat*****

ABSTRACT

National Agricultural Innovation Project (NAIP) focuses on four components which aimed at ICAR as the catalyzing agent for the management of change in the National Agricultural Research System; Research on Sustainable Rural Livelihood Security; and Basic & Strategic Research in Frontier Areas of Agricultural Sciences, multiple technology options in holistic and integrated manner in order to increase their productivity and profitability. In Rajasthan, consortia NAIP were in operation in four tribal populated districts namely, Udaipur, Banswara, Dungarpur and Sirohi. Therefore, district Banswara was selected for present investigation based on maximum households covered under the project. The Banswara district consist of 11 Panchayat Samiti. Out of which one Panchayat Samiti namely Talwara was selected for the study purpose. After having drawn sample of 19 respondents (beneficiaries) each from every beneficiary village, similar size of sample of non-beneficiaries (19) from each of the non- beneficiary villages was drawn with the help of random sampling procedure. Total size of sample was of 152 respondents, combining beneficiaries and non - beneficiaries. Findings indicated that beneficiaries (NBs) were not far lagging behind about knowledge of HYVs. Their knowledge level was medium to high. It means that the NAIP being run in Banswara district exerts positive impact on the beneficiary farmers in the context of their knowledge about HYVs. That the Beneficiary farmers under NAIP in the study area possess relatively less knowledge in the context of "sources of improved seeds and "depth of sowing" of wheat seed. It is recommended the NAIP functionaries must emphasize on keeping beneficiary well informed regarding easy accessible sources of advocated latest seed of wheat crop.

INTRODUCTION

Shri Sharad Pawar, Union Agriculture Minister, on July 2006, launched a 6 year ambitious agricultural research Programme National Agricultural Innovation Project (NAIP), which focuses on innovations in agricultural technology. It would facilitate an accelerated and sustainable transformation of the Indian Agriculture so that it can support poverty alleviation and income generation. National Agricultural Technology Project (NATP) led by the ICAR, aimed to implement the shared understanding of the Government of India and the World Bank on technology- led - pro - poor growth, and it facilitated the public sector reform process for accelerating the flow of agricultural technologies. A key lesson from the NATP is that deliberate investments in partnership building and shared governance are required to speed up technology adaptation and dissemination. Various Agricultural Universities in India have been provided with sufficient fund by the ICAR to implement different programmes for increasing income and nutrition through adoption of economically viable integrated farming system. Under component 3 of NAIP, Maharana Pratap University of Agriculture and Technology, Udaipur had also been sanctioned a consortia project entitled "Livelihood and nutritional security of Tribal dominated areas through integrated farming system and technology modules". Good efforts under the project are being made to replace local seeds of wheat with High Yielding Varieties, along with important interventions, such as Integrated Nutrient

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Management (INM), Integrated Pest Management (IPM) and Integrated Water Management (IWM). So far no evaluation study in the operational area of the project has been conducted regarding the response of farmers about IPM interventions in wheat under NAIP. With this background, present study was conducted with the objective to determine the knowledge level of beneficiaries and non-beneficiaries with regards to high yielding varieties of wheat crop.

RESEARCH METHODOLOGY

The present investigation was conducted in Talwara Panchayat Samiti of Banswara district of southern Rajasthan. With the specific objective to evaluate the NAIP with special reference to IPM interventions in Wheat cultivation. It was performed based on comparison of beneficiaries with those of non-beneficiaries with regard to their knowledge of IPM in Wheat cultivation. Out of total 52 Gram Panchayats under Talwara Panchayat Samiti, four Gram Panchayats viz. Masotiya, Devlia, Sageta and Jhalo ka Gada (Nokla) were covered under NAIP. Therefore, as such, these four Gram Panchayats were included in the present investigation. Four beneficiary and four non-beneficiary villages were selected. Seventy six beneficiaries and non-beneficiaries (19 from each village) were selected for the present study. Total size of sample was of 152 respondents, combining beneficiaries and non - beneficiaries.

Relevant data were collected from the selected respondents with the help of constructed interview schedule. Face -to -face interview technique was employed for collecting the data from the respondents. Thereafter, data were analyzed and results were interpreted in the light of the objective of study.

RESULTS AND DISCUSSION

To get an overview of the respondents regarding their knowledge about high yielding varieties, they were classified into three categories viz., high, medium and low level of knowledge. These categories were formed on the basis of calculated mean per cent score of the knowledge attained by the respondents

A perusal of data in Table 1 reveals that majority of the respondents 113 (74.34 per cent) were from high knowledge category, while 27 (17.77 per cent) could be placed under medium knowledge category. The proportion of respondents reported in the low knowledge were 12 (7.89 per cent) in the study area. The analyzed data in Table 1 divulge that 60 (78.94 per cent) beneficiaries and 53 (69.73 per cent) non-beneficiaries farmers respectively had high level of knowledge. Likewise, 9 (11.85 per cent) of the beneficiaries and 18 (23.69 per cent) of non-beneficiaries farmers respectively possessed medium level of knowledge. However, beneficiaries farmers 7 (9.21 per cent) fell under the category of low level knowledge than those of non-beneficiaries 5 (6.57 per cent). Thus, it could be concluded on the basis of table that beneficiary farmers had high knowledge about HYVs of wheat cultivation. At the same time, considerable knowledge level of non-beneficiaries was also noticed; it may be due to indirect influence of the project on them. Naturally, non-beneficiaries come in the contact with the beneficiaries (Bs), this might have contributed in increased level of non-beneficiries. Thus, it is clear that project has definite impact not only on beneficiaries but indirectly on non-beneficiaries.

The findings are similar to the results of Khan et al. (1997), Lavania et al. (1998) and results of Gaur (1999) are also similar.

Aspects wise identified knowledge of the respondents regarding HYVs of wheat is given in Table 2. The data presented in the Table 2 indicate that beneficiaries and non-beneficiaries respondents possessed maximum knowledge about "Names of HYVs of wheat" with MPS 88.68. This aspect was ranked first by the farmers of both the categories. This was followed by "Advantages of HYVs", "Depth of sowing" and "Sources of improved seeds". The mean per cent scores of these aspects were 85.84, 80.91, and 47.66 respectively. Both the groups of farmers separately ranked the aspects in the similar way. Table 2 also expresses that there existed more general knowledge of beneficiaries than non-beneficiaries with regards to four different

Table 1: Distribution of the respondents according to their knowledge level regarding selected high yielding varieties (HYVs)

n =152

S. No.	Knowledge level	Beneficiaries	Non-beneficiaries	Total
1	Low (MPS upto 33)	7	5	12
		(9.21)	(6.57)	(7.89)
2	Medium	9	18	27
	(MPS 34-66)	(11.85)	(23.69)	(17.77)
3	High	60	53	113
	(MPS above 66)	(78.94)	(69.73)	(74.34)
	Total	**76**	**76**	**152**
		(100)	**(100)**	**(100)**

MPS=Mean per cent score, figures within the parentheses are percentage

Table 2: Aspects wise identified knowledge level of the respondents regarding HYVs of wheat

n= 152

S.No.	Aspect	Beneficiaries		Non-beneficiaries		Total	
		MPS	Rank	MPS	Rank	MPS	Rank
1	Names of HYVs of wheat	90.11	I	87.26	I	88.68	I
2	Advantages of HYVs	86.33	II	85.36	II	85.84	II
3	Depth of sowing	81.41	III	80.42	III	80.91	III
4	Sources of improved seeds	45.32	IV	50.00	IV	47.66	IV

MPS=Mean per cent score

aspects of HYVs. Here also, project impact on beneficiaries is classified it is worth noticing that beneficiaries ranked " sources of improved seeds" as forth in the hierarchy of general knowledge aspects of HYVs. It disseminated the beneficiaries regarding this aspect. Successfulness and the impact of the project cannot be thought, unless the seed of improved varieties is ensured. The findings are in contradiction with that of Meghwal (1999) as he reported maximum knowledge about improved practices of Bajra cultivation in Jodhpur district of Rajasthan.

REFERENCES

Khan, M. 1997. Impact of Krishi Vigyan Kendra in transfer of technology among the farmers of Bharatpur district of Rajasthan. M.Sc. (Ag.) Thesis (Unpublished)), Rajasthan Agricultural University, Bikaner.

Lavania, R., Patel, H. L. and Sharma, H. O. 1998. Knowledge level of trained and untrained farmers in improved practices of Wheat crop. *Rural India* **61**: 165-166

Gaur, H. 1999. Impact of vocational training programmes organized by KVKs on farmers of western Rajasthan. Ph.D. Thesis (Unpublished)), Rajasthan Agricultural University, Bikaner.

Meghwal, R. R. 1999. Impact of Krishi Vigyan Kendra in the adoption of improved practices of bajra cultivation in Jodhpur district of Rajasthan. M.Sc. (Ag.) Thesis (Unpublished) Rajasthan Agricultural University, Bikaner.

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ICT TOOLS USED BY FARM WOMEN KNOWLEDGE GROUPS

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ABSTRACT

The objective of the present study was to find out the use of ICT tools by farm women knowledge groups. The study was conducted in Udaipur district of Rajasthan State. The sample consisted of 100 farm women. Frequency and percentage were used for analysis of data. The study reveals that 68 per cent respondents used mobile of their family member with internet facility and 64 per cent used their family members mobile in which internet facility was not available. All the respondents (100%) were aware about calling from mobile and all were using this service. Nearly three fourth of the respondents (77 %) answers to all known calls. It was found that 81-90 per cent respondents received written messages and can read also. Television & mobile were used by three forth respondents always & sometimes by 23-27 per cent respondents. 55 to 96 per cent respondents watched Television for entertainment, social welfare for agriculture, education, and health & business purpose. Radio was listening by 11 per cent respondents for entertainment purpose only. Mobile was used by 97 per cent respondents for entertainment, while 47 per cent used it for education purpose, 33 per cent for social welfare and 15 per cent for business purpose. Only 3-7 per cent respondents used it for health & agriculture purpose.

INTRODUCTION

There has been a lot of interest during the last two decades in employing Information and Communication Technologies (ICTs) for achieving sustainable agriculture and rural development. While many of these initiatives have benefited rural women by way of access to new information and new employment opportunities, women still face a number of constraints in accessing ICTs especially in the agriculture nutritional aspect. All the decisions whether political, social, economic, cultural and behavioural today depends on the ability to access, gather, analyse and utilize information and knowledge (Jakhar, 2015). For the women farmers. It is also easy to come out of their household as the member of knowledge group in which they share their group identity. A variety of ICTs are used by the rural women to develop their ICT skills. The use of mobile phones provide new opportunities for farmers to obtain access to agricultural information, such as market prices, weather reports, transport information and agricultural technique in various formats like audio, video and text (Aker, 2011). Use of ICTs is crucial for the socio-economic empowerment of rural women. ICTs should be provided at a reasonable cost to help rural women maintain the networks' with other community members and to develop ICT skills. ICTs have the potential to improve the quality of lives of rural women and can give them more control over their lives.

RESEARCH METHODOLOGY

The present study was conducted in village Gudli & Vijanwas of Mavli block from Udaipur district of Rajasthan State. The study was purposively planned for situational analyse on knowledge & use of ICT in agricultural & allied sector. For this, the data were collected from 100 farm women. Availability and access of ICT tool was studied in the study.

RESULTS AND DISCUSSION

Table 1 shows use of ICT tools by the respondents it was found that 68 per cent respondents used mobile of their family member, while 38 per cent used mobile of their own, three respondents used common family computer, whereas 2 per cent

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Table 1: Distribution of respondents according to their use of ICT tools

n= 100

Availability of ICT tools	With internet service (Freq.)	Without internet service (Freq.)
Mobile owned by respondent	34	74
Mobile of some family member	68	64
Personal computer/laptop	0	4
Family common computer /laptop	3	6
Kiosk / common service centres	2	0

Table 2: Per cent distribution of respondents according to their Awareness & use of different ICT tools & services

n=100

ICT tools and services	Aware		Use	
	Yes	No	Yes	No
Mobile without internet				
Calling	100	0	100	0
SMS	89	11	72	28
Memory stick	81	19	63	37
Mobile with internet				
Calling	79	21	60	40
SMS	65	35	43	57
Memory stick/ Memory card	60	40	44	56
Whats app	60	40	44	56
Facebook	36	64	17	83
Games/ movies/ songs	43	57	25	75
Accessing different internet sites	38	62	18	82
Computer /laptop without internet				
Office documents/presentations etc.	34	66	8	92
Computer/laptop with internet				
Office documents/presentations etc.	29	71	6	94
Facebook, social media	25	75	0	100
Accessing different internet sites	25	75	2	98

respondents used kiosk also for their work with internet service. Other than this, 74 per cent respondents used their own mobile without internet service, 64 per cent used their family members mobile, 4 per cent respondents used laptop, 6 per cent respondents used common computer in which internet facility was not available.

It is evident from table 2 that 100 per cent respondents were aware about calling from mobile and all were using this service. Majority of the respondents (89%) were aware about SMS and 72 per cent were using also. Regarding awareness

about memory stick, it was found that 81 per cent were aware & 63 per cent were using it also. Karuna and Sandhya also reported that all the respondents were using mobile phones.

Further, it was observed that majority of the respondents (60-100%) were aware about calling, messaging, about memory stick, memory card and what's app. While, their use was done by 43-60 per cent respondents. About one third of the respondents i.e. 36-43 per cent knew about face book, games, movies, songs, different internet sites, office documents & presentations. While, very few i.e. 17-25 per cent were using these facilities. The reason was that these facilities were of no use for them.

About office documents with & without internet 25 to 34 per cent were aware and only 2 to 8 per cent were using them. While, 66-75 per cent were

Table 3: Distribution of respondents according to pattern of use of mobile

n= 100

Calls								
1.Answering calls			**All calls**				**Known calls**	
			Yes		**No**		**Yes**	**No**
			f / %		f / %		f / %	f / %
			77		23		23	77
SMS								
2. SMS received	Can you read messages		If no, than who reads them for you (n=20) *				Read all messages(n=80)	
							Yes	No
							26 (32.5%)	54 (67.5%)
	Yes	No	Husband	Children	Relatives	Friends	Read messages from known numbers (n=80)	
	f/%	f/%	f/%	f/%	f/%	f/%		
	80	20	14 (70%)	16 (80%)	0	0	50 (62.5%)	30 (37.5%)
3. Source and type of SMS	Husband		Children	Relatives	Friends	KVKs	Agriculture dept.	Any other
	f/%		f/%	f/%	f/%	f/%	f/%	f/%
i) Voice	43		20	59	56	0	0	0
ii) Written	81		47	90	84	0	0	0
iii) Video	41		20	58	57	0	0	0
4. SMS sent	**Can you write messages**				**If no, than who write them for you** (n=45)*			
	Yes		**No**		**Husband**	**Children**	**Relatives**	**Friends**
	f / %		f / %		f / %	f / %	f / %	f / %
	55		45		39 (86.66%)	32 (71.11%)	0	0
Memory stick/memory card								
5. Capacity of memory stick /card	**Availability**		**Capacity of memory stick**					
	Yes	No	2 GB	4 GB	8 GB	16 GB	32 GB	
	f / %	f / %	f / %	f / %	f / %	f / %	f / %	
	86	14	3	33	16	31	3	

not aware about computer and almost all i.e. 92 to 100 per cent were not using computers.

Table 3 depicts the pattern of use of mobile by the respondents. It was observed that 77 per cent respondents answers to all calls whereas, 23 per cent answers to known calls only. While, asked about receiving SMS, 80 per cent reported that they can read message, for rest of them their husband and children's do this job. Further, table shows that nearly one third (32.5%) respondents read all messages and amongst them 62.5 per cent read messages of known numbers.

Further, it was found that 81 -90 per cent respondents received written messages, (43-59%) voice messages and 41 -58 per cent respondents received video messages from their husband, friends and relatives. They didn't receive any message from KVK and agriculture department. More than half of the respondents (55%) were able to write messages.For others (45%), their husband and children's do this job. It was interesting to note that 86 per cent of them have memory card of 2-32 GB capacity.

Table 4 shows that television & mobile were used by three forth respondents always & sometimes by 23-27 per cent respondents, internet was used either always (21%), sometimes (28%) or rarely (24%). The use of kiosk & computer was rare or almost nil by majority of the respondents (75-89%). Similarly the use of rest of the ICT tools was also negligible. Verma and Sharma reported that more than half of the respondents were in medium user category (56.25%), followed by low user category (29.375%) and high user category (14.375%) of ICT use. Adetumbi et al. also observed that 58.6 per cent of the respondents fell under average level of use of ICTs, followed by low (21.9%) and high (19.5%) level of use of ICTs.

Table 5 depicts the purpose for using ICTs by the respondents, it was observed that 55 to 96 percent respondents watch Television for entertainment, social welfare, for agriculture, education, health & business purpose. Radio was listening by 11 per cent respondents for

Table 4 : Distribution of respondents according to frequency of use of different ICT tools

n=100

ICT tools	Frequency of usage			
	Always	Some-times	Rarely	Never
Television	70	26	0	4
Radio	0	5	6	89
Mobile	77	23	0	0
Kiosk / common service centres	0	6	19	75
Computer	0	0	11	89
CD/VDV	0	0	0	0
Internet	21	28	24	27
e- mail	0	6	9	85

entertainment purpose only. Mobile was used by 97 per cent respondents for entertainment, while 47 per cent used it for education purpose, 33 per cent for social welfare and 15 per cent for business purpose. Only 3-7 per cent respondents used it for health & agriculture purpose.

Kiosk services were used for educational purpose by 21 per cent respondents. Computer was also used for educational purpose by 8 per cent respondents only. One respondent reported that she used it for entertainment purpose. Internet was used by 67 percent for entertainment, educational purpose (42% respondents), 30 per cent respondents told that they used it for business purpose and 6-10 per cent used it for receiving information regarding health and agriculture. Email was used by 13 per cent respondents for educational purpose as they reply for some competition exam etc.

CONCLUSION

It can be concluded that 38 per cent respondents used their own mobile, in there 74 per cent were use their own mobile without internet service. Majority of the respondents (60-100%) were

Table 5: Distribution of respondents according to their purpose for using ICTs

n= 100

ICT tools	Education	Health	Business	Agriculture	Social welfare	Entertainment
Television	71	61	55	75	76	96
Radio	0	0	0	0	0	11
Mobile	47	3	15	7	33	97
Kiosk / common service centres	21	0	0	0	0	0
Computer	8	0	0	0	0	1
CD/VDV	0	0	0	0	0	0
Internet	42	6	30	10	6	67
e- mail	13	0	0	0	0	0

aware about calling, messaging, about memory stick, memory card and what's app. Television & mobile were used by three forth respondents always & sometimes by 23-27 per cent respondents and 55 to 96 per cent respondents watched Television for entertainment, social welfare for agriculture, education, health & business purpose. Mobile was used by 97 per cent respondents for entertainment, while 47 per cent used it for education purpose.

REFERENCES

Adetumbi, S. I., Olaniyi, O., & Adewale, J. 2013. Assessment of Use of Selected Information Communication Technologies (ICTs) for Extension Service Delivery: Implication for Agricultural Development in Nigeria. *International Journal of Agricultural Management and Development (IJAMAD)* **3**(2): 20-24

Aker, J.C. 2011. Dial "A" for Agriculture: a review of information and communication technologies for agricultural extension in developing countries. *Agricultural Economics* **42**(6): 631-647

Jakhar, S. 2015. Role of ICT in economic growth of India. *International Journal of Science and Research* **6**(9): 216-219

Karuna, Sree, E., & Sandhya, Shenoy, N. 2009. Information and communication technology (ICT) needs assessment of agricultural professionals working in Krishi Vigyan Kendras in Andhra Pradesh. *Journal of Communication Studies* **28**: 24-35

Verma, S.R., & Sharma, F.L. 2013. Application of information and communication technologies in agriculture by extension personnel. *Journal of Extension Systems* **29**(2): 13-28

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SOCIO-ECONOMIC STATUS OF WOMEN WORKERS UNDER MGNREGA

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ABSTRACT

The present study was conducted in Jaipur District of Rajasthan with the objective of analysing socio-economic status of women workers of MGNREGA. For this, one hundred twenty MNREGA women workers were selected and information was collected with the help of structured interview schedule and data were analysed with the appropriate statistical tools as; frequency, percentage and mean and result were drawn from it. It was found that majority of respondents were in medium socio-economic group in the study area.

INTRODUCTION

The National Rural Employment Guarantee Act, 2005 (NREGA) also known as National Rural Employment Guarantee Scheme (NREGS), is Indian legislation enacted since August 25, 2005. NREGA was renamed as Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) in October, 2009.The MNREGA provides a legal guarantee for one hundred days' employment in every financial year to any rural household whose adult members are willing to do unskilled manual work at the statutory minimum wage. This act was introduced with an aim of improving purchasing power of rural people, primarily semi or unskilled work to people living below poverty line in rural India. It attempts to bridge the gap between the rich and poor in the country. Roughly one third of stipulated workforce must be women. The scheme was started from February 2, 2006 in 200 most backward districts of the country. It was expanded to 645 districts during 2014 -2015.

The Act has been notified throughout the country with effect from April 1, 2008.The state of Rajasthan is characterized by low literacy especially among women, recurrent drought, dependency on agriculture and animal husbandry (i.e. 66 %), high birth rate, infant and maternal mortality rate and the like. Many rural development programmes have been so far implemented by the government for employment of rural people. In the same line, MGNREGA is the latest livelihood security programme being implemented in the state.

RESEARCH METHODOLOGY

The study was conducted in Dudu panchayat samiti in Jaipur district of Rajasthan. Dudu panchayat samiti consisted of 57 villages. Out of which 4 villages were selected on the basis of total active women workers. Four villages namely Habaspura, Hirnoda ,Naraina and Mozamadad were selected for study.From every selected village, a list of all workers registered in the master a roll in MNREGA during last 2 years i.e. 2013-14 and 2014-15 was obtained from the Surpanch. From this list, 30 women workers benefitted through MGNREGA were selected randomly thus, a total of 120 respondents from four villages were selected for the present investigation. Data were collected through well structured interview shcedule and personal interview technique was used to collect data from the selected respondents. Thereafter, data were analysed, tabulated ad results were interpreteted in light of the objective of study.

RESULTS AND DISCUSSION

On the basis of extensive review of literature and discussion with the experts, five personal and family background variables namely age, caste, education and income etc. were selected. The data on these characteristics were analyzed and presented in

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following tables with an aim to draw a general picture of the women workers.

1. Age : Age of the women worker at the time of investigation was recorded by asking their age in completed years and data were classified into three groups viz., (1) below 31 years, (2) from 31 to 53 years and (3) above 53 years. The data with respect to age are presented in Table 1.

The data presented in Table 1 indicate that majority (62.60%) of women workers were from 31to 53 years age group, whereas 18.33 per cent women worker were above 53 years and only 19.17 per cent women worker were in less than 31 years. The majority of the respondents in the middle age group. It may be due to the reason that 31- 53 years of age is the time when the physical strength of a person is appropriate for physical work.

2. Caste: The data presented in Table 2 indicate that 41.67 per cent of women workers were from scheduled caste, whereas the women workers belonging to other backward caste, minority and scheduled tribe were 32.50, 19.16 and 6.67 per cent, respectively. It may be because the MGNREGA programme is meant to offer

Table 1: Distribution of women workers according to their age

n=120

S.No.	Category of age	Selected Villages				
		Habaspura	**Hirnoda**	**Naraina**	**Mozamabad**	**Total**
1	Below 31 years	5 (16.66)	5 (16.66)	8 (26.66)	5 (16.66)	23 (19.17)
2	From 31 to 53 years	19 (63.34)	20 (66.67)	15 (50.00)	21 (70.00)	75 (62.60)
3	Above 53 years	6 (20.00)	5 (16.67)	7 (23.33)	4 (13.34)	22 (18.33)

Mean= 42.71, SD = 10.78 (Figures in the parentheses indicate percentage)

Table 2: Distribution of women workers according to their caste

n=120

S.No.	Category of caste	Selected Villages				
		Habaspura	**Hirnoda**	**Naraina**	**Mozamabad**	**Total**
1	Scheduled caste	14 (46.67)	17 (56.66)	19 (63.33)	0 (0.00)	50 (41.67)
2	Scheduled tribe	6 (20.00)	1 (3.33)	0 (0.00)	1 (3.33)	8 (6.67)
3	Other backward caste	10 (33.33)	12 (40.00)	2 (36.67)	15 (50.00)	39 (32.50)
4	Minority	0 (0.00)	0 (0.00)	9 (30.00)	14 (46.66)	23 (19.16)

(Figures in the parentheses indicate percentage)

employment to the weaker sections of the society.

3. Education: The data presented in Table 3 indicate that majority of women workers (66.66 %) were illiterate, whereas 13.3 per cent were literate, 7.50 per cent were upto primary school level and can sign only. It was further found that 4.1 per cent were educated up to secondary school level and 0.83 per cent women workers were having senior secondary level education. Majority of women workers were illiterate may be because of MGNREGA is basically for an unskilled work force and thus no qualification is required foe getting job under the scheme.

4. Annual family income: The data presented in Table 4 indicate that majority of women workers

Table 3: Distribution of women workers according to their education

n=120

S.No.	Level of education	Selected Villages				
		Habaspura	**Hirnoda**	**Naraina**	**Mozamabad**	**Total**
1.	Illiterate	29 (96.67)	17 (56.66)	20 (66.67)	14 (46.67)	80 (66.66)
2	Can sign only	0 (0.00)	5 (16.67)	6 (20.00)	5 (16.67)	9 (7.50)
3	Literate (can read and write)	0 (0.00)	5 (16.67)	1 (3.34)	3 (3.34)	16 (13.30)
4	Primary school level	0 (0.00)	3 (10.00)	1 (3.33)	5 (16.67)	9 (7.50)
5	Secondary school level	1 (3.33)	0 (0.00)	1 (3.33)	3 (3.33)	5 (4.10)
6	Senior secondary level	0 (0.00)	0 (0.00)	1 (3.33)	0 (0.00)	1 (0.84)

Mean=0.44, SD=0.828 (Figures in parantheses indicate percentage)

Table 4: Distribution of women workers according to their annual family income

n=120

S.No.	Annual family income category	Selected Villages				
		Habaspura (n1)	**Hirnoda (n2)**	**Naraina (n3)**	**Mozamabad (n4)**	**Total (N=120)**
1	Low (below Rs.57,233)	9 (30.00)	8 (26.66)	6 (20.00)	3 (10.00)	26 (21.67)
2	Middle (Rs. 57,233 to 86,100	19 (63.33)	14 (46.67)	21 (70.00)	18 (60.00)	72 (60.00)
3	High (above Rs. 86,100)	2 (6.67)	8 (26.67)	3 (10.00)	9 (30.00)	22 (18.33)

Mean=71666.67, SD= 15280.75 (Figures in the parentheses indicate percentage)

Table 5: Distribution of women workers according to their socio- economic status

S.No.	Socio-economic status	Selected Villages				
		Habaspura (n1)	**Hirnoda (n2)**	**Naraina (n3)**	**Mozamabad (n4)**	**Total (N=120)**
1	Low (Below 63.78 score)	8 (26.67)	0 (0.00)	4 (13.33)	1 (3.34)	13 (10.83)
2	Medium (63.78 to 96.02)	19 (63.33)	19 (63.33)	23 (76.67)	25 (83.33)	86 (71.67)
3	High (Above 96.02 score)	3 (10.00)	11 (36.67)	3 (10.00)	4 (13.33)	21 (17.50)

Mean = 79.90, SD = 17.50 (Figures in the parentheses indicate percentage)

(60.00%) were from middle income group, whereas 21.67 per cent women workers were from low income group and only 18.33 per cent women workers were from high income group. The respondents selected under sample of study were having majority of the income less than Rs. 86100/ annum which were not sufficient to run the family, therefore the objective of MGNREGA Scheme is to provide job to people from low income group.

5. Socio- economic status: The data presented in Table 5 indicate that majority of women workers 71.67 per cent were from medium socio-economic group, whereas 17.50 and 10.83 per cent women workers were from high or low socio-economic status group respectively.

The percentage of women workers belonging to high socio-economic status was more in Hirnoda village (36.67%) as compare to other villages, however the percentage of low socio- economic status of women workers was more in Habaspura village (26.67 %) against that in other villages. The findings of this study are supported by the findings of Singh (2014).

CONCLUSION

From the above discussion it can be concluded that majority of respondents were from middle age group, schedule caste category and illiterate. It was further concluded that 71.60 per cent rural workers possessed medium Socio-economic status in the study area.

REFERENCES

Ahuja, U.R., Tayagi, D., Chauhan, S. and Choudhary, K.R. 2011. Impact of MGNREGA on Rural Employment and Migration: A Study in Agriculturally-backward and Agriculturally-advanced Districts of Haryana. *Agricultural Economics Research Review* **24**: 495-502.

Pamecha, S. and Sharma, I. 2015. Socio-economic Impact of MGNREGA- A study undertaken beneficiaries of 20 villages of Durgapur district of Rajasthan. *International Journal of Scientific and Research Publications* **5**: 15-19.

Pillai, A.B. and Nithiya, D. 2014. Socio-economic condition of MNREGA progamme workers in Krishnarayrapuram taluk of Karur district. *International Journal of Management Research & Review* **4** (9): 71-74.

Singh, H. 2014. A Study on Socio-Economic Status of Scheduled Caste People of Kangra. *Asian Journal of Multidisciplinary Studies* **2**(12): 37-39.

❑❑❑

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CONSTRAINTS FACED BY THE FARMERS IN ADOPTION OF GRAM PRODUCTION TECHNOLOGY IN BIKANER DISTRICT OF RAJASTHAN

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ABSTRACT

The present study was conducted in Bikaner district of Rajasthan. The National Food Security Mission is in operation in all six panchayat samities of Bikaner district. Out of which fifty percent panchayat samities, viz. Nokha, Lunkarnshar and Sri Dungargarh were selected purposely. Further three gram panchayats were selected from each identified panchayat samities on the basis of random sampling method. Thus, the total 9 villages were selected. To know the impact of National Food Security Mission, a control group of villages were also be required. Therefore, three distant villages where the National Food Security Mission was not in operation were also selected on the basis of random sampling technique from each identified panchayat samity. 7 beneficiary and 7 non-beneficiary gram respondents were selected randomly from each identified village. Thus, a total of 63 beneficiary respondents and 63 non-beneficiary gram respondents.The study revealed that inadequate knowledge of soil treatment, lack of skill about application of chemicals, unavailability of bio-fertilizer at village level, unavailability of timely seed minikits of gram crop at local level, lack of technological guidance at proper time were expressed as most sever constraints by the farmers in gram crop.

INTRODUCTION

Chickpea is a rich source of highly digestible dietary protein (17-21%), carbohydrate (61.5%) and fat (4.5%). It is also rich in calcium, iron, niacin, vitamin-B and vitamin-C. Its leaves contain malic acid which is very useful for stomach ailments and blood purification. Its straws are rich in nutrients and are mostly used as productive ratio. National Food Security Mission is being run at present in all 13, 33 and 12 districts of Rajasthan under the component of wheat, pulses and course cereals respectively. The emphasis in component third on NFSM- pulse reflects that several million people in the country remain largely bypassed by the green revolution and modern agricultural practices. The component NFSM- pulse is being implemented in Bikaner district of Rajasthan since 2007-08. Bikaner comes under hyper arid and partially irrigated western plains. The mission is in full swing and so far no impact study in the operational area of the mission has been conducted regarding the response of farmers about gram interventions introduced under NFSM.

The term constraints means the barriers or obstacles which are perceived by the beneficiary respondents in the adoption of recommended pulse production technology. Adoption of technology depends on various factors, which may either accelerate or retard its adoption. It is important on the part of extension functionaries to identify such factors so as to make the dissemination of technologies in line with the respondents' perception and need. It is needless to mention that pace of adoption can be augmented by overcoming the perceived constraints. So it was felt necessary to overcome the perceived constraints which prevented the respondents from adopting recommended gram production technology.

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RESEARCH METHODOLOGY

The present study was conducted in Bikaner district of Rajasthan. The National Food Security Mission is in operation in all panchayat samities of Bikaner district, out of which three panchayat samities were taken for the study. For selection of villages a list of villages were prepared from the selected panchayat samities for the study purpose where the interventions of gram were taken under NFSM. There were 12 villages in the selected panchayat samities where NFSM activities have been in operations in the last year 2014-15. Out of the list three villages were selected randomly for the study purpose from each selected panchayat samity. This way a total of 9 villages were selected from this identified panchayat samities. To know the impact of National Food Security Mission, a control group of villages was also required. Therefore, three distant villages where the National Food Security Mission was not in operation were also selected on the basis of random sampling technique. Thus, in total 9 villages were selected from all the identified panchayat samities and these villages were considered as non-beneficiaries villages. For selection of beneficiary respondents, a comprehensive list of gram growers who were benefitted under National Food Security Mission in 2014-15 was prepared separately. From the lists so prepared, 7 gram respondents were selected randomly from each identified beneficiary village. Thus, a total of 63 gram beneficiary respondents were selected on the basis of random sampling method from the identified villages.Likewise, 7 gram respondents were selected on the basis of random sampling technique from the each identified non-beneficiary village. Total 63 gram respondents were selected from all the non- beneficiary villages.An effort was made to find out the priority of constraints perceived by the beneficiary and non-beneficiary respondents in adoption of recommended gram production technology introduced under National Food Security Mission. For this mean percent score for each constraint was calculated and ranked accordingly. Data were collected from the selected respondents were analysed, tabulated and interpreted in the light of the objectives of the study.

Mean per cent score (MPS): It was calculated by multiplying total obtained score of the respondents by 100 and divided by the maximum obtainable score.

$$\text{Mean per cent score} = \frac{\text{Total score obtained}}{\text{Maximum obtained score}} \times 100$$

RESULTS AND DISCUSSION

The data presented in Table 1 reveal that non-beneficiary respondents were facing more problems related to "nepotism and favoritism in distribution of minikits under NFSM", "inadequate knowledge of soil treatment", "lack of skill about application of chemicals", "unavailability of bio-fertilizer at village level", "unavailability of timely seed minikits of gram crop at local level", "lack of skill about plant protection measures", "lack of technological guidance at proper time", "Improper knowledge of micronutrient application", "lack of knowledge about seed treatment", "high cost of farm implements/ machinery" and "high cost of improved seeds, micronutrients, fungicides and insecticides" with 88.89, 87.30,85.71, 84.13, 82.54, 80.95, 79.36, 77.78, 74.60, 73.02, and 71.43 MPS. While, beneficiary respondents facing more problems related to "inadequate knowledge of soil treatment", "lack of skill about application of chemicals", "lack of knowledge about seed treatment", "unavailability of bio-fertilizer at village level", "lack of technological guidance at proper time", "unavailability of timely seed minikits of gram crop at local level" and "Improper knowledge of micronutrient application" with 77.78 MPS, 74.60 MPS, 73.02 MPS, 71.43 MPS, 69.84 MPS, 68.25 MPS and 66.67 MPS respectively.

Further, moderate constraints faced by non-beneficiary respondents were regarding "lack of competence of AAOs/ Agriculture Supervisor in conducting demonstrations", "fragment and undulated land for cultivation of gram" and "unavailability of plant protection equipments" with 66.67 MPS, 65.08 MPS and 63.49 MPS respectively. The least constraint acknowledged by

them was regarding "lack of knowledge about application of gypsum", and "lack of irrigation water for cultivation of gram" with 61.90 MPS and 47.62 MPS respectively.

In case of beneficiary respondents, moderate constraints perceived by them were regarding "high cost of farm implements/machinery", "high cost of improved seeds, micronutrients, fungicides and insecticides" and "lack of skill about plant protection measures" with 63.49 MPS, 61.91 MPS, and 60.32 MPS respectively. Least constraints faced by beneficiary respondents were regarding "lack of competence of AAOs/ Agriculture Supervisor in conducting demonstrations", "nepotism and favoritism in distribution of minikits under NFSM","unavailability of plant protection

Table 1: Constraints perceived by the respondents in adoption of recommended gram production technology

N=126

S.No.	Constraint	Non-beneficiary Respondents		Beneficiary Respondents		Pooled	
		MPS	Rank	MPS	Rank	MPS	Rank
i.	Unavailability of timely seed minikits of gram crop at local level	82.54	V	68.25	VI	75.39	IV
ii.	Inadequate knowledge of soil treatment	87.30	II	77.78	I	82.54	I
iii.	Lack of knowledge about seed treatment	74.60	IX	73.02	III	73.81	VI
iv.	Improper knowledge of micronutrient application	77.78	VIII	66.67	VII	72.22	VIII
v.	Nepotism and favoritism in distribution of minikits under NFSM	88.89	I	57.14	XII	73.00	VII
vi.	Lack of technological guidance at proper time	79.36	VII	69.84	V	74.60	V
vii.	Lack of knowledge about application of gypsum	61.90	XV	53.97	XIV	57.93	XV
viii.	High cost of farm implements/machinery	73.02	X	63.49	VIII	68.25	X
ix.	High cost of improved seeds, micronutrients, fungicides and insecticides	71.43	XI	61.91	IX	66.67	XI
x.	Lack of skill about plant protection measures	80.95	VI	60.32	X	70.63	IX
xi.	Unavailability of plant protection equipments	63.49	XIV	55.56	XIII	59.52	XIII
xii.	Lack of skill about application of chemicals	85.71	III	74.6	II	80.15	II
xiii.	Lack of competence of AAOs/ Agril. Supervisors in conducting the demonstrations	66.67	XII	58.73	XI	62.70	XII
xiv.	Fragment and undulated land used for gram cultivation	65.08	XIII	52.38	XV	58.73	XIV
xv.	Lack of irrigation water for cultivation of gram	47.62	XVI	46.03	XVI	46.82	XVI
xvi.	Unavailability of bio-fertilizers at village level	84.13	IV	71.43	IV	77.78	III
			rs = 0.71		t = 3.79**		

rs = Rank correlation

** = Significant at 1% level of significance

equipments" "lack of knowledge about application of gypsum", "fragment and undulated land for cultivation of gram" and "lack of irrigation water for cultivation of gram" with 58.73 MPS, 57.14 MPS, 55.56 MPS, 53.97 MPS, 52.38 MPS and 46.03 MPS respectively.

A critical examination of Table 1 further reveals that overall respondents were facing major problem of "inadequate knowledge of soil treatment" (82.54 MPS), "lack of skill about application of chemicals" (80.15MPS), "unavailability of bio-fertilizer at village level" (77.78MPS), "unavailability of timely seed minikits of gram crop at local level" (75.39 MSP), "lack of technological guidance at proper time" (74.60MPS), "lack of knowledge about seed treatment" (73.81 MPS), "nepotism and favoritism in distribution of minikits under NFSM" (73.00 MPS), "Improper knowledge of micronutrient application" (72.22 MPS) and "lack of skill about plant protection measures" (70.63 MPS) in the adoption of improved gram intervention. The moderate problem of adoption in improved gram intervention i.e. "high cost of farm implements/ machinery", "high cost of improved seeds, micronutrients, fungicides and insecticides", "lack of competence of AAOs/ Agriculture Supervisor in conducting demonstrations" and "unavailability of plant protection equipments" with 68.25 MPS, 66.67 MPS, 62.70 MPS and 59.52 MPS respectively. Least problems faced by them were regarding "fragment and undulated land for cultivation of gram", "lack of knowledge about application of gypsum" and "lack of irrigation water for cultivation of gram" with 58.73 MPS,57.93 MPS and 46.82 MPS

The value of rank correlation rs was 0.71. The calculated value of 't' (3.79) was higher than its tabulated value at 1 per cent level of significance. This directed to the conclusion that there was a similarity between the assignment of ranks by beneficiary and non-beneficiary gram respondents in different aspects of constraints in spite of difference in the magnitude of Mean Percent Score.

From the above discussion it could be concluded that lack of knowledge about soil treatment, lack of skill about application of chemicals, timely non-availability of seed minikits of gram at local level, lack of technological guidance at proper time and non- availability of plant protection equipment's were major constraints expressed by the gram respondents in complete adoption of recommended gram production technology.

CONCLUSION

It was concluded that inadequate knowledge of soil treatment, lack of skill about application of chemicals, unavailability of bio-fertilizer at village level, unavailability of timely seed minikits of gram crop at local level, lack of technological guidance at proper time, lack of knowledge about seed treatment, nepotism and favoritism in distribution of minikits under NFSM, improper knowledge of micronutrient application and lack of skill about plant protection measures were important constraints in the adoption of improved gram intervention.

REFERENCES

Burman, A.R.; Singh, S.K.; Singh L. and Singh, A.K. 2006. Adoption of improved pulses production technologies and related constraints in Uttar Pradesh. *Ind. J. Pulses Res.* **19**(1): 104-106.

Kumar, S., Purushottam and Yadav, V.K. 2012. Knowledge and attitude of hill farmers towards improved agricultural practices. *Indian Journal of Extension Education* **48** (3&4): 26-29.

Bhatia, M.S. 1991. Economic constraints in increasing pulses production, *Agric. Situ. India* **46** (4): 279-264.

Rajan, P., Khare, N.K., Singh, S.R.K. and Khan, M.A. 2014. Constraints perceived by tribal farmers in adoption of recommended practices. *Indian J. Extn. Edu.* **50**(3 and 4): 65-68.

Khatik, R.L. and Sharma, F.L. 2017. Constraints causing serious concern to NFSM gram beneficiaries in southern Rajasthan. *Agriculture Update* **12**(1): 142-145.

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CONSTRAINTS FACED BY MILK PRODUCERS IN MANAGEMENT OF DAIRY FARMING IN GANDHINAGAR DISTRICT OF GUJARAT

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ABSTRACT

The study was conducted in purposely selected two talukas-namely Mansa and Kalol of Gandhinagar district of Gujarat. A sample of 120 respondents was drawn from ten selected villages randomly for the study. Majority constraints faced by milk producers were "high construction cost of cattle shed, lack of capital for purchase of milch animals and fodder, lack of knowledge of improved fodder, improved cattle shed and first aid, non availability of loan facilities for purchases of milch animals and fodder, no proper rate of milk produced". Knowledge should be provided regarding improved fodder, improved cattle shed and first aid, reduce the construction cost of cattle shed through efficient managements, regular training should be provided to milk producers, provide loan facilities for purchases of milch animals, giving appropriate knowledge about calf-rearing practices like deworming, dehorning, castration, weaning time of calf, colostrums feeding, vaccination were the major suggestions as pointed out by the milk producers to overcome constraints faced by them in management of dairy farm.

INTRODUCTION

India has the vast resource of livestock and poultry, which play a vital role in improving socio-economic conditions of rural masses. India ranks 1st in buffalo, 2nd in cattle and goats, 3rd in sheep, 4th in duck, 5th in chickens and 6th in camel production in the world. It is matter of proud that Gujarat has highly enriched genetic resources of Cattle (Gir, Kankrej and Dangi), Buffalo (Mehsani, Jafarabadi, Surati and Banni), Sheep (Patanwadi, Marwadi and Duma) and Goat (Kachchhi, Surti, Zalawadi, Mehsani and Gohilwadi). This situation raises the question why milk producers not yet able to reach expected level of satisfaction? To answer this, study was conducted on Management efficiency of milk producers in Gandhinagar district of Gujarat state. Hence, this study was undertaken with an objectives are given hereunder:

1. To identify the constraints faced by the milk producers in management of dairy farming.
2. To seek the suggestions from the dairy farmers to overcome the constraints faced by them in management of dairy farming.

RESEARCH METHODOLOGY

The present study was purposively undertaken in the two talukas *viz.,* Mansa and Kalol talukas of Gandhinagar district of Gujarat state. Five villages from each taluka were selected by random sampling method. Thus, total ten villages were selected. From each selected village, 12 farmers were selected randomly by making a sample of 120 respondents who had minimum 3 years of experience in dairy farming. The data were collected with the help of well-structured, pre-tested interview schedule through personal contact and data were compiled, tabulated and analyzed to get proper answers for objectives of the study. A simple ranking technique was applied to measure the constraints faced by milk producers. The statistical tools used were percentage, mean score, standard deviation and coefficient of correlation value.

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RESULTS AND DISCUSSION

Constraints faced by the milk producers in management of dairy farming: Constraints in management of new technology never end. However they can be minimized. The respondents were requested to express the constraints faced by them in management of dairy farm. Frequency and percentage for each constraint were calculated and on that basis of that, the constraints were ranked and presented in Table 1.

As seen from the Table 1 major constraints faced by milk producers are: "lack of knowledge of scientific animal feed preservation practices" (79.17 %), "high construction cost of cattle shed" (72.50 %), "lack of capital for purchase of milch animals and fodder" (65.83 %), "lack of knowledge of improved fodder, improved cattle shed and first aid" (63.33 %) and "non availability of loan facilities for purchases of milch animals and fodder" (61.67 %) assigned ranked as first, second, third, fourth and fifth, respectively.

The rank of sixth to thirteen in descending order were observed by, "no proper rate of milk produced" (52.50 %), "lack of knowledge of improved breeds of buffaloes" (45.83 %), "non availability of artificial insemination facility" (43.33 %), "non availability of milk marketing facility" (42.50 %), "no supply of improved cow breeds, buffaloes, breeding bulls and fodder from the society" (40.83 %), "no transport facility" (36.67 %), "no pasture land" (30.83 %), "non availability of veterinary aid centre" (29.17 %), respectively.

Suggestions from the dairy farmers to overcome the constraints faced by them in management of dairy farming: Valuable suggestions given by milk producers are presented in table 2. It can be concluded from the table 2 that the milk producers suggested that "knowledge should be provided regarding improved fodder, improved cattle shed and first aid" (80.83 %), "reduce the construction cost of cattle shed through efficient managements" (70.00 %), "regular training should

Table 1: Constraints faced by milk producers in management of dairy farming

n = 120

S. No.	Constraint	Number	Per cent	Rank
1.	Non availability of loan facilities for purchases of milch animals and fodder	74	61.67	V
2.	High construction cost of cattle shed	87	72.50	II
3.	Lack of capital for purchase of milch animals and fodder	79	65.83	III
4.	No supply of improved cow breeds, buffaloes, breeding bulls and fodder from the society	49	40.83	X
5.	No pasture land	37	30.83	XII
6.	Non-availability of artificial insemination facility	52	43.33	VIII
7.	No proper rate of milk produced	63	52.50	VI
8.	Non availability of milk marketing facility	51	42.50	IX
9.	Lack of knowledge of scientific animal feed preservation practices.	95	79.17	I
10.	Lack of knowledge of improved fodder, improved cattle shed and first aid	76	63.33	IV
11.	Non availability of veterinary aid centre	35	29.17	XIII
12.	Lack of knowledge of improved breeds of buffaloes	55	45.83	VII
13.	No transport facility	44	36.67	XI

Table 2: Suggestions given by milk producers to overcome constraints faced by them

n = 120

S. No.	Suggestion	Number	Percent	Rank
1.	Reduce the construction cost of cattle shed through efficient managements.	84	70.00	II
2.	Provide knowledge of improved fodder, improved cattle shed and first aid.	97	80.83	I
3.	Provide loan facilities for purchases of milch animals.	69	57.50	IV
4.	Giving appropriate knowledge about calf-rearing practices like deworming, dehorning, castration, weaning time of calf, colostrums feeding, vaccination.	66	55.00	V
5.	Regular training should be provided to milk producers.	76	63.33	III
6.	Availability proper rate of milk produced	64	53.33	VI
7.	Veterinary doctor should visit regularly in the village	55	45.83	VII
8.	Green fodder should be available timely and cheaper rate	51	42.50	VIII
9.	Availability of milk marketing facility	46	38.33	IX
10.	Availability of proper transport facility	36	30.00	X

be provided to milk producers" (63.33 %), "provide loan facilities for purchases of milch animals" (57.50 %) and "giving appropriate knowledge about calf-rearing practices like deworming, dehorning, castration, weaning time of calf, colostrums feeding, vaccination" (55.00 %) assigned ranked as first, second, third, fourth and fifth, respectively.

The rank of sixth to ten in descending order were observed by, "availability proper rate of milk produced" (53.33 %), "veterinary doctor should visit regularly in the village" (45.83 %), "green fodder should be available timely and cheaper rate" (42.50 %), "availability of milk marketing facility" (38.33 %), "availability of proper transport facility" (30.00 %), respectively.

CONCLUSION

The majority constraints faced by milk producers were "high construction cost of cattle shed, lack of capital for purchase of milch animals and fodder, lack of knowledge of improved fodder, improved cattle shed and first aid, non availability of loan facilities for purchases of milch animals and fodder, no proper rate of milk produced" in the study area.

REFERENCES

Anonymous, 2007. Livestock Census 2007. Statistical Cell, Directorate of Animal Husbandry, Govt. of Gujarat.

Anonymous, 2011. Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture, Govt. of India.

Anonymous, 2011. National Accounts Statistics-2011; Central Statistical Organization, Govt. of India.

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UTILIZATION OF INCOME GENERATED THROUGH NON-FARM INCOME GENERATING ACTIVITIES IN BIKANER DISTRICT OF RAJASTHAN

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ABSTRACT

The present study was conducted in four villages of Bikaner Panchayat Samiti of Bikaner district. Total 160 rural women were selected who were involved in Stitching and Woolen Yarn Making activities from four villages namely Raisar, Khara, Pemasar and Udasar. 80 respondents who were involved in Stitching activity and 80 respondents who were involved in Woolen Yarn Making activity were selected. Thus total 160 (80 + 80) rural women were selected randomly. In the present study majority of the rural women were utilizing there income for household needs, education for childrens, marriage of daughter, purchasing of stiching matterial etc. in the study area.

INTRODUCTION

Women in all regions performs a variety of roles. Many of these roles are of great economic significance. They act as food producers, processors and marketers. They work harder and for longer hours at home and outside in the fields along with husband in order to supplement their family income.

Women's work has always been of much significance. She provides a helping hand in agriculture as well as in other allied activities. They performed so many income generating activities viz. embroidery, carpet weaning, shawl weaving, dari making, milk selling, papad wadi making, stitching and woolen yarn making etc.

Non-farm income generating activities are additional source of income. Thus, the non-farm sector provides employment and income to the rural poor in their own region. Therefore, the non-farm sector has a lot of policy significance for rural development when this sector fails to offer employment opportunities to the rural people they slip deep below the poverty line and also migrate to urban centres.

RESEARCH METHODOLOGY

The present study was conducted in four villages of Bikaner Panchayat Samiti of Bikaner district. Total 160 rural women were selected who were involved in Stitching and Woolen Yarn Making activities from four villages namely Raisar, Khara, Pemasar and Udasar. In Bikaner district various non-farm income generating activities were being performed by the rural women. The two selected activities Stitching and Woolen Yarn Making were selected as these activities were being performed by majority of rural women in the area. 80 respondents who were involved in Stitching activity and 80 respondents who were involved in Woolen Yarn Making activity were selected from four villages namely Raisar, Khara, Pemasar and Udasar (20 rural women for each activity from a village). Thus, total 160 (80 + 80) rural women were selected randomly.

RESULTS AND DISCUSSION

(A) The utilization of income generated through Stitching: It was considered important and interesting to find out utilization of the income of rural women. The data pertaining to this aspect

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has been presented in Table 1.

Majority of the rural women (86.25%) reported that their income was generally used to meet out the household needs i.e. their daily requirements. Findings of the study (Table 1) also revealed that most of the women faced it difficult to rear the whole family from their own single income.

More than half (51.25%) of the rural women said that their income was spent on children i.e. their education, clothes, etc. its prime reason was that most of the women were from younger age group. It is also reported that 48.75 per cent rural women spent their income on themselves. 47.50 per cent rural women utilized their income for income generating activity because the rural women purchased the stitching material from their own income. While, 36.25 per cent rural women said that a part of their salary was force fully taken up by their husband, it was spent on bad habits like drinking, smoking and gambling etc. It was reported from 27.50 - 26.25 per cent rural women that a part of their salary was spent for repayment of debts/ loans or some times a partial amount was saved in future emergencies or for the child's bright future in some cases.

Table also reveals that one fourth part (25%) of the rural women reported that as they were living in a joint family so their full salary was given to the in-laws. 11.25 per cent rural women said that they gave their whole salary to the husband. 10 per cent of rural women reported their salary was spent for medical purpose and on treatments, as a family member was on the sick bed since a very long time.

(B) The utilization of income generated through Woolen Yarn Making: It was considered important and interesting to find out utilization of the income of rural women. The data pertaining to this aspect have been presented in Table 2. Because Woolen Yarn Making is an important income generating activity in Bikaner Panchayat Samiti most of the women were engaged in this income generating activity to meet their house hold needs. It was seen that more than half of the rural women (57.50%) who were engaged in Woolen Yarn Making spent their income in meeting household needs as this is the only source of income for them.

About 37.50 per cent of rural women reported that their income was spent on the education, clothes, and meeting other needs of the children because they were aware of the bright future and development of their children and knew that this would yield good results in near future. It was seen that 32.5 per cent rural women said that their income was spent in meeting their own personal needs.

It was further reported from the table that 31.25 per cent rural women that a part of their salary was

Table 1: Percentage distribution of rural women by utilization of income generated through stitching activity

n = 80

S.No.	Purpose	Frequency	Percentage
1.	Full salary is given to husband	9	11.25
2.	Full salary is given to in-laws	20	25.00
3.	Spent to your self	39	48.75
4.	Spent on your children i.e. education, clothes etc.	41	51.25
5.	Part of the salary is goes in husband's bad habit like drinking, smoking, gambling etc.	29	36.25
6.	Part of the salary is saved	22	27.50
7.	Spent in meeting household needs	69	86.25
8.	Spent in husband's/family member's sickness	8	10.00
9.	Utilization in your activity (income generating)	38	47.50
10.	Spent in repayment debts/loans	21	26.25

Table 2: Percentage distribution of rural women by utilization of income generated through Woolen Yarn Making activity

n = 80

S.No.	Purpose	Frequency	Percentage
1.	Full salary is given to husband	15	18.75
2.	Full salary is given to in-laws	8	10.00
3.	Spent to your self	26	32.50
4.	Spent on your children i.e. education, clothes etc.	30	37.50
5.	Part of the salary is goes in husband's bad habit like drinking, smoking, gambling etc.	24	30.00
6.	Part of the salary is saved	25	31.25
7.	Spent in meeting household needs	46	57.50
8.	Spent in husband's/family member's sickness	18	22.50
9.	Utilization in your activity (income generating)	3	3.75
10.	Spent in repayment debts/loans	16	20.00

saved for the marriage of daughter or future emergencies in some cases. 30 per cent rural women said that a part of their salary was goes in husband's bad habit like drinking, smoking, gambling etc. While, 22.50 per cent rural women said that their salary was spent for husband's/family member's sickness. 20 per cent rural women reported that their a part of their salary was spent for repayment debts/loans because they were to take credit because of some emergencies in their house hold. It was also noted that 18.75 per cent rural women gave their whole salary to the husbands. Findings of the study also revealed that taking of the raw material and giving of final products taken care by their husbands so most of the income never come in their hands and all of the income was take care off by the husbands themselves. 10 per cent rural women reported that they gave their whole salary to the in-laws.

Most of the rural women do not buy the raw material instead they were engaged in finishing them they were paid for working on the raw material the middle men give them raw material they work on it and make yarn and then return it back to middle man and middle man paid for the job done. So they did not spent much of income on their activity, only 3.75 per cent women spent this income on this activity.

CONCLUSION

Majority of income of rural women generated through Stitching activity was spent on meeting house hold needs (86.25%) followed by their children i.e. education, clothes etc. (51.25%) and spent on themselves (48.75%). Majority of income of rural women generated through Woolen Yarn Making activity was spent on meeting house hold needs (57.50%), followed by their children i.e. education, clothes etc. (37.50%) and spent on themselves (32.50%).

REFERENCES

Dwarakanath, H.D. 2001. Self employment generation under DWCRA-A Review. *Kurukshetra* **49**: 33-41.

Hazarika, M.; Bhattacharyaa, N. and Borah, R. 2000. Women Workers in Tea Industry. *Indian Journal of Extension Education* **36**(3 & 4): 134-140.

Jayanthi, C. 2003. Women entrepreneurs in the new wave economic development programme. *Yojana* **47**: 25-26.

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CONSTRAINTS IN ADOPTION OF RECOMMENDED RAPESEED MUSTARD PRODUCTION TECHNOLOGY IN SUB-TROPICAL AND TEMPERATE REGION OF J&K

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ABSTRACT

The present research was undertaken to assess different constraints faced by the farmers in adoption of recommended rapeseed mustard production and protection technologies. The present study was conducted in four districts falling under sub-tropical and temperate region of Jammu division with a sample size of randomly selected 200 farmers. The study revealed that lack of irrigation facilities (55%), problem of aphid attack (45%) and lack of quality seeds (29%) were the main constraints reported by the farmers in adoption of recommended rapeseed mustard production technology in both sub-tropical and temperate region of Jammu division. However problem of untimely snowfall and hailstorms were the major constraints faced by the rapeseed mustard growers in temperate hilly zones of Jammu division.

INTRODUCTION

Rapeseed mustard is an important Rabi oilseed crop of India. Rapeseed mustard group mainly consists of toria *(Brassica rapa)*, raya *(Brassica juncea)* and gobhi sarson*(Brassica napus)*. In India, it contributes nearly 80 per cent of the total *rabi* oilseed production. Area under rapeseed mustard is 6.3 million ha with a production of 7.4 metric tonnes and productivity of 11.76 q/ha. (Directorate of Rapeseed Mustard Research, 2013). In terms of rapeseed mustard productivity, global ranking of India is 28th (Bhardwaj, 2013). There is variation in the production and productivity of rapeseed mustard in different states. In Jammu & Kashmir (J&K) state, rapeseed mustard production scenario is not very encouraging despite its paramount importance for human beings and animals. The productivity of rapeseed mustard in J&K is 6.98 q/ha (DSE, 2013) which is far less than the national average. Earlier research studies conducted till date show that majority of farmers are still lagging behind in the adoption of modern rapeseed mustard production technology. Therefore in order to assess different constraints faced by the farmers, present research pursuit was undertaken in subtropical and temperate zone of the Jammu division.

RESEARCH METHODOLOGY

Stratified random sampling technique was employed for selection of districts for the present study. At first stage all the ten districts of Jammu division were divided into two strata. First strata includes districts having overall maximum area falling under sub-tropical zone and second strata includes districts having maximum area under temperate zone. From sub-tropical zone, Jammu & Samba district, whereas from temperate zone, Reasi & Doda were purposively selected on the basis of maximum area under rapeseed mustard crop in these districts. Based on the maximum area under rapeseed mustard crop, two blocks from each district were selected purposively. R.S.Pura & Bishnah blocks from Jammu district, Purmandal &Vijaypur blocks from Samba district, Mahore & Arnas blocks from Reasi district and Bhaderwah and Marmat blocks from Doda district were selected purposely. A list of rapeseed mustard growers for each of the selected block was prepared with the help of concerned agencies. From a total list of 1177 rapeseed mustard growers in the selected blocks, 25 rapeseed mustard growers from each block were selected by random sampling method making a total sample size of 200 rapeseed mustard growers

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for assessing different constraints faced by the rapeseed mustard growers in adoption of recommended production technology.

RESULTS AND DISCUSSION

Table 1 shows the socio-economic characteristics of rapeseed mustard farmers interviewed. Overall average age in all the four study districts was 49.02 years (±13.09). Majority of rapeseed mustard growers (51.00%) belong to middle age group (43-60 years) followed by 32.00 per cent from 18-42 years group and 17.00 per cent were 61-85 years group respectively. The average overall formal education was 8.00 years (±4.00).The data in Table 1 indicate that in case of rapeseed mustard growers in Samba district was 84 per cent had nuclear families followed by 80.00 per cent in Doda, 76.00 per cent in Reasi and 70.00 per cent in Jammu district. The percentage of joint families of rapeseed mustard growers was 16.00, 30.00, 24.00 and 20.00% in Samba, Jammu, Reasi and Doda districts respectively. With respect to categorization of family size done by 'Singh's Cube root method (1975) overall 71 per cent of the mustard growers had a family size of 2 to 7 members followed by 24 per cent growers who had family size of 8 to 11 members and only 5 per cent growers had family size between 12 to 22 members per family (Table 1). Overall average operational land holding of mustard growers in the study area was 1.64 hectare which was higher than state average land holding size of 0.67 hectare. (DSE, 2007)

Data presented in Table 1 further show that in case of rapeseed mustard growers overall 41 per cent were in the category of marginal farmers (<1ha) followed by 26 per cent small farmers (1-2ha), 23 per cent semi-medium farmers(2-4ha), 9 per cent medium farmers (4-10ha) and only 1 per cent were

Table 1: Socio-economic profile of rapeseed mustard farmers

Parameter	Samba (n=50)	Jammu (n=50)	Reasi (n=50)	Doda (n=50)	Overall percentage N=200
Average age	51.20 ±14.37	51.10 ±11.35	46.64 ±11.24	47.14±13.09	**49.02±13.09**
Age categories (% farmers)					
18-42yrs	32	18	36	40	**32**
43-60yrs	42	64	54	46	**51**
61-85yrs	26	18	10	14	**17**
Education (% farmers)					
Illiterate	16	14	38	10	**20**
Below primary	02	00	02	00	**01**
Primary	14	02	8	10	**08**
Middle	24	18	26	26	**24**
Matric	32	38	16	38	**31**
10+2	08	18	04	12	**10**
Graduate and above	04	10	06	04	**06**
Average education (formal no. of schooling years completed)	7.47±4.04	9.34±4.07	5.66±5.00	8.42±3.55	**7.79±4.39**
Avg family size	6±2.65	7±3.12	7±2.45	7±3.85	**7±3.08**

Type of farm households (% farmers)					
Joint	16	30	24	20	**23**
Nuclear	84	70	76	80	**77**
Size of farm households (% farmers)					
2-7 members	80	72	64	68	**71**
8-11 members	18	22	34	20	**24**
12-22 members	02	06	02	12	**05**
Land holding (in ha)					
Avg. operational land holding (S.D)	1.81(±2.12)	1.61(±1.31)	2.10(±1.72)	1.08±.96)	**1.64(±1.63)**
Average irrigated land holding(ha)	1.22 ±2.20	1.57 ±1.32	0.18 ±3.40	0.11 ±0.32	**0.77±1.44**
Average un irrigated land holding	0.59 ±1.01	0.04 ±0.14	1.91±1.58	0.97 ±.96	**0.88±1.25**
Categories of farmers (% farmers)					
Marginal(<1ha)	44	34	30	56	**41**
Small(1-2ha)	22	32	24	28	**26**
Semi-medium (2-4ha)	22	26	30	12	**23**
Medium (4-10ha)	10	08	16	04	**09**
Large (>10ha)	02	00	00	00	**01**
Average farming experience (years)	29.84±12.99	27.00±10.29	25.00±10.29	23.48±12.36	**26.33±11.63**
Average distance from (in Km)					
Agri office	3.68±2.45	3.72±2.93	10.04±9.68	11.39±7.55	**7.21± 7.30**
Seed store	3.68±2.45	3.42± 2.72	9.32± 9.37	7.29±3.97	**5.93± 5.92**
Fertilizer store	2.12± 2.10	2.76± 2.30	9.32± 9.37	7.29±3.97	**5.37± 6.09**
Pesticide store	2.12±2.10	2.76± 2.29	9.49± 9.39	7.29±3.97	**5.39± 6.09**
Market	3.96 ±3.33	3.80 ±2.78	9.64±9.38	7.69±3.79	**6.22±6.06**
Social participation (% age)					
Membership of an organization	6	4	12	08	**10**
No membership inany organization	94	86	88	92	**90**
Extension contacts with different agencies (% age)					
Yes	60	52	40	50	**51**
No	40	48	60	50	**49**

in large farmers category having land holding size greater than 10 hectares. The figures given in Table 1 depict that average farming experience of rapeseed mustard growers was 26.33 years (±11.63). Data presented in table regarding distance show that overall average distance from the nearby market and seed store in case of rapeseed mustard growers was 6.00 Km from their place of residence and an equal distance of 5.00 km in case of pesticide and fertilizer sale center. The overall average distance of the Department of Agriculture was 7.00 Km. A close look at Table 1 indicates that overall only 10 per cent mustard growers had membership in some social organizations. With regard to extension contacts of the respondent farmers, overall only 51 per cent growers had contact with different field extension functionaries.

Different constraints which hinder the successful cultivation of rapeseed mustard cultivation have been explained in Table 2. It was found that lack of irrigation at critical stages was the main constraint ranked first by the rapeseed mustard growers in study area followed by problem of aphid attack (IInd rank), lack of quality seeds (IIIrd rank), problem of hailstorms mainly in Reasi and Doda district & untimely rainfall (IVth rank), unavailability of inputs at right time (Vth rank), untimely snowfall mainly in Reasi and Doda district (VIth rank), destruction of crop by wild animal (VIIth rank), lack of information regarding recommendations & difficult manual harvesting and threshing (VIIIth rank), weed infestation and strong winds at ripening time damage the mustard crop also ranked IXth by the mustard growers in Jammu district only. The present findings got support from the study conducted by Singh *et al*. (2013) on oilseeds at Central Agricultural University, Imphal in collaboration with DRMR, Bharatpur, Rajasthan in which it is reported that scarcity of irrigation at critical stages and high incidence of pest and diseases is the major constraint in oilseed cultivation. However study conducted by Sharma *et al.* (2013) reported different set of constraints in rapeseed mustard cultivation such as non-availability of pure seeds at sowing time, inadequate supply of fertilizers, poor fertility of soil, lack of technological know-how and

Table 2: Constraints faced by farmers in adoption of recommended rapeseed mustard production technology

n=200*

Constraints	Samba n =50	Jammu n =50	Reasi n =50	Doda n =50	Overall %age	Rank
Lack of irrigation at critical stages	48	16	96	60	55	I
Lack of quality seeds	20	20	54	24	29	III
Problem of Aphid	34	60	34	52	45	II
Unavailability of inputs at right time	4	2	26	14	11	V
Untimely snowfall	0	0	14	28	10	VI
Problem of hailstorm	0	0	48	26	18	IV
Weed infestation	2	0	0	8	2	IX
Manual harvesting and threshing is difficult	14	10	0	0	6	VIII
Lack of knowledge about recommendations	6	4	14	2	6	VIII
Untimely rainfall	16	24	12	20	18	IV
Wild animal destroy the crop	16	0	0	0	9	VII
Strong winds at ripening time damage crop	0	10	0	0	2	IX

*Multiple responses

lack of visit by extension personnel to the village.

CONCLUSION

On the basis of results it is concluded that lack of irrigation facilities, problem of aphid, lack of quality seeds, untimely rainfall, unavaliblity of inputs at right time were major constraints perceived by the farmers in adoption of recommended rapeseed and mustard production technology. Field extension functionaries should try to overcome these constraints which are within their control to improve the adoption status of recommended rapeseed mustard production technology.

REFERENCES

Bhardwaj, V. 2013.Overview of Indian Oilseed Sector; How to increase rapeseed production to reach 10 million tonnes. A presentation in National Council of Applied Economic Research (NCAER) .The Solvent Extractors 'Association of India (SEA).

Directorate of Rapeseed Mustard Research, 2011& 2015. Vision-2030 Document.

Directorate of Economics and Statistics. 2007. Statistical Digest of Jammu and Kashmir. Government of Jammu and Kashmir.

Sharma, A.K., Chauhan, J. and Kumar, V. 2013.Perception dynamics of farmers affecting sustainability of mustard production: An Analytical Study. *Indian Res. J. Ext. Education* **13**(3).

Singh, M.P., Puri, S.N., Singh, T.R., Devi, R., Chongtham, N., Sharma, A.K. and Singh, D. (2013). A joint extension project of Directorate of Extension Education, Central Agricultural University, Imphal and Directorate of Rapeseed-Mustard Research, Bharatpur Rajasthan entitled, "Augmenting Rapeseed-Mustard Production of Tribal Farmers of North Eastern States for sustainable livelihood security" under the Tribal Sub-Plan (TSP).

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