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Indian Journal of Extension Education and Rural Development

FROM EDITOR'S DESK

It's my immense pleasure to introduce you the 23rd volume (year 2015) of the Indian Journal of Extension Education and Rural Development. The journal encompasses 47 research papers on various aspects pertaining to Extension Education and rural Development.

The major aspects highlighted in this volume of the journal by our esteemed authors are Land use pattern, Utilization of credit, Integrated Farming System, Training need assessment, Entrepreneurship development, Impact assessment, Constraints analysis etc. Besides, the authors have also touched aspects like utilization of KSK by farm women, clothing of spice mill workers. As usual many researches were centered on measurement of adoption of technologies & knowledge measurement. All the authors deserve appreciation for their valuable contributions.

This journal is published with the aim to provide a plateform to researchers, scientists, acamedicians, students etc. to share their research work with scientific world for mutual benefit.

My sincere thanks are due to Prof. P.N. Kalla, President of Rajasthan Society of Extension Education for his guidance for bringing out the publication of the Journal. I am also thankful to the executive council, reviewers and editorial board specially Dr. N.K. Panjabi the Secretary & Dr. Rajeev Bairathi, Treasurer of the society for rendering valuable assistance in publication of this Journal.

I am extremely thankful to Dr. F.L. Sharma, Professor & Head, Deptt. of Extension Education, R.C.A., Udaipur whose efforts have culminated in publication of the Journal.

I am sure that the Journal will prove its worth to all the stakeholders. The suggestions are always welcomed for improvement in the Journal.

Looking forward for co-opeation and continous support from valuable members of the society.

S.K. Sharma
Chief Editor

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OPINION OF EXTENSION FUNCTIONARIES OF STATE DEPARTMENT OF AGRICULTURE TOWARDS TRAINING ON MUSHROOM PRODUCTION TECHNOLOGY

Narinder Paul*, Rakesh Kumar and P.S. Slathia*****

ABSTRACT

Present investigation was carried out with 31 extension functionaries from Department of Agriculture, Jammu who participated in the 3 days training programme on Mushroom Production Technology organized by State Agriculture Management and Extension Training Institute, Jammu (SAMETI-J) at Division of Plant Pathology, Sher-e-Kashmir University of Agriculture Sciences and Technology of Jammu (SKUAST-J) to study the opinion of the trainees towards the training conducted. Study reveals 80.65 percent of the trainees had favourable opinion towards the training programme. Besides, 16.12 percent had highly favourable opinion. However, only 3.23 percent of the trainees had least favourable opinion towards the training on Mushroom Production Technology. 98.06 percent of the trainees opined that they learned new skills and; training added to their knowledge about mushroom production technology, 97.41 percent had firm opinion that the subject matter of the training was in accordance with the theme of training, 94.84 percent didn't believe that the training programme was unenthusiastic. In addition, 85.50 percent also didn't agree that information about new techniques of mushroom production was not included in the training programme. The Mean Score of the opinion ranged from 4.90 to 4.29 and overall opinion of the extension functionaries towards training on Mushroom Production Technology was found to be favouable.

INTRODUCTION

Commercial cultivation of mushroom in India started during 1971 with an annual production of about 100 tons which has been increased to 1.5 thousand tones during 2012-13 (IARI, 2014). Mushroom cultivation involves a high degree of skill besides the knowledge of the subject matter of Mushroom Production Technology. Mushroom cultivation is spreading very quickly as an alternative source of income among rural and semi-urban people in the Jammu region. Farmers largely depend on the extension functionaries of Department of Agriculture for any first hand new knowledge and related information about Mushroom Production Technology. The further transfer of latest technological know-how of mushroom production to the client farmers is largely influenced by the degree of knowledge and attitude of extension functionaries towards the enterprise of mushroom cultivation.

Training is a vital component for sharpening the existing skills of a person with reference to any venture or enterprise. Training programmes increase the knowledge, give a new direction to one's attitude and help to change it in desirable direction and also changes the outlook of the trainees about the subject covered under the training programme. Training also helps in acquiring specific skills to perform a job in a better way (Jucious, 1930). Training helps people to become qualified and proficient in doing some job (Dhama, 1979). Keeping the importance of training programme in view a three day training programme was organized in the Division of Plant Pathology, Faculty of Agriculture (FOA), Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu (SKUAST-J) in collaboration with State Agriculture Management and Extension Training Institute, Jammu (SAMETI-J) during October, 2013 on Mushroom Production Technology for the extension functionaries of Department of Agriculture, Jammu for updating their knowledge and reshaping their attitude towards the vocation of mushroom

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production. The objectives of the training programme was to update knowledge and impart practical skills among the trainees about various aspects of mushroom production right from spawn production, compost making, spawning, casing, management, harvesting and post harvest handling and other uses of mushroom.

The present study was undertaken with the following particular objectives:

1. To study the level of opinion of the trainees towards training on Mushroom Production Technology.
2. To study statement wise opinion of the trainees towards training programme on Mushroom Production Technology.

RESEARCH METHODOLOGY

The present investigation was carried out with 31 participants who attended three days training programme on Mushroom Production Technology organized by State Agriculture management and Extension Training institute, Jammu (SAMETI-J) at Division of Plant Pathology, Faculty of Agriculture (FOA), Sher-e-Kashmir University of Agriculture Sciences and Technology of Jammu (SKUAST-J) at main campus Chatha during October 2013. All the trainees were from Department of Agriculture, Jammu working at various levels for extension work. Thus the study sample consisted of 31 extension functionaries from Department of Agriculture, Jammu who attended three days training programme on Mushroom Production Technology. A well designed, properly structured and pre-tested scale was served to the trainees for recording their responses to assess their opinion towards the training programme at the end of the training. Components of training course were listed converting them into the form of twelve statements. Of these, nine statements were positive and three were negative. The opinion of trainees was recorded on a five point continuum ranging from strongly agree to strongly disagree. Weightage of 5,4,3,2 and 1 respectively were accorded to positive statements for "strongly agree" to "strongly disagree" responses and with reverse scoring to the negative statements. The data collected was quantified accordingly and subjected to suitable statistical operations for analysis.

RESUTLS AND DISCUSSION

i) Distribution of the extension functionaries on the basis of their opinion towards training on Mushroom Production Technology

To get an overview of the extension functionaries undergoing training with respect to their opinion towards the training programme on Mushroom Production Technology, they were stratified into three categories i.e highly favourable (more than 57.45 score), favourable (From 52.93 to 57.45 score) and least favourable (less than 52.93 score) on the basis of calculated Mean (55.19) and Standard Deviation (2.25) of the individual opinion scores obtained by the 31 trainees under the study.

Table 1. Distribution of the extension functionaries on the basis of their degree of opinion towards training on Mushroom Production Technology

S. No.	Opinion category	Frequency	Percentage
1	Highly favourable (> 57.45)	5	16.12
2	Favourable (57.45 to 52.93)	25	80.65
3	Least favourable (< 52.93)	1	3.23
	TOTAL	31	100

Mean: 55.19, SD: 2.25

A perusal of data presented in Table 1 reveal that majority of the trainees i.e. 25 (80.65 %) had favourable opinion towards the training on Mushroom Production Technology; whereas, 16.12 percent of them had highly favourable opinion towards the training. However, it is quite encouraging that only 1 trainee (3.23%) opined his level of opinion as least favourable. It implies that the participants of the training programme on Mushroom Production Technology were highly satisfied with the contents, methods and subject matter of the training on Mushroom Production Technology. These findings are in conformity with those of Soni and Singh (2014) who reported a positive interest of the trainees towards training programme resulting into a

significant gain in knowledge. Besides, Choudhary *et.al*. (2011) also reported a high degree of positive opinion of the respondents towards the training programme.

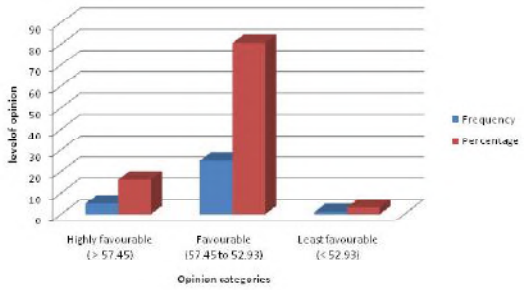

Fig. 1. Distribution of the trainees on the basis of their level of opinion towards training on mushroom production technology

ii) Overall opinion of the extension functionaries towards training on Mushroom Production Technology:

The opinion of the extension functionaries participating in the training programme on Mushroom Production Technology towards various components of training programme was recorded on a five point continuum ranging from strongly agree to strongly disagree with undecided at the centre with weightage of 5,4,3,2 and 1 for positive statements and reverse scoring for negative statements. The instrument consisted of 12 statements of which 9 were positive and 3 negative. Both Mean Score (MS) and Mean Percent Score (MPS) were calculated which were ranked accordingly and the results have been presented in Table 2.

A perusal of data incorporated in Table 2 reveals that 98.06 percent of the trainees were of the opinion that they learned new skills from the training and it added to their knowledge about the Mushroom Production Technology followed by 97.41 percent of them who opined that the subject matter was in accordance with the objective of the training programme. Besides, 96.12 percent of them were fully satisfied with the physical facilities provided to them during the training period. However, 94.83 percent of the trainees didn't agree that the overall training was not enthusiastic being the negative item in the tool used for assessing opinion of the trainees.

It has also been found that in the opinion of 92.90 percent of the trainees, they learned about the cultivation of new mushroom species in addition to the button mushroom from the training programme. Contrarily, 91.61 percent of the trainees were not agreed that the sufficient opportunities were not given to the trainees to clear their doubts. The well equipped and interested instructors for delivering lectures during the training were also agreed upon fully by the 90.96 percent of the trainees followed by 90.06 percent of them who opined that adequate supporting literature was provided to them as reference material during the training.

The opinion of the trainees towards the use of teaching methods utilized for the training was also found to be very positive to an extent of 89.67 percent followed by adequacy of the duration of the training programme i.e. to an extent of 88.38 percent. It has also been found that 87.09 percent of the trainees were of the strong opinion that equal emphasis was given to theory and practical exercises during the training programme on Mushroom Production Technology. However, 85.50 percent of them strongly disagreed that information about new techniques was not included in the training programme. Over all, it has been found that the trainees displayed a highly positive opinion towards the positive statements and highly negative opinion towards the negative items undertaken for assessing their opinion towards the training programme on mushroom production technology.

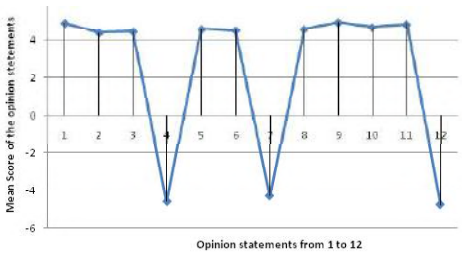

Fig. 2. Line Chart representing statement-wise opinion of the trainees towards training programme on mushroom production technology

The findings are in concordance with those of Soni and Singh (2014) who found that the respondents reported a significant gain in the knowledge after attending the training programnme.

Table 2. Opinion of the trainees towards various aspects of training programme on Mushroom Production Technology

(n=31)

S. No.	Opinion Statement	Degree of Opinion (Frequency)					Mean Score	Mean Percent score	Rank
		SA	A	UD	DA	SDA			
1.	Subject matter was in accordance with the Objective of the training (+)	27	4	0	0	0	4.87	97.41	II
2.	Equal emphasis was given to theory and practical (+)	16	10	5	0	0	4.35	87.09	XI
3.	Adequate duration of training programme (+)	17	10	4	0	0	4.41	88.38	X
4.	Sufficient opportunities was not given to trainees to clear their doubts (-)	0	0	4	5	22	4.58	91.61	VI
5.	Instructors were well equipped and interested in delivering lectures to the trainees. (+)	22	4	5	0	0	4.54	90.96	VII
6.	Suitable teaching methods used by the instructors. (+)	18	10	3	0	0	4.48	89.67	IX
7.	Information about new techniques of mushroom production was not included in the training programme (-)	0	0	7	8	16	4.29	85.80	XII
8.	Adequate literature was provided to the trainees. (+)	21	6	4	0	0	4.54	90.06	VIII
9.	Learned new skills and added new knowledge. (+)	28	3	0	0	0	4.90	98.06	I
10.	Learned about cultivation of new mushroom species in addition to button mushroom (+)	20	11	0	0	0	4.64	92.90	V
11.	Proper physical facilities to the trainees during training period (+)	25	6	0	0	0	4.80	96.12	III
12.	Overall training programme was not enthusiastic (-)	0	0	0	8	23	4.74	94.83	IV

SA: Strongly Agree, A: Agree, Un: Undecided, DA: Disagree, SDA: Strongly Disagree, n: Sample size

CONCLUSION

It can be concluded from above findings that more than 80 percent of the extension functionaries attending the training programme had favourable opinion towards training programme on Mushroom Production Technology. It is therefore suggested to replicate such type of trainings with other extension functionaries for updating their knowledge and skills about cultivation of mushroom.

REFERENCES

Jucious,M.J. 1963.Personnel management (5th Edition*) Homewood,* IL: Richard D.Irwin.

Dahama,O.P. 1979. Extension and rural welfare. *Ram Prasad and sons,* New Delhi.

Choudhary L.R., Sharma, N. K, Dangi, K.L and Santosh Devi Samota. 2011. Opinion of the agricultural supervisors towards training programmes. *Rajasthan Journal of Extension Education* **19**: 47-50.

IARI. 2014. Technological options for enhanced productivity and profit, *Indian Agriculture Research Institute*, New Delhi-10012, India

Soni, R.L. and Singh, Ranjeet. 2014. Impact of short duration training programme on gain in knowledge about horticulture practices. *Indian Journal of Extension Education and Rural Development* **22**: 138-140.

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GROWTH AND INSTABILITY IN MAJOR LAND USE CLASSES OF SELECTED DISTRICTS OF RAJASTHAN

Azad Mordia*

ABSTRACT

The present study was conducted to examine the performance of agriculture in terms of growth and instability of major land use classes in the districts of Barmer, Jhunjhunu, Alwar, Bhilwara and Bundi from Rajasthan state. In the state of Rajasthan, because of vast arid tracts the resource have not as yet been fully assessed and whatever information is available has not been fully utilised to upgrade production. This paper attempts to examine growth and instability of major land use classes. Rational management of land resources plays a crucial role in developing the national economy. The compound growth rates and instability in major land use classes have been chosen for discussion. Three temporal phases viz., TP_1 (1956-57 to 1966-67), TP_2 (1967-68 to 1980-81), and TP_3 (1981-82 to 1996-97) were considered to calculate growth rates. Instability measure was calculated in TP_3. Area under forest and net sown area recorded positive growth in all the five districts in the third phase. Bhilwara district recorded low instability compared to other districts in many of the land use classes. Therefore, the index for assessing the areas of more instability or less instability can be a matter of great concern when policy decisions for land use classes are taken.

INTRODUCTION

Rajasthan agriculture often does not receive the due importance despite the large contribution it makes to the national agricultural production pool. In a state like Rajasthan where agricultural activities are taken up under agro-climatically heterogeneous situations, it is not only necessary but also meaningful to make such an assessment on regional basis. The information on land use pattern is necessary to develop future strategies on land use planning and land use policies. The land use pattern is ultimately determined by the factors like human inhabitation, socio-economic, political, technical and institutional changes. An analysis of temporal changes in land use pattern over a period of time provides scope for planned and judicious management of land. The major land use classes taken under this study are forest area, land put to non- ag. uses, barren and unculturable land, permanent pastures and other grazing land, culturable waste, other than current fallow, current fallow and net sown area.

RESEARCH METHODOLOGY

The present study was carried out in five districts i.e. Barmer, Jhunjhunu, Alwar, Bhilwara and Bundi from the five zones of the state. The regular time series data on various facets of agriculture are available from the year 1956-57 in Rajasthan. In order to make the time series analysis more meaningful three temporal phases viz.,

Phase I (TP_1) - Pre green revolution period (1956-1966).

Phase II (TP_2) - Post green revolution period (1967-1980).

Phase III (TP_3) - Period (1981-1997).

were considered to calculate growth rates. Instability was calculated using third phase i.e. TP_3. The required data were collected from the published/ secondary sources. The agro-climatic regions delineated by the National Agricultural Research Project (NARP) during early eighties has been considered for the inter-regional analysis of the study. For all purposes related to technological evolution in agriculture and its transfer, these zones are used in the state. Based on land quality, geographical situation, cropping pattern, irrigation, moisture availability and other climatic factors there are five macro regions, four of which are further divided into two micro-regions each, making a total of nine agro-climatic regions in the state. For the purpose of the current study only the five macro regions have been considered. In order to make the study representative for these regions which are shown as under. The selected districts are (i) Barmer

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from zone I, (ii) Jhunjhunu from zone II, (iii) Alwar from zone III, (iv) Bhilwara from zone IV and (v) Bundi from zone V.

While selecting the districts it was kept in mind that the selected district is the true representation of the concerned agro climatic region. Besides the non-bifurcation of the selected district to make newer districts over the years and also coverage of the whole district in a particular zone were ensured so that the time-series data for the selected districts are available for the entire time period.

A. Compound growth rate:

Often compound growth rates which provide the rate at which the values are increased or decreased at exponential fashion are used to assess the rate and direction of change of agricultural parameters.

The compound growth rate is derived from the exponential trend equation of the form

$Y_t = a\ b^t$

$r = (\text{Antilog } b - 1) \times 100$, since $b = 1+r$

where,

r = compound growth rate

b = regression coefficient of the exponential relationship.

B. Instability Measures :

One of the commonly used measure of indices of instability is the method devised by Cuddy and Della Valle index i.e.,

Instability index = $CV \times \sqrt{(1-R^2)}$

Here CV is coefficient of variation and R^2 is coefficient of determination obtained from the linear time trend regression adjusted by the number of degrees of freedom.

RESULTS AND DISCUSSION

A. Compound Growth Rates:

The compound growth rates in major land use classes for the three temporal phases are presented in Table 1.

Table 1. : Growth rates of land use classes in selected Districts

Item of land use	Phase	Compound growth rates				
		Barmer	Jhunjhunu	Alwar	Bhilwara	Bundi
Forest	TP_1	-2.42	-10.60	-0.14	-3.34	-11.19
	TP_2	2.37	0.29	-1.27	10.78	13.76
	TP_3	2.84	0.73	10.13	1.17	0.69
Land Put to Non-Ag. uses	TP_1	-1.85	4.88	-0.04	1.07	0.39
	TP_2	0.96	4.64	1.41	2.89	2.98
	TP_3	1.01	1.65	-0.26	1.0	0.32
Barren and	TP_1	.08	11.09	-0.68	2.58	1.33
unculturable land	TP_2	1.11	-2.50	-0.77	1.18	-8.02
	TP_3	-0.31	0.73	-0.68	-1.35	-2.20
Permanent pastures and	TP_1	7.11	0.12	13.07	3.86	28.75
other grazing land	TP_2	0.57	-0.24	-4.55	0.75	1.75
	TP_3	-0.28	-0.75	-0.42	.02	-0.35
Culturable waste	TP_1	3.41	-4.88	-6.96	0.97	-6.51
	TP_2	-1.24	-0.38	-5.38	-2.43	0.30
	TP_3	2.27	-1.85	-2.9	-2.49	0.28
Other than current fallow	TP_1	-3.02	-2.95	-4.94	-8.47	-2.54
	TP_2	-4.36	8.48	12.79	-1.60	3.91
	TP_3	0.73	1.72	-3.28	1.41	0.30
Current fallow	TP_1	-5.44	0.28	1.65	0.60	9.21
	TP_2	-2.54	6.99	10.65	2.04	1.83
	TP_3	-0.28	-2.34	-3.83	1.60	-2.32
Net area sown	TP_1	1.84	0.20	0.79	1.97	1.50
	TP_2	3.69	-.51	-0.04	-0.38	0.01
	TP_3	0.48	0.02	0.41	1.28	0.54

During the first temporal phase area under forest recorded negative growth rates of varying magnitudes in all the five districts. However, except for Alwar in all other districts area under forest was found to increase during the second temporal phase. It was as high as 13.76 per cent per annum in Bundi. On the contrary in Jhunjhunu district, the forest area was found increasing marginally at a compound growth rate of 0.29 per cent per annum. In the third temporal phase area under forest recorded a positive growth in all the five districts. However, the growth rates varied from 0.73 per cent per annum in Jhunjhunu to 10.13 per cent per annum in Alwar.

The growth rates of the area under land put to non-agricultural uses revealed that during the first temporal phase there was a positive growth in Jhunjhunu, Bhilwara and Bundi. In Jhunjhunu it was to the tune of 4.88 per cent per annum. Negative growth was observed in Barmer and Alwar districts. During the second phase, positive growth was recorded for area under non-agricultural use in all the five districts. In the third temporal phase, all districts except Alwar recorded positive growth in area under land put to non-agricultural uses. In the districts of Jhunjhunu, Bhilwara and Bundi, positive growth rates in area under non-agricultural use was observed in all the temporal phases.

The phasewise analysis indicated that the Barren and unculturable land increased with positive growth in all districts except in Alwar during the first phase. However, in second phase only Barmer and Bhilwara recorded positive growth. During the third temporal phase except Jhunjhunu all other districts recorded negative growth. The negative growth in barren land during the third temporal phase indicate that barren land was put to other uses during this period.

During the first temporal phase pattern of change in permanent pastures and other grazing land emerged with positive growth in all the five districts. The growth rate in Bundi was the highest which was 28.75 per cent per annum. However in second phase Barmer, Bhilwara and Bundi recorded positive growth while Jhunjhunu and Alwar recorded negative growth in pasture land. In the third temporal phase all districts except Bhilwara recorded negative growth. Even the positive growth in Bhilwara was very meagre and to the tune of 0.02 per cent per annum. Land diverting from grazing land to other purposes is implied during the third temporal phase in all the districts, except Bhilwara.

During the first phase, area under culturable waste showed positive growth in Barmer i.e. 3.41 per cent per annum and in Bhilwara it was 0.97 per cent per annum. However, in Jhunjhunu, Alwar and Bundi negative growth rate was recorded. In second temporal phase, all the districts except Bundi recorded positive growth rate. A similar situation is seen in the third temporal phase in Jhunjhunu, Alwar and Bhilwara.

The area under land other than current fallow recorded negative growth rates in all the five districts during the first temporal phase. However, during the second temporal phase Alwar recorded the highest positive growth rate of 12.79 per cent per annum compared to 8.48 per cent per annum in Jhunjhunu and 3.91 per cent per annum in Bundi. Negative growth rate was seen in Barmer and Bhilwara. In the third temporal phase all districts except Alwar recorded positive growth rates.

Incidently during the first temporal phase all districts except Barmer were found to have positive growth rates in area under current fallow. The highest growth rate was recorded in Bundi which was 9.21 per cent per annum. In the second temporal phase also all districts except Barmer were found to have positive growth rates in current fallow land. During the third temporal phase all districts except Bhilwara recorded negative growth rate in current fallow. Probably, the pressure on land under cultivation makes it necessary to cultivate as much land as possible. Hence, the trend in current fallow is on a decline during the recent past.

It may be noted that during temporal phase first, net area sown recorded positive growth rate in all the five districts though none of the districts showed very high growth rates. During the second temporal phase Barmer recorded positive growth rate of 3.69 per cent per annum and in the other districts either the net area sown normally declined or remained static over the years. Remarkably during the third phase all the districts emerged with positive growth rates in net sown area.

B. Instability indices

Instability indices for land use classes of selected districts are given in Table 2.

In case of forest the highest instability was recorded in Alwar i.e. 13.31 and lowest was recorded in Bundi i.e. 1.77. In case of land put to non-agricultural uses instability measures in Barmer, Jhunjhunu and Bundi was more or less same and remained relatively more. However, in Jhunjhunu very high instability was recorded in area under barren and unculturable land. Among all the districts, Bundi recorded high instability compared to other districts in permanent pastures and other grazing land. As far as culturable waste land is concerned, the districts Jhunjhunu, Barmer and Alwar recorded more instability as compared to Bhilwara and Bundi. Very high instability measure were observed in old fallow land in the districts of Barmer and Alwar followed by Bundi, Bhilwara and Jhunjhunu. Under current fallow land the instability measures were more in Alwar and Barmer districts. The least instability in current fallow was observed in Bhilwara. In Barmer district instability was very high i.e. 15.96 compared to other districts in net area sown and lowest was in Jhunjhunu district.

CONCLUSION

The comparison of growth vis-a-vis instability measures for the land use classes helps to examine the growth pattern in relation to instability during the third phase. The forest area in Alwar district was found to have high growth rate coupled with high instability. The area under barren land in Jhunjhunu district was one with low growth and high instability. The culturable waste land in Barmer district was increasing with more growth rate and more instability, while that in Bhilwara district was decreasing with stability. The growth of fallow land in Alwar was one with high negative growth and high instability. The current fallow in Alwar and Bundi district was decreasing with high growth and high instability and that for Barmer district was decreasing with low growth and high instability. The net sown area in Jhunjhunu, Alwar, Bhilwara and Bundi was one with low growth and low instability while that for Barmer was having low growth and relatively high instability. The results in the land use classes is indicative of the need to have systematic land use planning in Rajasthan so as to ensure sustainability in the agricultural sector.

Table 2. : Instability Indices of Land Utilization Statistics in TP_3 (1981-1996)

Item of land use	Instability Indices in Districts				
	Barmer	**Jhunjhunu**	**Alwar**	**Bhilwara**	**Bundi**
Forest	8.98	6.76	13.31	1.97	1.77
Land Put to Non-Ag. uses	2.95	3.17	1.85	1.72	3.06
Barren are unculturable land	2.49	19.68	8.11	1.35	2.57
Permanent pastures and other grazing land	1.01	NA	1.62	0.26	2.80
Culturable waste	7.95	9.97	7.31	2.67	0.58
Land other than current fallow	17.19	8.56	14.39	8.69	9.90
Current fallow	59.54	28.59	62.80	9.27	33.08
Net area sown	15.96	1.45	4.04	4.93	4.33

NA not worked out

REFERENCES

Cuddy and Della, V. 1978. Measuring the instability of time series data, Oxford Bulletin of Economics and Statistics, Feb., 1978.

Bandopadhyay, A. 1989. Growth and instability in the production of main crops : West Bengal, Punjab and Haryana, 1950-51 to 1985-86, a note, *Indian Journal of Agricultural Economics* **44**(2): 168-176.

Varghese, K.A. and Yadav, D.P. 1993. Inter Temporal Growth, Instability and Acreage response of major oilseeds crops in Rajasthan, *Indian Journal of Agricultural Economics* **48**(3): 440.

Mordia, A. 2001. Application of Regression Model to Assess the Inter-regional Performance of Agriculture in Rajasthan. An unpublished thesis submitted to MPUAT , Udaipur, Raj.

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UTILIZATION PATTERN OF THE CREDIT UNDERTAKEN BY KCC HOLDERS

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ABSTRACT

The present investigation was conducted in Bikaner district of Rajasthan. Tehsil Bikaner was selected due to its maximum population. Ten villages have been included for the investigation based on their maximum population. One hundred fifty farmers (75 KCC holders and 75 Non- KCC holders) were selected from each of the chosen villages through probability proportionate procedure. It was found that two-third KCC holders utilized the bank loan for which they applied, while 17 KCC holders utilized partially and 7 KCC holders did not utilize the loan for which they applied.

INTRODUCTION

The KCC was started by the GOI in consultation with the RBI and NABARD in 1998-99.This was implemented throughout the country by public sector commercial banks, RRBs and cooperative banks. The target groups of beneficiaries for KCCs are all categories of farmers, vulnerable groups like defaulters- farmers, oral lessees, tenant farmers, share croppers and others who have been left outside the fold of KCC Schemes for any reasons. The present KCC scheme aims at providing adequate and timely support from the banking system to the farmers for the short term cultivation needs for the cultivation of crops. The scheme avoids long time consuming process in securing the credits from the banks. The KCC emphasizes on insurance coverage and financial support to the farmers in the event of failure of crops due to any of the causes, to increase the adoption of progressive farming practices, to help farmers in stabilizing the farm income during disaster years and to support and stimulate production of food crops and oilseeds. There are a good number of attractive features of the present KCC scheme. There are very few studies that have been conducted by the researchers in order to ascertain its impact on the farmers.

RESEARCH METHODOLOGY

The present study was conducted purposely in Bikaner district of Rajasthan. The need for study in Bikaner district of Rajasthan is required as till now no study has been designed and undertaken in this area. Tehsil Bikaner appears to be at 1st and foremost place as far as its total population (2,363,937) is concerned. Tehsil Bikaner was being proposed to be included and selected for the present study with the impression that desired representative sample (KCC farmers) would be available to the student researcher. The villages were arranged in descending order based on total population, first ten villages based on highest population were drawn up and included for the investigation. The KCC holders were those for the investigation who were benefited under the scheme during the period of 2003-04 to 2008-09. Prior to actual selection of targeted respondents, a comprehensive list of KCC holders and Non- KCC holders was prepared by the researcher for this purpose; a pre-survey of the study area was conducted by him. A total size of sample that constituted was 150 of respondents (75 beneficiaries and 75 non beneficiaries). Seventy five farmers were selected from selected ten villages on the basis of the probability proportionate to sample size for the study purpose. To measure the utilization pattern of the credit by the KCC farmers interview schedule was prepared. The data collected for this credit utilization pattern were in the form of percentage. The data collected for effective utilization of credit for various farm operation were obtained on four points continuum which were most often, often, some-time and never with the respective weightage of 3, 2, 1 and 0 for each statement.

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RESULTS AND DISCUSSION

Utilization pattern of the credit undertaken by KCC holders

On the basis of utilization pattern of the credit undertaken by KCC holders were asked to state the purposes in which they utilized of the obtained loan, reply of the farmers presented in Table 1.

The table shows that 51 KCC holders out of 75 KCC holders utilized the bank loan for which they had applied. Out of these 51 KCC holders 18(24.00 percent) KCC holders utilized loan for purchase of fodder for their cattle, 11(14.67 percent) purchased fodder and inputs for production of crops. Whereas, 13(17.33 percent) KCC holders utilized the loan amount only for production of crops for their own and cattle purpose. 9(12.00 percent) KCC holders utilized this amount for purchase of pumpset

Seventeen KCC holders partially utilized the loan for the purpose for which they were granted the loan and partially utilized for other purposes. Only 7 KCC holders did not utilized a single coin for the purposes for which they had asked for the loan and out of them 3(4.00 percent) purchased fodder, only 1(1.33 percent) purchased fodder and input for crop production and 3(4.00 percent) KCC holders utilized their full disbursed loan for production of crop.

Distribution of KCC holders on the basis of loan utilized partially for other purpose than they have got loan

Table 2 shows that out 75 KCC holders 15 KCC holders paid a fraction in clearance. Out of 15, 5 KCC holders utilized 50 percent, 4 utilized 30 percent, 3 utilized 40 per cent and 3 utilized 20 percent of the disbursed loan in clearance of old debt. Total 11 KCC holders utilized loan for crop growing purpose out of these 11 KCC holders 4 farmers utilized 40 per cent, 3 utilized 30 percent, 2 utilized 70 percent and 2 utilized 20 percent for crop growing purposes. 8 KCC holders utilized some loaned amount for purchase of fodder out of these 8 KCC holders 2 KCC holders utilized 70 percent and 2 KCC holders 50 percent, 2 KCC holders utilized 40 percent, where as 1 KCC holders each 60 and 30 percent utilized for purchase of fodder.

Table 2 also express that 7 KCC holders utilized a part of loan in social obligations out of which 4 KCC holders utilized 20 percent, 2 KCC holders 50 percent and 1 KCC holders 30 percent in social obligations. 5 KCC holders also utilized a fraction of loan amount in depending of existing well out of which 2 KCC holders utilized 50 percent, 2 KCC holders utilized 40 percent and 1 KCC holders utilized 30 percent in said purpose. 5 KCC holders used some asked amount in purchase of needful items out of which 2 KCC holders utilized 20 percent and 3 KCC holders utilized 30 percent in needful item purposes. 3 KCC holders in purchase of luxurious items out of which 2 KCC holders utilized 30 percent and one KCC holders utilized 15 percent in luxurious items purpose. 7 KCC holders utilized a part of loan in family consumption out of which 3 KCC holders utilized 50 percent, 2

Table 1. Distribution of KCC holders on the basis of credit utilization pattern

S.No.	Type of loan	No. of loanee	Out of these respondents received laon for the purpose (N=75)
1.	Who fully utilized for which they have got loan	51	18 (24.00%) Fodder loan
			13 (17.33%) Crop loan
			11 (14.67%) Fodder and crop loan
			9 (12.00%) Pump set
2.	Who partially utilized for which they have got loan	17	7 (9.33%) Crop loan
			4 (5.33%) Fodder loan
			6 (8.00%) Fodder and crop loan
3.	Who did not utilized for which they have got loan	7	3 (4.00%) Crop loan
			3 (4.00%) Fodder loan
			1 (1.33%) Fodder and crop loan

Table 2. Distribution of KCC holders on the basis of loan utilized partially for other purpose than they have got loan

S.No.	Purposes	No. of KCC holders	Per cent utilized
1.	Social obligations	4	20
		1	30
		2	50
	Total	7	100
2.	Needful items	2	20
		3	30
	Total	5	50
3.	Luxurious items	1	30
		2	15
	Total	3	45
4.	Payment of debt	5	50
		3	40
		4	30
		3	20
	Total	15	140
5.	Crop loan	4	40
		2	70
		3	30
		2	20
	Total	11	160
6.	Growing of fodder	2	40
		2	50
	Total	4	90
7.	Purchasing of fodder	2	70
		1	60
		2	50
		2	40
		1	30
	Total	8	250
8.	Deepening of existing well	2	50
		2	40
		1	30
	Total	5	120
9.	Family consumption	3	50
		2	40
		2	30
	Total	7	120
10.	Medical aid	2	30
		2	20
		1	10
	Total	5	60

KCC holders utilized 40 percent and 2 KCC holders utilized 30 percent in family consumption. 5 KCC holders utilized in medical aid purposes out of which 2 KCC holders utilized 30 percent, 2 KCC holders utilized 20 percent and only 1 KCC holders utilized 10 percent in medical aid. Lastly 4 KCC holders utilized in growing fodders out of which 2 KCC holders utilized 40 percent and 2 KCC holders utilized 50 percent in said purposes.

Distribution of KCC holders according to source of information used for effective utilization of credit

The utilization of credit is viewed as a process and it requires some sort of information at different stages. There are many sources, which people may use to get information about new recommended technology. The sources of information in the present study have been divided into three groups viz., (i) formal sources, (ii) informal sources and (iii) mass media. The responses obtained against each source were tabulated and data in this respect are presented in table 3.

It is evident from Table 3 that almost all the enlisted sources had been utilized by the credit takers. However, the sources *viz*., neighbours with a mean score 2.53 was ranked first followed by agriculture supervisor (2.48 mean score), relatives and friends (2.45 mean score) and radio (2.44 mean score) and were ranked 2nd, 3rd and 4th, respectively. The KCC holders assigned 5th, 6th, 7th and 8th ranks to the sources viz., progressive farmers (2.35 mean score), salesman and dealer (2.20 mean score), panchayat official (2.16 mean score) and assistant agriculture officer (AAO) (1.87 mean score), respectively. Further, the respondents assigned 9th and 10th ranks to sources viz., tv/film (1.84 mean score) and block development officer (BDO) (1.77 mean score), respectively.

The sources *viz*., agriculture officer (1.60 mean score), newspaper (1.59 mean score) and farm journals/magazines (1.36 mean score) were ranked 11th, 12th and 13th, respectively. Remaining sources were utilized by less number of farmers or have been utilized occasionally and hence their mean score was observed folders (1.31 mean score) and agricultural research scientist (ARS) were ranked 14th and 15th.

Distribution of KCC holders according to types of technical guidance taken from bank employee

Table 3. Distribution of KCC holders according to sources of information used for effective utilization of credit

S.No.	Sources of information utilized	Total score	Mean score	MPS	Rank
A.	**Formal Interpersonal sources**				
1.	Agriculture supervisor	186	2.48	61.33	II
2.	Assistant Agriculture officer (AAO)	140	1.87	72.00	VIII
3.	Block Development officer (BDO)	133	1.77	84.44	X
4.	Agricultural Research Scientist (ARS)	89	1.19	81.33	XV
5.	Agriculture Officer (AO)	120	1.60	78.22	XI
6.	Panchyat officials	162	2.16	53.33	VII
7.	Salesman and Dealers	165	2.20	82.67	VI
B.	**Informal interpersonal source**				
1.	Progressive farmers	176	2.35	52.89	V
2.	Relative and friends	184	2.45	73.33	III
3.	Neighbours	190	2.53	45.33	I
C.	**Mass media exposure**				
1.	Newspaper	119	1.59	59.11	XII
2.	Farm journals/magazines	102	1.36	39.56	XIII
3.	Folders, leaflets and bulletins	98	1.31	81.78	XIV
4.	Radio	183	2.44	43.50	IV
5.	TV/Film	138	1.84	62.22	IX

Table 4 Distribution of KCC holders according to types of technical guidance taken from bank employee

S.No.	Type of technical guidance	Number of KCC holders taken	
		Frequency	Percentage
1.	About use of hybrid seeds	17	22.67
2.	About control of insect and pests	7	9.33
3.	Repayment of loan	30	40.00
4.	Purchase of better quality seed	14	18.67
5.	About make of pumpset	7	9.33

Table 4 shows the data about the technical guidance KCC holders, who said the bank employees of obtained by KCC holders from bank employees for better credit utilization 30(40.00 percent) KCC holders stated that bank personnel told us for repayment of loan and 17(22.67 percent) KCC holders stated that bank personnel told us to purchase hybrid seeds, 14(18.67 percent) KCC holders said these personnel told us to purchase of better quality seeds, similarly 7(9.33 percent) KCC holders said the bank officer's guided them about control of insect pest of their crops whereas 7(9.33 percent) KCC holders said that bank officers told him to purchase the pump set of a reliable company.

The KCC holders were also asked to state type of bank credit they need. It was observed that 64 KCC holders were interested to get the credit in the form of cash, whereas, 11 KCC holders said that they are interested to get the bank credit in the form of cash and kind and not a single KCC holders was interested to get the loan in the form of kind.

Out of 64 KCC holders who were interested to get the loan in the form of cash, 52 said that they needed cash so that they could purchase good and cheap material available at any place 7 said that they were interested so utilize this cash according to their need.

CONCLUSION

It was found that 51 KCC holders out of total 75 KCC holders utilized the bank loan for which they applied, while 17 KCC holders utilized partially and 7 KCC holders did not utilize the loan for which they applied. It was observed that out of 75 KCC holders, 64 were interested to get the credit in the form of cash, 11 KCC holders in the form of both cash and kind while not a single KCC holders was interested to get the loan in the form of kind only. It was found that local leader served as most important source of information followed by bank employees for better utilization of bank credit.

REFERENCES

Dhanabhakyam, M. and Malarvizhi, J. 2012. A study on the awareness, utilization and problems of using Kisan Credit Card of canara bank [with special refrence to Coimbatore district. *International Journal of Marketing, Financial Services & Management Research* **1**(10):113-119.

Garg, S. K., Badodiya, S. K. and Shakya, S. K. 2010. Credit utilization through farmers' service society. *Annals of Biology* **26**(2):183-186.

Kannan Elumalai 2011. Relationship between agricultural credit policy, credit disbursements and crop productivity: a study in Karnataka. *Indian Journal of Agricultural Economics* **66**(3): 444-456.

Khan, Aamir Riaz and Ahmad Munir, G.A. 2012. Utilization of agriculture credit by the farming community of Zarai Tariqiati Bank Limited (ZTBL) for agriculture development. *Pakistan Journal of Agricultural Sciences* **49**(4): 557-560.

Khodke, M.V., Deshmukh N.D. and Mane N.B. 2010. Determinants of farm credits utilization by farmers. *Agriculture Update* **5**: 303-305.

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ASSOCIATION BETWEEN FARMER'S CHARACTERISTICS AND ADOPTION OF MOTH BEAN PRODUCTION TECHNOLOGY IN ARID ZONE

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ABSTRACT

The study was conducted in four districts namely, Jodhpur, Pali, Bikaner and Jaisalmer of Rajasthan. Two Panchayat Samities from each district, one village from each Panchayat Samities and 15 moth bean growing farmers from each village were selected randomly. Thus the sample was 120. Data were collected through special developed interview schedules and analyzed. Study revealed that majority of the farmers had adopted high yielding varieties, seed treatment, application of nitrogenous and phosphatic fertilizer and plant protection measures to a lesser extent. Out of sixteen variables, seven variables education, occupation, extension contact, source of information, economic motivation, scientific motivation and knowledge were found to be positively and significantly correlated with adoption of moth bean production technology.

INTRODUCTION

Moth bean [*Vigna aconitifolia* (Jacq.) Marechal] is an important *kharif* pulse crop of Rajasthan. It occupies about 8.63 lakh hectare area, which accounts for 26.62 per cent of total pulse area of the state but contribute only 12.060 per cent to total pulse production of the state. Mostly, it is grown under rain fed condition. The average productivity of moth bean is 273 kg/ha (2012-13), which is very low as compared to its potensiality. The reason for low productivity may be traditional methods of cultivation practices by the farmers. With development of high yielding varieties and better management practices, there is much scope for further increase in yield. Keeping this in view, the present study was under taken with specific objectives:

1. To study the extent of adoption of moth bean production technology by the farmers
2. To find out the relationship between socio-economic characteristics of the farmers and adoption of moth bean production technology.

RESEARCH METHDOLOGY

The study was conducted in 4 districts namely Jodhpur, Pali, Bikaner and Jaisalmer of Rajasthan. Two Panchayat Samities, namely Bilada and Osian from Jodhpur district, Rohet and Jetaran Panchayat Samities from Pali district ,Nokha and Lunkaran Panchayat Samitis from Bikaner district and Pokharan and Jaisalmer Panchayat Samiti from Jaisalmer district were selected randomly. From each Panchayat Samiti one village and from each village 15 farmers were selected randomly. Thus the sample was 120 for the study. The data were collected through specially developed interview schedules.

For studying the extent of adoption 10 important cultivation practices ie. high yielding varieties, recommended seed rate, seed treatment, time of sowing, method of sowing, spacing, application of nitrogenous and phosphatic fertilizers, interculture and weeding and plant protection measures 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.

Sixteen independent variables namely age, education, caste, occupation, land holding, irrigation facility, type of family, size of family, farming experience, annual income, extension contact, source of information, economic motivation, scientific motivation, risk orientation and knowledge were computed for correlation co-efficient in order to find

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out their relationship with the dependent variable; adoption.

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.

$$AI = \frac{\text{Respondents total score}}{\text{Total possible score}} \times 100$$

Here, AI represents adoption index

Respondents total score = Total number of practices adopted by farmers multiplied by respective practices weightage and summated

Total possible score = Total number of practices recommended multiplied by the respective weightage and summated

RESULTS AND DISCUSSION

Extent of adoption of moth bean 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 moth bean production technology is presented in Table 1.

Data presented in Table 1, showed that majority (75.83 %) of the farmers belonged to low adoption category in the use of high yielding varieties of moth bean crop. However, 7.50 per cent farmers belonged to high adoption category and 16.67 per cent belonged to medium adoption category. Singh *et al*. (2003) reported that 30 per cent farmers adopted high yielding variety of moth bean. 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, majorities (52.50 %) of the farmers were found in high adoption category and 35.00 per cent farmers were found in medium adoption category. Similar findings also reported by Singh *et al*. (2003). With regards to seed treatment, majority of the farmers (94.17 %) 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, 50.83 per cent farmers were found in medium adoption category followed by high (25.00 %) and low adoption category (24.17 %).Low adoption might be due to lack of moisture in the field, lack of sowing implements

Table 1. Adoption of moth bean production technology

S.No.	Practices	Adoption level		
		Low	Medium	High
1.	High yielding varieties	91(75.83)	20(16.66)	9(7.50)
2.	Recommended seed rate	15(12.50)	42(35.00)	63(52.50)
3.	Seed treatment	113(94.17)	5(4.17)	2(1.66)
4.	Time of sowing 29(24.17)	61(50.83)	30(25.00)	
5.	Method of sowing 11(9.17)	20(16.67)	89(74.16)	
6.	Spacing 4(3.33)	10(8.33)	106(88.33)	
7.	Application of nitrogenous fertilizers	116(96.67)	4(3.33)	-
8.	Application of phosphatic fertilizers	112(93.33)	8(6.67)	-
9.	Interculture and weeding	6(5.00)	84(70.00)	30(25.00)
10.	Plant protection measures	113(94.17)	5(4.17)	2(1.66)

(Figures in parenthesis indicates the percentage of the respondents)

and lack of knowledge.

An examination of Table 1, it was indicated that majority (74.16%) of the farmers belonged to high 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 reported by Singh and Chauhan (2010).

With regards to application of nitrogenous and phosphatic fertilizers, majority of the farmers (96.67 and 93.33 %) were found in low adoption category. Thakre and Tiwane (1994) found that only 4.50 per cent farmers applied nitrogenous fertilizers as per recommended dose. Possible reason for low adoption might be high cost of fertilizers, lack of knowledge and lack of finance.

Table 1 indicated that majority of the farmers (70.00 %) were found in medium adoption category followed by high (25.00 %) and low adoption category (5.00 %) in case of interculture and weeding. In case of plant protection measures, 94.17 per cent farmers 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.

Overall adoption of moth bean production technology

A perusal of Table 2 revealed that overall majority of the farmers (79.16 %) had medium adoption of moth bean production technology. The percentage of low and high adoption was 13.33 and 7.50 per cent respectively. These findings are supported by Singh and Chauhan (2006), Singh and Chauhan (2010),Singh (2011) and Singh *et al*. (2012).

Regression analysis:

Table 3 elicited that all the sixteen independent variables taken together explained 52.55 per cent of the variation for adoption. Thus the respective 'F' value 7.198855 was significant. The results implied that all the sixteen variables had accounts for significant amount of variation for adoption of moth bean production technology.

Further, it was also observed that't' test of significance expressed in coefficient of regression ' b' values were positively significant for occupation, sources of information and knowledge and negative significant for caste. On the contrary, coefficient of regression ' b' value were non- significant for age, education, land holding, irrigation facilities, type of family, size of family, experiences, annual income, extension contact, economic motivation, scientific motivation and risk orientation. The results of the analysis were indicated of the facts that occupation, sources of information and knowledge of the farmers were most important predictors of the adoption of moth bean production technology.

CONCLUSION

From the findings it can be concluded that majority of the farmers belonged to medium adoption category. Out of sixteen variables, education, occupation, extension contact, source of information, economic motivation, scientific motivation and knowledge of the farmers were found to be positively and significantly correlated with adoption of the moth bean production technology. All the thirteen independent variables jointly accounted for 72.49 per cent of variation in adoption regarding mothbean production technology.

The study suggests that the practices seed treatment, application of nitrogenous and phosphatic fertilizers and plant protection measures which had

Table 2. Distribution of respondents according to their overall adoption of moth bean production technology

S.No.	Adoption	Frequency	Percentage
1.	Low adoption(up to 33.33 %)	16	13.33
2.	Medium adoption(33.34 to 66.66 %)	95	79.16
3.	High adoption(above 66.66 %)	9	7.50
	Total 120	100.00	

Table 3. Regression coefficient between independent variables and adoption of moth bean production technology

S.No.	Independent variables	Reg. coefficient ('b' value)	Standard error	't' value
1.	Age	0,03003	0,022765	1,31963
2.	Education	0,16526	0,37780	0,43743
3.	Caste	-0,81634	0,26165	-3,11988**
4.	Occupation	1,66466	0,46265	3,59807**
5.	Land holding	0,00600	0,00556	1,07918
6.	Irrigation facilities	0,047532	0,44689	0,10635
7.	Type of family	0,06601	0,45399	0,14540
8.	Size of family -0,0359	0,04854	-0,73955	
9.	Experiences	-0,02763	0,02367	-1,16709
10.	Annual income	-0,00465	0,00486	-0,95666
11.	Extension contact	0,12258	0,26041	0,47072
12.	Sources of information	0,13935	0,04776	2,91731**
13.	Economic motivation	0,15033	0,14889	1,00965
14.	Scientific motivation	-0,03090	0,12469	-0,24784
15.	Risk orientation -0,17860	0,13046	-1,36895	
16.	Knowledge	0,28709	0,05356	5,35984**

R2 =52.55, R = .724919, F =7.198855

* -Significant at 5 percent level; ** -Significant at 1 percent level

low adoption by farmers should given due attention by extension agencies, so that the existing level of adoption of such practices can be increased.

REFERENCES

Karthikeyan, C. 1994. Sugar factory registered growers an analysis of their involvement and impact. M.Sc thesis (unpublished), T.N.A.U, Coimbatore.

Thakre, S.K. and Tiwane, A.K.1994. Technology adoption in cotton – A follow-up study. *PKV Research Journal* **18**(1): 147-149.

Singh Bhagwan 2011. Factors influencing the adoption of mung bean production technology in arid zone of Rajasthan. *Raj. J. Extn. Edu.* **19**: 173-177.

Singh Bhagwan 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 Bhagwan 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 Bhagwan, Singh Raj and Chauhan, K.N.K. 2003. Adoption and constraints in moth bean production technology in arid zone of Rajasthan. Published in Book " Advances in Arid Legumes Research. A.Henry, D.Kumar and N.B.Singh Published for Indian Arid Legumes Society & Scientific Publishers (India), Jodhpur, pp.510-14.

Singh,P. Lakhera,J.P. and Chandra Subhash 2012. Knowledge and adoption of mothbean production technology in western Zone of Rajasthan. *Raj. J. Extn. Edu.* **20**: 35-38.

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ACCESS AND USE OF INTEGRATED FARMING SYSTEM (IFS) TECHNOLOGIES BY BENEFICIARY HOUSEHOLDS IN UDAIPUR DISTRICT OF RAJASTHAN

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ABSTRACT

The present investigation was carried out to study the access and use of technologies and services by beneficiary households with special focus on IFS horticulture and livestock in Udaipur District of Rajasthan with a sample of 45 households. The data were analyzed by tabular analysis. The findings of study indicated that the average family size and land holding per household were observed 5.89 members and 1.95 hectare, respectively. For enhancing the productivity and income at household level, emphasis was made to increase seed replacement rate (SRR) in existing crops, vegetables, and fruits with HYV's and hybrids in the study area. Seed replacement (91.11%) and mineral bricks/mineral mixture (60%) were major technologies in horticulture and livestock, respectively, actually used by the households. The maximum service of Rural Technology Centre (RTC) was actually used by beneficiary households (75.56%) in the study area.

INTRODUCTION

Ensuring equity, good quality of life and its sustainability and economic empowerment of the weaker sections is an important policy goal of our development plans. For attaining equitable targeted growth, there has to be appropriate livelihood technology intermediation of practices. The prestigious ICAR-NAIP project known as "Livelihood and Nutritional Security of Tribal Dominated Areas through Integrated Farming System and Technology Models" under the aegis of Maharana Pratap University of Agriculture & Technology, Udaipur was started in the year 2007 in the tribal belt of Rajasthan. The outstanding technologies have been developed especially on Integrated Farming System (IFS) approach leading to livelihood and nutritional security of households. Research activities on horticulture based IFS and livestock based IFS modules were tried for accelerating livelihood security of households. A large number of horticultural and livestock based innovative technologies have been made available to the beneficiaries in hand through this project. These modules of Integrated Farming System with judicious mix of proven technologies have been recognized as a vital tool for bringing social upliftment through adoption of technology. Thus, keeping above background in mind, the present study was carried out in Udaipur district of Rajasthan with the objective to evaluate access and use of IFS technologies and services adopted by beneficiary households.

RESEARCH METHODOLOGY

Udaipur district has been purposively selected from the operational districts of project entitled "Livelihood and Nutritional Security of Tribal Dominated Areas through Integrated Farming System and Technology Models" for the present study. Cluster Mavli-I was selected from Udaipur district on the basis of maximum number of villages. Keeping in view the available resources and time factor, with the researcher, the study was confined to 6 villages of Cluster Mavli-I in the Udaipur district. Three villages namely Rathana, Bansliya and Rediya Khedi were beneficiary and another three villages namely Khimakheda, Ganvda and Varni were non-beneficiary. A complete enumeration of all the households in the selected villages with respect to technologies adopted, family size and land holdings etc. was made. From six selected villages, 45 beneficiary households and an equal number of non-beneficiary households (45) of almost similar resource situation were selected from the nearby

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villages to serve as valid basis of comparison. Thus, a total of 45 households were randomly selected for the present study. The study is based on a sample survey conducted for the year 2013-14. The primary data were collected from selected households on suitably structured schedules. Tabular analysis was used for the present study.

Increasing productivity and income and reducing environmental impacts is expected to hinge on improving access to, and use of, improved technologies and management practices. Uptake of these improved technologies and management practices signifies a change in the behaviour (decision-making) of households on the use of technologies at farm level with respect to agriculture. To calculate these, measurements were taken on the proportion of households in a sampling frame that (i) has technology or a service available and (ii) were using technology or a service. The recall period for these data was commonly 12 months prior to the survey.

Access to IFS technology

Percentage of households with access to a technology

$$= \frac{\text{Number of households with access to technology}}{\text{Number of households in sample}} \times 100$$

Access to IFS services

Percentage of households with access to a service:

$$= \frac{\text{Number of households with access to a service}}{\text{Number of households in sample}} \times 100$$

Use of IFS technology

Percentage of households with using a technology:

$$= \frac{\text{Number of households using a technology}}{\text{Number of households in sample}} \times 100$$

Use of IFS services

Percentage of households with using a service:

$$= \frac{\text{Number of households using a service}}{\text{Number of households in sample}} \times 100$$

RESULTS AND DISCUSSION

Family and Land Holding Size: The details of average family size are presented in Table 1. The average family size was found 5.89 members, of which 35.48, 30.05 and 34.47 per cent were adult male, adult female and children, respectively, in the study area. Further, it was also observed that the percentage of adult male were marginally higher than those of children and adult female.

Land is the main resource base of the farmers in the production process. The economic and social progress of the farmers largely depends on the size of land holdings. The average size of land holding (hectare/household) is also presented in Table 1. The average size of land holding was 1.95 hectare per household, of which 39.49, 24.10 and 36.41 per cent were irrigated, un-irrigated and uncultivable wasteland, respectively in the study area.

Seed Replacement/New Varieties Introduced: To increase in income of the poor rural community, scientific vegetable cultivation is an ultimate way to get rid of poverty in these tribal dominated districts.

Table 1. Average Size of Family and Land Holdings

	Adult Male	Adult Female	Children	Total
Family Size	2.09	1.77	2.03	5.89
(Number)	(35.48)	(30.05)	(34.47)	(100.00)
	Irrigated	Un-irrigated	Uncultivated	Total
Land Holdings Size	0.77	0.47	0.71	1.95
(Hectare)	(39.49)	(24.10)	(36.41)	(100.00)

Therefore, different hybrid varieties of field, vegetables and fruit crops were introduced in the operational area of project (Table 2).

The productivity of existing field crops was less in the operational area due to poor adoption of HYV's and improved cultivation practices. Therefore, for enhancing the productivity of existing crops emphasis was made to increase seed replacement rate (SRR) in existing crops (wheat, gram, mustard, maize, green gram, pigeon pea, black gram etc.) with HYV's and hybrids in the operational area of project. For enhancing the income of farm households by diversifying the existing cropping system, vegetable cultivation was introduced in operational area. Earlier in project area, only few farmers were taking vegetable cultivation. Hence, for enhancing the productivity of vegetable crops emphasis was made to introduce vegetable crops (okra, bottle gourd, pumkin, clusterbean, tomato, chilli, onion, coriander, brinjal, turmeric etc.) with HYV's and hybrids in the operational area of project. Fruit crops i.e. Mango, Custard Apple, Citrus, Guava, Pomegranate, Papaya etc. were introduced in the operational area of project.

Access to, and Use of, Technologies by Beneficiary's Households: The access to, and use of, horticulture and livestock related technology and inputs during the last six years by farmers in the study area are presented in Table 3. It can be seen from Table 1 that the seed replacement (91.11%) was major horticulture technology actually used by the households followed by cultivation of vegetables (68.89%), storage bins (51.11%), HDPE pipes & sprinkler (48.89%), improved agricultural equipments (44.44%), nursery raising (28.89%), nutrigarden (26.67%) and cultivation of fruits (20%).

Table 2. Seed Replacement/New Varieties Introduced and Cropping System Followed

Particulars	New varieties/HYV's
Crops	
Wheat	Raj-3765, 4037, 3077
Maize	MRM-3838/MRM-3765, Prabal, Allrounder, Bio-9687, Boom
Barley	RD-2035
Mustard	Bio-902, Pusa, Tarak, Mahak, Panch, Vasundhara
Groundnut	GG-7
Blackgram	RBU-38, PU-31
Gram	Pratap Chana-1, Smarat, Vardan
Cotton	Bt cotton
Methi	RMT-1
Moong	K-851, SML-668, Pusa Vishal
Pigeonpea	BDN-2
Vegetable crops	Okra, Bottle gourd, Pumpkin
Fruit Crops	Mango, Custard Apple, Citrus, Guava, Pomegranate, Papaya
Cropping System	
Maize → Wheat → Summer Moong	
Maize → Wheat	
Maize → Gram	
Maize → Mustard	
Maize + Black gram → Barley	
Maize → Fallow	

Table 3: Access to, and Use of, Horticulture and Livestock Related Technology and Inputs

(Number of households)

Technologies	Access to	Use of
Horticulture		
Cultivation of fruits	22 (48.89)	9 (20.00)
Cultivation of vegetables	37 (82.22)	31 (68.89)
Nursery raising	23 (51.11)	13 (28.89)
Seed replacement	42 (93.33)	41 (91.11)
Improved harvesting implements & equipments	38 (84.44)	20 (44.44)
Storage bins	27 (60.00)	23 (51.11)
Installation of drip unit, HDPE pipes, sprinkler	27 (60.00)	22 (48.89)
Nutrigarden	22 (48.89)	12 (26.67)
Livestock		
Artificial Insemination	34 (75.56)	17 (37.78)
He buffalo/Sirohi buck for breed improvement	33 (73.33)	16 (35.56)
Nirbhik breed of poultry	17 (37.78)	7 (15.56)
Construction of scientific manger	32 (71.11)	22 (48.89)
Growing of green fodder	39 (86.67)	18 (40.00)
Chopping of fodder	13 (28.89)	3 (6.67)
Use of mineral bricks/mineral mixture	39 (86.67)	27 (60.00)

Figures in parentheses are percentage of total sample farmers (45)

As regards livestock technology, mineral bricks/ mineral mixture (60%) was major livestock technology actually used by households followed by construction of manger (48.89%), growing of fodder crops (40%), Artificial Insemination (37.78%), male buffalo/Sirohi buck (35.56%), Nirbhik breed of poultry (15.56%) and chopping of fodder (6.67%). Thus, it can be concluded that seed replacement, cultivation of vegetables and storage bins were the most important horticulture technologies actually used and adopted by the majority of households. The mineral bricks/mineral mixture was major and actually used technology in case of livestock technology.

Access to, and Use of, services by Beneficiary Households: The access to services and use of services during last six years (2007-13) in the study area is depicted in Table 4. The services of exposure visits (crop, horticulture and livestock), training programme (crop, horticulture and livestock), financial services (saving, credit, house insurance, health insurance, crop insurance and livestock insurance), Rural Technology Centre and service providers were accessible to 55.56 per cent, 64.44 per cent, 51.11 per cent, 93.33 per cent and 86.67 per cent households, respectively. While the service of exposure visits, training programme, financial services, Rural Technology Centre (RTC) and service providers were actually used by 44.44 per cent, 53.33 per cent, 31.11 per cent, 75.56 per cent and 60 per cent households, respectively.

Thus, it can be concluded that the actual use of services by the farmers was comparatively less than access to services to farmers. Further, Rural Technology Centre were maximum accessible to households in study area followed by services of service providers, training programme, exposure visits and financial services while the same order was also found in case of actual use of these services.

CONCLUSION

It can be concluded from the results of study that the percentage of adult male was marginally higher than those of children and adult female. Out of total size of land holding, near about one-third of land was uncultivable wasteland in the study area. The actual use of technologies and services by beneficiary

Table 4: Access to, and Use of, Services by Beneficiary Households

(Number of households)

Type of Services	Access to	Use of
1. Exposure visits related to field crops, horticulture and livestock.	25 (55.56)	20 (44.44)
2. Training programme on crops, horticulture and livestock.	29 (64.44)	24 (53.33)
3. Financial services including saving, credit, crop insurance and livestock insurance	23 (51.11)	14 (31.11)
4. Rural Technology Centre (RTC)	42 (93.33)	34 (75.56)
5. Service providers such as village workers, Senior Research Fellow and Clusters & village committees.	39 (86.67)	27 (60.00)

Figures in parentheses are percentage of total sample farmers (45)

households was comparatively less than access to households. Rural Technology Centre were maximum accessible to households in study area.

REFERENCES

Kumawat, S. R. 2008. Impact of frontline demonstration on adoption of improved caster production technology. *Rajasthan Journal of Extension Education* **16**: 143-147.

Meena, G. L., Pant, D. C. and Burark, S. S. 2012. Impact assessment of NAIP project on livelihood and nutritional security of tribal dominated areas through Integrated Farming System and Technology Modules, Project Report, ATIC, MPUAT, Udaipur.

Mula, G. and Sarker, S. C. 2013. Impact of Improved agro-techniques on sustainable livelihood empowerment: An economic study from West-Bengal. *Agricultural Economics Research Review* **26**: 129-137.

Sedhain, G. K. and Singh, B. 2001. Key performance area of village milk producer's societies in the hill regions. *Indian Journal of Extension Education* **37**: 15-23.

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ADOPTION BEHAVIOUR OF Bt COTTON GROWERS IN RAJSAMAND DISTRICT OF RAJASTHAN

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ABSTRACT

The present study was conducted in purposely selected Rajsamand district of Rajasthan. Total 120 farmers were selected as sample of study from eight identified villages of Railmangra Tehsil of Rajsamand. The results revealed that 45.0 per cent respondents adopted the Bt cotton production technology to a medium level, whereas 30.00 and 25.00 per cent of the respondents adopted Bt cotton production technology to low and high level respectively. The study further revealed that the extent of adoption in marginal farmers was from 35.10 to 76.67 in all the improved Bt Cotton cultivation pratices respectively. Further, it was found that the large and small farmers had more extent of adoption than marginal farmers.

INTRODUCTION

Cotton, the king of fibres, is an industrial commodity of the world wide importance. It is one of the most important commercial crops playing a key role in economic and social affairs of the world. Cotton is also considered the backbone of Indian rural economy, particularly in dryland areas. Besides being a monetary spinner, it is an employment generator as its cultivation provides 200 Man-days ha^{-1} of employment. About 60 M people earn their livelihood through its cultivation or trade and processing. The current crisis in cotton revolves around the main issues such as rising cost of production hiked use of pesticides without adequate pest suppression, inability to enhance production during the bountiful monsoon due to ineffective water management, deterioration in genetic purity of the multitude of cotton cultivars, inadequate price support and paucity of infrastructure to ensure value addition products at farmer's level. Looking to the present market scenario, cotton growers need to reorient about the package of practices of Bt cotton cultivation. The Indian government permitted commercial cultivation of genetically modified Bt cotton in March 2002. In Rajasthan it is grown in an area of 4.5-5.00 lakh hectares, mainly in Bhilwara, Chittorgarh, Rajsamand, Banswara, Bikaner districts. Keeping the above facts in the view, the present study was undertaken with the following specific objectives:

1. To find out the extent of adoption of Bt cotton cultivation technology among the farmers.
2. To compare the adoption level among marginal, small and large farmers about improved Bt cotton cultivation practices.

RESEARCH METHODOLOGY

The present study was conducted in the purposely selected Rajasmand district of Rajasthan. There are total seven tehsils in Rajsamand district of Rajasthan, out of which, one tehsil namely Railmagra was selected on the basis of maximum area under cultivation of Bt cotton. Eight villages from selected tehsil were taken on the basis of maximum area under Bt cotton cultivation for the present investigation.

From each selected village, 5 marginal, 5 small and 5 large cotton growers were selected randomly. Thus, in all 120 farmers (40 Marginal, 40 small and 40 large farmers) were included in the sample of the study. Thereafter data were collected from the selected respondents and these data were analysed, tabulated and interpreted the results in the light of the objectives of the study.

RESULTS AND DISCUSSION

To get an overview of adoption level, the respondents were divided into three group viz., (i) low level of adoption (<23) (ii) medium level of

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adoption (23 to 33) and high level of adoption (>33). The groups were made on the basis of calculated mean and standard deviation of the adoption scores obtained by the respondents. The results of the same are presented in Table 1.

Data presented in Table 1 depict that 45.00 per cent of the total respondents were in the medium level of adoption group, whereas 30.00 per cent respondents were in low adoption group and remaining 25.00 per cent Bt cotton growers to be observed in the high level of adoption about Bt cotton cultivation technology.

Further, among the categories of Bt cotton growers, it was observed that 10.00 per cent marginal farmers, 20.00 per cent small farmers and 45.00 per cent large farmers were in the high adoption category. Whereas, 42.50 per cent marginal farmers, 50.00 per cent small farmers and 42.50 per cent large farmers were noted in medium adoption group. Likewise, 47.50, 30.00 and 12.50 per cent marginal, small and large farmers possessed low level of adoption respectively about Bt cotton cultivation technology.

These findings are in line with the findings of Manhas, et al. (2003) also reported that majority of the respondents were from medium adoption category, followed by 30 per cent respondents who were found in high adoption category, while 13.34 per cent respondents could be placed in the category of low level of adoption about cotton cultivation technology.

Individual aspect-wise extent of adoption of Bt cotton growers was worked out. For this mean per cent score were calculated. The results of the same have been presented in Table 2.

Data depicted in Table 2 reveal that adoption about improved Bt cotton varieties was 70.39 per cent among large farmers, while in case of small and marginal farmers it was 63.83 and 60.50 per cent respectively. It was noted that most of the farmers were sowing MRC-6025, MRC-6029 and RCH-308 varieties of Bt cotton in the study area. This aspect was ranked fifth by small and large farmers, while sixth by marginal farmers. The extent of adoption regarding recommended soil treatment to prevent soil borne diseases, it was fond that large farmers, small farmers and marginal farmers had 48.17, 46.80 and 45.59 per cent adoption respectively.

Further analysis of table shows that the extent of adoption in all three categories of farmers about recommended seed rate was above 72.00 per cent. It was noted that majority of respondents were using recommended seed rate approximately 8-12 Kg/ha in the cultivation of Bt cotton. The extent of adoption about recommended spacing was ranked fourth by large and small farmers, while third by marginal farmers in order of adoption of Bt cotton cultivation practices.

Likewise, the adoption about depth of sowing of Bt cotton seed was 77.39, 74.16 and 71.16 MPS in large farmers, small farmers and marginal farmers respectively. It was noted that most of the farmers were following appropriate depth (2-3cm.) of sowing Bt cotton seed in their fields. This may be because of the reason that to minimize the risk of poor germination of seeds which are directly affect the production of cotton. The practice time of sowing of

Table 1. Distribution of respondents on the basis of their level of adoption of improved Bt cotton cultivation technology

S.No	Level of adoption	Marginal farmers		Small farmers		Large farmers		Total	
		f	%	f	%	f	%	f	%
1.	Low (<23)	19	47.50	12	30.00	5	12.50	36	30.00
2.	Medium (23 to33)	17	42.50	20	50.00	17	42.50	54	45.00
3.	High (>33)	4	10.00	8	20.00	18	45.00	30	25.00
	Total	**40**	**100.00**	**40**	**100.00**	**40**	**100.00**	**120**	**100.00**

f = Frequency, % =per cent

Bt cotton crop was possessed highest adoption level among marginal farmers, small farmers and large farmers with MPS 87.50,75.00 and 94.19 per cent respectively.

It was found that extent of adoption about seed treatment to prevent seed born diseases was 58.62, 58.39 and 63.13 per cent among marginal farmers, small farmers and large farmers respectively. This practice was ranked eight by marginal and small farmers, whereas it was ranked seventh by the large farmers. It was also found that adoption of recommended method of sowing of Bt cotton was 43.00, 43.59 and 46.66 per cent in marginal farmers, small farmers, and large farmers respectively.

Further analysis of Table 2 indicates that adoption regarding application of nitrogenous fertilizers was 55.33, 56.00 and 59.37 MPS among marginal farmers, small farmers and large farmers respectively. The extent of adoption was found 33.16, 35.00 and 40.16 per cent in marginal, small and large farmers about application of phosphatic fartilizers in cultivation of Bt cotton. On the other hand application of recommended doses of micro-nutrients, the extent of adoption was 33.00, 35.73 and 37.00 per cent among

Table 2. Extent of adoption of production practices by Bt cotton growers

S.No	Improved Practices	Marginal farmers		Small farmers		Large farmers		Total	
		MPS	Rank	MPS	Rank	MPS	Rank	MPS	Rank
1.	Adoption of improved Bt cotton varieties	60.50	6	63.83	5	70.39	5	65.65	5
2.	Recommended soil treatment to prevent soil born diseases	45.59	11	46.80	11	48.17	11	46.85	11
3.	Using recommended seed rate	72.50	2	76.67	1	84.16	2	77.83	2
4.	Following recommended spacing	71.66	3	72.33	4	76.09	4	73.11	4
5.	Recommended depth of sowing	71.16	4	74.16	3	77.39	3	74.27	3
6.	Proper seed treatment to prevent seed born diseases	58.62	8	58.39	8	63.13	7	60.05	8
7.	Following recommended time of sowing	87.50	1	75.00	2	94.19	1	85.45	1
8.	Adoption of correct method of sowing	43.00	12	43.59	13	46.66	12	44.42	12
9.	Application of nitrogenous fertilizers	55.33	9	56.00	9	59.37	9	56.90	9
10.	Using phosphatic fertilizers	33.16	17	35.10	18	40.16	17	36.14	17
11.	Recommended doses of micronutrients	33.00	18	35.73	17	37.00	18	35.24	18
12.	Timely application of fertilizers	54.83	10	55.39	10	58.50	10	56.24	10
13.	Adoption of herbicides for weed control	38.33	15	39.00	16	43.45	15	40.26	15
14.	Weed control through mechanical method	60.16	7	61.16	7	62.00	8	61.12	7
15.	Irrigation management	62.16	5	63.61	6	70.01	6	65.26	6
16.	Applying insecticides	41.00	14	41.50	14	44.97	14	42.49	14
17.	Using fungicides 36.50	16	41.39	15	41.67	16	39.85	16	
18.	Recommended harvesting and storage methods	42.09	13	42.67	12	45.09	13	43.28	13

MPS=Mean Per cent Score

marginal farmers, small farmers and large farmers respectively and ranked last by the cotton growers in the study area.

The extent of adoption about the time of fertilizers application was 54.83, 55.39 and 58.50 per cent in the marginal farmers, small farmers and large farmers respectively. The adoption of herbicides for weed control was 38.33, 39.00 and 43.45 per cent among all the marginal framers, small farmers and large farmers respectively. While in case of weed control through mechanical method in Bt cotton cultivation the extent of adoption was 60.16, 61.16 and 62.00 per cent among marginal small and large farmers respectively. It was noted that extent of adoption of irrigation management was 62.16, 63.61 and 70.01 per cent by marginal, small and large farmers respectively. A view of table further indicates that the adoption about insecticides was 41.00, 41.50 and 44.97 per cent by marginal, small and large farmers respectively. Whereas, adoption about fungicides was 36.50, 41.39 and 41.67 per cent by the marginal farmers, small farmers and large farmers respectively. It was recorded that the extent of adoption about recommended harvesting and storage methods was 42.09, 42.67 and 45.09 per cent among marginal farmers, small farmers and large farmers.

These findings are similar with the results of Meti and Hanchinwal (1995), who reported that the high percentage adoption of dryland recommended cotton practices were variety (75.00%), seed rate (69.16%) and date of sowing (62.50%), followed by fertilizer application (58.33%), spacing (57.00%), insect and pest management while the poor adoption of the practices like top dressing of fertilizers (41.66%) and post-harvest technology (37.50%) of cotton.

To find out the variation or similarity in the adoption of marginal farmers, small farmers and large farmers about improved Bt cotton cultivation technology, 'F' Test was applied. The results were presented in Table 3.

Data presented in Table 3 reveal that the calculated 'F' Value (2.49) is lower than tabulated 'F' value at 5 per cent level of significance at 2 degree of freedom. It means that there was no significant difference in all the three categories of farmers with respect to adoption of Bt cotton cultivation technology. Thus, it was concluded that the extent of adoption was more or less same in marginal farmers, small farmers and large farmers with respect to improved Bt cotton cultivation technology. The present findings are contradictory to the findings of Thalor (2004) who revealed that there was significant difference between beneficiary and non-beneficiary farmers as far as their level of adoption about organic farming practices in cotton cultivation was concerned.

Table 3. Comparison of adoption of improved Bt cotton cultivation practices among different categories of farmers

Source of variation	d.f.	SS	MSS	F Value
Between the categories of farmers	2	152.325	76.1225	2.49^{NS}
Error	117	3572.67	30.53	
Total	**119**	**3724.995**		

NS = non significant

CONCLUSION

From the above results it can be concluded that 45.00 per cent of the total respondents adopted the Bt cotton production technology to a medium level, whereas 30.00 and 25.00 per cent of total respondents adopted Bt cotton production technology to low and high level respectively. It was further observed that the extent of adoption in marginal farmers was observed to be 35.10 to 76.67 and 37.00 to 94.19 per cent in all the improved Bt cotton cultivation practices respectively. Further, it was observed that the large and small farmers had more extent of adoption than marginal farmers.

REFERENCES

Manhas, J.S., Rathore, G.S. and Dangi, K.L. 2003. Extent of adoption of improved practices of cotton cultivation by the farmers. *Rajasthan Journal of Extension education* **8**: 77-80.

Meti S.K. and Hanchinwal, S.N. 1995. Adoption of dry land technologies recommended for cotton crop. *Maharashtra Journal of extension education* **14** : 55-58.

Thalor, P.K. 2004. Impact of training programmes in adoption and knowledge about organic farming practices in wheat and cotton cultivation among the farmers of Shri Ganganagar District of Rajasthan. M.Sc. Thesis submitted to Maharana Pratap University of Agriculture and Technology, Udaipur, Rajasthan.

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TRAINING MODULES FOR FENNEL CULTIVATORS IN SIROHI DISTRICT OF RAJASTHAN

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ABSTRACT

This study was conducted in Abu Road and Reodar tehsil of Sirohi district of Rajasthan. Total 240 respondents viz. marginal, small & large farmers were interviewed for this study. Based on research finding, discussion with the farmers and consultation with the subject matter specialists and extension workers a few of training modules for enhancing technical competency in fennel cultivation have been suggested. Training for knowledge enhancement of fennel cultivators, scientific nursery raising, harvesting and drying techniques and post harvest technology for fennel cultivator modules were suggested to increase fennel production in the area.

INTRODUCTION

Seed spices are mainly cultivated in the state of Rajasthan and Gujarat. Among these coriander, fennel and fenugreek are cultivated on sizeable acreage as compared to other spices. Fennel is an important commercial cash crop of arid and semi arid region. In the state it is largely grown in the district Sirohi, Pali, Jalore, Ajmer and Tonk.

Fennel is a cash crop in Sirohi district. Looking to the higher market price year wise and area under fennel cultivation is continuously increasing but farmers are unaware about new technology, so they are not getting maximum potential yield. Reason behind is lack of knowledge about improved package of practices and skill to use this practices in field conditions. As training plays a very vital role in developing the confidence for adoption of any technology because it improves the knowledge and skill in particular aspects and makes easy to understand the technology. Hence keeping in view this study was conducted with the objective "To suggest suitable training modules for enhancing technical competency in the fennel cultivators".

RESEARCH METHODOLOGY

The present study was conducted in two tehsils namely Abu Road and Reoder of Sirohi district of Rajasthan. These two tehsils were purposely selected on the basis of maximum area under fennel cultivation. Similarly four villages from each tehsil were selected on the basis of maximum area under this crop. To select respondents, a comprehensive list of all the fennel growers of selected villages was prepared with the help of Gram patwaries and agricultural supervisors. The listed farmers of each village were categorized into three categories namely marginal (<1 ha land), small (1-2 ha land) and large (>2 ha land). Then a proportionate sample from each category was drawn randomly to have a total sample size of 240 fennel growers. Based on research findings, discussion with the farmers and consultation with subject matter specialist and extension workers a few training modules for enhancing technical competency in fennel cultivators have been suggested.

RESULTS AND DISCUSSION

Fennel practices were divided into three sub areas and training progrmmes were formulated accordingly:

1. Training module for knowledge enhancement of fennel cultivators
2. Training modules for skill enhancement of fennel cultivators
3. Training module for post harvest technology for fennel cultivators

1. Training module for knowledge enhancement of fennel cultivators

Title: Training for knowledge enhancement of fennel cultivators

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Duration: 3 days

Trainees: 25, Fennel Cultivators

General objectives:

- To acquaint the farmers with the latest high yielding varieties.
- To know about fertilizer management.
- To improve the knowledge and upgrade the technical skill on plant protection measures.

Specific objectives:

By the end of this training session, the farmers will be able to:

- Know the high yielding varieties, their characteristics and yield level.
- Use proper method of fertilizer application
- Identify insect, pest and diseases of fennel and their control measures.

2. Training modules for skill enhancement of fennel cultivators

Title: Scientific nursery raising, harvesting and drying techniques

Duration: 3 days

Number of participants: 20

Trainees: Fennel Cultivators

General objectives:

By the end of this training session, the farmers will be able to:

- Improve the skill in scientific raising of nursery
- Prepare seedling in summer season.

Table 1. Training for knowledge enhancement of fennel cultivators

(n=240)

S. No.	Content	Extension teaching methods recommended	AV aids recommended
1.	Losses due to insect pest and disease	Judicious use of different instructional strategies like lecture group discussion, panel discussion, role play, case study	CD video film Photographs
2.	Identification of insect pest		
3.	Character of different disease		
4.	Control measures of different insect pests		
5.	Control measures of different diseases		
6.	Integrated pest management		
7.	Importance of HYV		
8.	Production technology for fennel cultivation		
9.	Nutrient management in fennel		
10.	Field visit to progressive farmers field, ARS		

Table 2. Scientific nursery raising, harvesting and drying technique

S. No.	Content	Extension teaching methods recommended	AV aids recommended
1.	Importance of nursery	lecture method demons- tration, group discussion, panel discussion, role play, case study	CD video film Photographs
2.	Lay out of raised bed nursery for fennel		
3.	Steps involved in raising nursery		
4.	Soil treatment sowing seed, seed treatment		
5.	Selection of umbels and harvesting		
6.	Appropriate stage for chewing fennel		
7.	Different drying method		
8.	Exposure visit to farmers field		

- Competency in right method of harvesting umbels at different stages.
- Competency in drying process of fennel.

3. Training module for post harvest technology for fennel cultivators

Title: Post harvest technology for fennel cultivators

Duration: 5 days

Number of participants: 25

Trainees: Fennel Cultivators (priority gives to large farmers)

General objectives:

- Know the importance of value addition.
- Acquaint about various post harvest technology.
- Learn about parameters of export quality.
- Learn about processing, grading and packaging of fennel.
- Know about marketing.

Specific objectives:

By the end of this training session, the farmers will be able to:

- Know the importance of value addition.
- Understand various post harvest technology like shade drying, threshing, grading and packaging.
- Learn various quality parameters for export purpose.
- Have the knowledge of different equipments and procedures.
- Aware about the marketing.

CONCLUSION

The study concludes that training for knowledge enhancement of fennel cultivators, scientific raising of nursery, harvesting and drying technique and post harvest technology for fennel cultivators were the training modules which are being suggested here may be adopted by the Government and concerned agencies for increasing the technical competency in the fennel cultivators.

Table 3. Post harvest technology for fennel cultivators

S. No.	Content	Extension teaching methods recommended	AV aids recommended
1.	Importance of value addition	Lecture, group discussion,	CD video film
2.	Post harvest technology	role play, success story,	Photographs
3.	Threshing and drying	field visit	
4.	Method of drying of umbels		
5.	Grading packaging		
6.	Quality parameters for export purpose		
7.	Colour texture, size of grains ripeness		
8.	Grading, packing processing equipment		
9.	Certification standards for exports		
10.	Exposure visit to farmers spices mandi, agriculture college, CTAE, Udaipur for drying equipment		

REFERENCES

Dangi, R. and Bairathi, R. 2007. Training Needs of opium growers. *Raj. J. Extn. Edu.* **14**: 127-131.

Sharma, C. and Sisodia, S.S. 2005. Training needs of maize and wheat production technology in watershed area. *Raj. J. Extn. Edu.* **12-13**: 67-70.

Singh, M., Mishra, S. and Rani, S. 2002. Training needs of women in agriculture. *Ind. J. of Extn. Edu.* **38** (1&2): 114-116.

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IMPACT OF TRAINING PROGRAMMES ON FARMERS ORGANISED BY KVKs DURING THE FOLLOW-UP YEARS

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ABSTRACT

The study was planned around Krishi Vigyan Kendras functioning in Haryana state. Three KVKs namely Karnal, Hissar and Rewari were selected purposely. Ten trainers from each KVKs and Sixty trainees from chosen course were selected as respondents for present study. Questionnaire was used to elicit data from the respondents and collected information was subjected to appropriate statistical analysis. The study indicated that the mean score of adoption of suggested technologies by the farmers was found to be significant in wheat, fodder and dairy farming. Most of the farmers had favorable attitude towards training programme.

INTRODUCTION

The KVKs have been formed as first line training institutes for the flow of agricultural technologies among the farmers through work experience. One of the ways of judging it is that innovations are actually tried under farm situation after learning from the kendras. In this study an effort has been made to assess the impact of training programmmes on farmers organized by KVKs during the follow-up year.The impact of training programme has been judged in terms of following components:

i) Knowledge level of farmers on demonstrated technologies
ii) Adoption level of farmers on demonstrated technologies and
iii) Attitude of farmers towards training programmes

RESEARCH METHODOLOGY

The study was conducted in State of Haryana, 3 KVKs were purposely selected from the total KVKs functioning in the state. They were selected on the basis of their year if establishment, good performance record and one each from ICAR, University and NGO. As per the laid criteria the following KVKs were finally selected

i) KVK,NDRI (ICAR) Karnal (establishment year 1976)
ii) KVK,Sadalpur, CSSHAU, Hissar (establishment year 1989)
iii) KVK,Rampura (NGO), Rewari (establishment year 1984)

The selection of courses for this study was done based on their utility and wider applicability among farmer respondents. Selected course represented different important subject Matter areas of Wheat Crop, Fodder Crop and dairy farming. A Sample of 60 members representing the sample of each KVK from all subject matter areas were selected for the study.

RESULTS AND DISCUSSION

Impact of training programmes on level of knowledge of farmers of follow-up year on demonstrated technologies

The process of transformation of wheat farming, fodder farming and dairy farming with intensive application of scientific techniques has been in the progress. Knowledge plays a key role in proper management and application of the resources available with the farming community. It was felt necessary to measure the knowledge level of farmers who attended the training programme at least one year back from the KVKs.

Table 1. Knowledge level of farmers of follow-up year on demonstrated technologies in wheat farming

S. No.	Categories	Frequency	Percentage	Mean	S.D
1.	Low (<10)	9	15.00	13.80	2.87
2.	Medium (11 to 16)	39	65.00		
3.	High (>17)	12	20.00		

Majority of the farmers were in the medium knowledge level. In other words, most of the farmers

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retained knowledge reasonably well even after one year of training. The methods of imparting knowledge to farmers in wheat training were, therefore, adequate.

Table 2. knowledge level of farmers of follow-up year on demonstrated technologies in berseem fodder farming.

S. No.	Categories	Frequency	Percentage	Mean	S.D
1.	Low (<6)	14	23.33	8.66	2.06
2.	Medium (7 to 11)	40	66.67		
3.	High (>12)	6	10.00		

A careful look at the figure in Table 2 exhibits that largest number of respondents had medium level of knowledge (66.67 per cent) in berseem fodder farming after one year of training programme.

It was good achievement for trainers that farmers retained knowledge at medium level even after one year of training.

Table 3. knowledge level of farmers of follow-up year on demonstrated technologies in Lucerne fodder farming

S. No.	Categories	Frequency	Percentage	Mean	S.D
1.	Low (<7)	9	15.00	9.66	2.01
2.	Medium (8 to 11)	40	66.67		
3.	High (>12)	11	18.33		

A quick glance at the figures in Table 3 clearly shows that majority of the respondents had medium level of knowledge scores (66.67 per cent) in the area of Lucerne fodder farming after one year of training programme.

Whereas impact of training was quite obvious in Lucerne fodder farming, there was a scope for improvement.

Table 4. Knowledge level of farmers of follow-up year on demonstrated technologies in oat fodder farming

S. No.	Categories	Frequency	Percentage	Mean	S.D
1.	Low (<4)	11	18.33	6.01	1.47
2.	Medium (5 to 7)	36	60.00		
3.	High (>8)	13	21.67		

A perusal of the data in Table 4 reveals that majority of the respondents (60 per cent) had medium level of knowledge in the area of oat fodder farming , after training programme.

The impact of training programme was quite obvious. The farmers remembered quite well what they had learnt in last year's training. To make the situation improve further, there is a need to use practical field oriented methods and encourage learning by doing.

Table 5. Knowledge level of farmers of follow-up year on demonstrated technologies in jowar farming

S. No.	Categories	Frequency	Percentage	Mean	S.D
1.	Low (<5)	16	26.67	7.06	1.89
2.	Medium (6 to 9)	36	60.00		
3.	High (>10)	8	13.33		

A careful look into the figures in Table 5 exhibits that largest number of respondents (68.33) had medium level of knowledge in the are of dairy farming after training programme.

Since the farmers had an opportunity to apply in field-situation the technologies learnt through training, it was considered appropriate to determine the extent to which the information imparted to them have been actually applied in the field situation.

Table 6. Adoption of technologies by wheat farmers of followup year

S. No.	Categories	Frequency	Percentage	Mean	S.D
1.	Low (<8)	15	25.00	9.45	1.61
2.	Medium (7 to 11)	37	61.67		
3.	High (>12)	8	13.33		

A perusal of data in Table 6 reveal that majority of the respondents (61.67 per cent) had medium level of adoption in the area of wheat farming after one year of training programme.

It was seen that the farmers who were trained a year earlier could apply a large number of technologies of wheat in actual field situation. The

technologies which could not be adopted were either high cost or technical to be followed by the farmers. Non-availability of inputs in time was another reason for Non-adoption of some of the technologies.

Table 7. Adoption of technologies by fodder farmers of follow-up year

S. No.	Categories	Frequency	Percentage	Mean	S.D
1.	Low (<4)	15	25.00	6.31	1.91
2.	Medium (5 to 8)	31	51.67		
3.	High (>9)	14	23.33		

A look at the figures in Table 7 exhibits that more than half of respondents (51.67 per cent)had medium level of adoption in the area of fodder farming after one year of training programme.

The situation was not very encouraging. It was because of varied reason that technologies related to fodder could not be adopted by farmers. the reason mentioned were non-availability of inputs in time, poor resources and lack of motivation. Training style was also not upto the mark.

Table 8. Adoption of technologies by dairy farmers of follow-up year

S. No.	Categories	Frequency	Percentage	Mean	S.D
1.	Low (<36)	11	18.33	41.01	4.75
2.	Medium (37 to 46)	35	58.34		
3.	High (>46)	14	23.33		

A quick glance at the figures in Table 8 Clearly shows that more than half of the respondents (58.34 per cent) had medium level of adoption in the area of dairy farming after one year training programme.

The adoption level of dairy farmers on new technologies was fairly high. The technologies which were simple, low cost and useful were adopted by dairy farmers. Dairy farmers wanted that the technologies given to them should be repeated several times in the training and some handouts should be also given for future reference.

Table 9. Impact of training programme on attitude of wheat farmers of follow-up year

S. No.	Categories	Frequency	Percentage	Mean	S.D
1.	Favorable	35	58.33	30.01	3.20
2.	Unfavorable	25	41.67		

A quick glance at the figures in Table 9 clearly shows that most of the farmers (58.33 per cent) had favorable attitude towards training programmes.

The wheat growing farmers had reasonably good attitude towards training programmes. They felt that after undergoing training they had become more positive towards wheat cultivation . The modern techniques which they learnt in the last year training made it clear to them that if they followed new technologies wheat cultivation can be highly profitable. After trying out some of the technologies in the field, their attitude became further positive. Those who did not have positive attitude felt that all the technologies suggested at training wre not for them. They gave reason such as high cost, non-availability of inputs or technologies being too technical. These findings tally with those of Kamalsen (1979) and Fulzele *et al.* (1995).

Table 10. Impact of training programmes on attitude of fodder growing farmers of follow-up year

S. No.	Categories	Frequency	Percentage	Mean	S.D
1.	Favorable	38	63.33	34.73	2.60
2.	Unfavorable	22	36.67		

It is evident from the data presented in Table 10 that a large number of the fodder growing farmers (63.33 per cent) had favorable attitude towards training programme, whereas rest of them had unfavorable attitude towards training programmes.

This should be noted that about a little more than one third had unfavourable attitude towards training programmes. This had happened because the trainers did not take care of some practical difficulties such as making the inputs available and high cost of innovations.

Table 11. impact of training programmes on attitude of dairy farmers of follow-up year.

S. No.	Categories	Frequency	Percentage	Mean	S.D
1.	Favorable	32	53.33	37.38	2.45
2.	Unfavorable	28	46.67		

A quick glance at the figures in Table 11 shows that a little more than half of the dairy farmers (53.33 per cent) had favorable attitude towards training programme and rest had unfavorable attitude.

These findings tally with those of Kamalsen (1979), Babu and Singh (1986) and Fulzele (1986). It is obvious that more efforts needs to be done to bring all the dairy farmers under the favourable attitude category. For this trainers should take the responsibility of arranging input, suggesting low cost technologies and following proper follow-up procedure.

CONCLUSION

It may be concluded that majority of the respondents had medium level of adoption of the demonstrated technology by KVK in relation to wheat, fodder and dairy farming. Farmers were found adopting improved package of practices. The majority of farmers had favorable attitude in relation to technology demonstrated by KVK during their training programmes. In view of the significance attached to the KVK as an Instrument to transfer the technology and in a bit to reduce the ever widening gap between the supply and demand of food and milk in the country. It further provides a clue to manipulate appropriately the factors which have positive association with trainees and trainers performance and diminish the influence of the negative factors.

REFERENCES

Anil Kumar, A., Ramachandran, M. and Nair, N.K. 1994. Effectiveness of training programmes for agricultural assistant. *Maha. J.Extn.Edn.* **13**(3): 163

Anantharam, M. and Ramanathan, S. 1990. Impact of training programme on tuber crops. *Indian J.Extn. Edn.* **26**(1&2): 103-106

Babu, A.R. and Singh, R. P. 1986. Training of young farmers towards manpower development in agriculture. *Indian J. Extn.Edn.* **22**(3&4): 48-53

Chahun, K.N.K., Singh, R.N. and Singh, M.P. 1990. Impact of training on knowledge of improved agricultural Practices of Arid Zone. *Indian J.Extn. Edn.* **26**(3&4): 64-66

Fulzele, R.M. 1986. Multidimensional analysis of training programme of Krishi Vigyan Kendra. Unpublished Ph.D. thesis, Kurikshetra University, NDRI, Karnal.

Fulzele, R.M., Chand, Ram, Malik, B.S. and Chauhan, J.P.S. 1995. A study of differential impact of KVK training programme on dairy farmers of different states. Staff Research Council Project Report, NDRI, Karnal

ICAR 1996. Agenda note for the Parliamentary Consulative Committee of the Ministary of Agriculture on KVKs, New Delhi, PP : 10-12

Kamalsen, P.S. 1971. A Study on the effectiveness of one day farmers training camp under high yielding varieties programme (HYVP) in Trivandaram district, Kerala. Unpublished M. Sc. Thesis, Tamilnadu Agricultural University, Coimbatore.

Raji, R.J., Muthiah, M. and Arunachalam, R. 1995-96. Relationship between knowledge and adoption behavior of trained and untrained farmers with their socio-personal characterstics. *Indian J. Extn.Edn.* **6&7** (4&5): 1304-1306.

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ADOPTION OF RECOMMENDED MUSHROOM PRODUCTION TECHNOLOGY BY THE FARMERS IN JAMMU AND KASHMIR

Poonam Sharma* and Parveen Kumar**

ABSTRACT

The present study was conducted in two Panchayats; Ranbir Singh Pura and Bishnah of District Jammu of the state of Jammu and Kashmir. The objective was to find out the adoption of recommended mushroom production technologies. The study concluded that the majority of the respondents (50.83%) were medium adopters, 26.67 per cent were low adopters and only 22.50 per cent of the respondents were high adopters of recommended technology of mushroom cultivation. Among the various technologies the most adopted technology was the recommended dose of water for making compost (96.67%) and dipping of mushroom in brine solution was not adopted at all.

INTRODUCTION

Mushroom cultivation is considered as one of the promising enterprises capable of recycling agriculture waste and generating employment opportunities. Mushroom is horticultural cash crop grown worldwide for income generation on small as well as large scale. It is recognized as distinct source of vegetable protein and is recommended by FAO as food that contributes to the protein nutrition of developing countries which depends largely on cereals. As a food, the nutritional value of mushroom lies between meat and vegetables. Experiments proved that mushroom is well suited to supplement diets, which lack protein and in sense has rightly been called "vegetable meat". Therefore, there is an urgent need to increase the production of this crop through adoption of recommended technology by the farmers. The present study was undertaken with objective to find out the extent of adoption of mushroom production technology by the farmers.

RESEARCH METHODOLOGY

The present study was conducted in two Panchayats Ranbir Singh Pura and Bishnah of District Jammu of the state of Jammu and Kashmir. The Panchayats were selected purposively because of the maximum number of mushroom growers in these two Panchayats. From these two Panchayats, eight villages having maximum number of respondents were finally selected and from them a sample of 120 farmers was taken by the method of stratified random sampling using proportional allocation. Based on the adoption scores obtained by farmers, the mean score (23.43) and standard deviation (6.93) were computed for the purpose of classifying the adoption level into three categories namely, low, medium and high. The extent of adoption of different recommended technology of Mushroom production was also analyzed separately under five major aspects, viz., general aspects, composting, spawning intercultural operations and harvesting and post harvesting Technology.

RESULTS AND DISCUSSION

Table 1 reveals that majority (50.83) of the respondents belonged to medium adoption categories with respect to recommended mushroom production technology. The results are somewhat in line with the finding of Kumar and Punjabi (1997).

Table 1. Distribution of respondents on the basis of different adoption categories

n=120

S.No.	Categories	No. of respon-dents	%
1.	Low (below 18.50)	32	26.67
2.	Medium (18.50-32.35)	61	50.83
3.	High (above 32.35)	27	22.50

Mean=25.43, S.D=6.93

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Table 2. Extent of Adoption of General aspects of Mushroom production Technology by the Farmers

No.	Practices	MPS	Rank
1.	Use of recommended varieties of Mushroom	18.33	II
2.	Maintenance of required temperature for higher production	3.33	III
3.	Prepare dark rooms/sheds as per recommended	37.08	I

The data incorporated in the table 2 shows that the extent of adoption was highest for preparing the dark rooms (MPS 37.08). This was followed by growing of recommended varieties (MPS 18.23) and maintaining required temperature (MPS 3.33).

The data presented in table 3 show that majority of the respondents adopted the recommended amount of water for preparing compost (MPS 96.67). The reason for this might be that the respondents knew that water is the primary need of composting and without recommended amount of water, good quality of compost cannot be prepared. The use of recommended chemicals in compost making (MPS 5.42) was ranked ninth. This might be due to the lack of awareness regarding chemicals or the respondents being unable to purchase these chemicals.

Table 3. Extent of adoption of compositing practices by the respondents.

No.	Practices	MPS	Rank
1.	Use of recommended substrate	74.17	V
2.	Use of recommended chemicals in compost making	5.42	IX
3.	The methods recommended chemicals in compost making	64.17	VI
4.	Use of mould & insect free substrate	81.67	III
5.	Use of recommended proportion of compost ingredients	17.92	VIII
6.	Use of recommended fumigants	22.08	VIII
7.	Making substrate sufficiently wet before composting	88.33	II
8.	Recommended quantity of water during preparation	96.67	I
9.	Recommended procedure of preparing compost	77.92	IV

Table 4. Extent of adoption of spawning practices by the respondents

No.	Practices	MPS	Rank
1.	Recommended spawn rate for compost inoculation	82.08	II
2.	Use of quality spawns	60.44	IV
3.	The methods of spawning	78.45	III
4.	Depth of spawn placement	49.18	V
5.	Polythene bags or wooden boxes for filling inoculated compost	88.75	I

Table 4 depicts that majority of respondents had used polythene bags or wooden boxes for filing the spawn inoculated compost (MPS 88.75). It was ranked first and majority of them were also found using recommended spawn rate (MPS 82.02). This was followed by adopting recommended method (MPS 78.45). It was also noted that extent of adoption was lowest for depth of spawn placement (MPS 49.18).

Table 5. Extent of adoption of intercultural operations by the respondents

No.	Practices	MPS	Rank
1.	Hygienic conditions for growing mushroom	50.42	III
2.	Methods & number of irrigations	87.50	II
3.	Chemicals for plants protection	6.25	IV
4.	Uprooting of off-type plants from the unit regularly	92.50	I

The data incorporated in the table 5 reveals that respondents had highest adoption in the aspect of uprooting the off-type plants from the mushroom unit (MPS 92.50). This was followed by recommended method and number of irrigation in the unit with MPS 89.50. It is alarming indeed that very few respondents had adopted chemicals for plant protection. The reason for such a low adoption rate for this was that they were not available to them. These results are somewhat in confirmation with Dhar (1994) who reported that the conditions under which small and marginal farmers grew Mushroom were unhygienic.

Table 6. Extent of adoption of harvesting and post harvest technology by the respondents

No.	Practices	MPS	Rank
1.	Harvesting at appropriate stage	51.25	II
2.	Methods of harvesting	57.10	I
3.	Grading of harvested mushroom	19.17	III
4.	Sun drying of mushroom	9.58	IV
5.	Dipping of mushroom in brine solution	0.00	VI
6.	Picking/Canning of mushroom	7.50	V

It can be seen from the Table 6 that the selected farmers had highest adoption of the recommended method of harvesting with MPS 57.10. It was followed by Harvesting at appropriate stage (MPS 51.25) and grading of harvested mushrooms (MPS 19.17). None of the respondents was found using practice of dipping mushroom in brine solution.

CONCLUSION

Based on findings, it could be concluded that the majority of the respondents (50.83 per cent) were medium adopters, 26.67 per cent were low adopters and only 22.50 per cent of the respondents were high adopters of recommended technology of mushroom cultivation. It may be due to the fact that various extension activities like demonstration, training etc. are frequently organized by the extension field functionaries in the village which may have helped in convincing the farmers about the recommended technology of mushroom cultivation and resulted in increasing the adoption of recommended technology by farmers. But still there is need to convert these medium adopters into high adopters. Therefore all the essential supplies and services for transfer of technology through extension activities should be made available to the farmers and intensive efforts to convince the farmers about recommended technology of mushroom are needed.

REFERENCES

Dhar, B.L. 1999. The Indian mushroom industry: a cross sectional view National Centre for Mushroom Research and training Solan (H.P.), No: 588: 17-18.

Kumar, S. and Punjabi, N.K. 1997. Adoption of turmeric production technology by farmers of Jhadol panchayat samiti of Udaipur District of Rajasthan. M. Sc Agriculture Thesis, RAU Bikaner Campus, Udaipur.

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STATISTICAL ASSESSMENT OF SOCIO-ECONOMIC DEVELOPMENT IN RAJASTHAN

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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 socio-economic development, 11 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 0.765, 0.771and 0.798 respectively. The difference between the periods 1980-81 & 1996-97 and 1990-91 & 1996-97 was found significant whereas difference in socio-economic development between the year 1980-81 and 1990-91 was observed to be non-significant.

INTRODUCTION

Rajasthan is the largest State in the Indian Union with a geographical area of 3.42 lakh sq. kms.. Rajasthan being a predominantly agrarian State, 77 per cent of the population is living in rural areas and about 70 per cent depends on agriculture as source of livelihood. Agriculture plays a vital role in the economic development of the State. Agriculture, the single largest sector of the economy contributes about 50 per cent of State domestic product and employs about 60 per cent of labour force. The geographical features of Rajasthan are dominated by the Aravalli range which divide the State into two distinct zones.

Socio-economic development can be identified with the improvement in standard of living which has remained basic objective of India's planning. Socio-economic development in a region is related to the facilities of education, transport, communication, electricity, financial institutions etc. Developmental programmes in various fields were taken up in the country in a planned way through various five year plans with the main objective of enhancing the quality of life of general masses by providing the basic necessities of life as well as effecting improvement in their social and economic well-being. In India, Rajasthan is considered as an economically backward state. However, all the districts of the state are not at the same level of development. Some districts are more developed while others are less developed or underdeveloped.

Socio-economic development cannot be fully measured by any single indicator. Moreover, a number of indicators when analysed individually, do not provide an integrated and comprehensible picture of reality. Hence there is need for building up of a composite index of socio-economic development based on various indicators combined in an optimum manner. Therefore the present study was conducted with the following specific objectives:

(i) To construct the various indices of socio-economic development for each district of Rajasthan and classify the districts on the basis of their development.

(ii) To examine the significance of overall change in socio-economic development indices over three points of time.

RESEARCH METHODOLOGY

In order to assess the socio-economic 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 in spite of 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

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related to new districts were not available for all the three selected points of time.

To measure the socio-economic development, 11 indicators were identified after reviewing the literature as under:

(i) Density of population per square km. of area.

(ii) Urban population.

(iii) Percentage of main workers to total population.

(iv) Percentage literacy.

(v) Different type of vehicles registered.

(vi) Per capita deposit in scheduled banks.

(vii) Number of commercial vehicles per lakh of population.

(viii) Number of co-operative societies per lakh of population.

(ix) Number villages connected to metalled roads.

(x) Percentage villages electrified.

(xi) Average population per bank (in '000).

The composite indices for various districts for socio-economic 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 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 socio-economic development for each district of Rajasthan

This section describes the construction of indices of socio-economic 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 development indices.

Perusal of Table 1 reveals that out of 26 districts included in the analysis for the year 1980-81, the district Jaipur stood first in the order of socio-economic development closely followed by district Jodhpur, Ganganagar, Ajmer and Kota. The districts namely Sirohi, Dungarpur, Jalore, Barmer and Jaisalmer obtained the last five ranks respectively. The composite indices varied from 0.312 to 0.898 during this period with mean index 0.765 and CV 15.647 per cent.

Almost similar findings were revealed by Bhargava (1987) who utilised 11 variables to compute composite index of overall economic development in Rajasthan for the year 1981. The findings indicated that district Jaipur, Kota, Ajmer, Bhilwara and Sirohi occupied the first five positions and Banswara, Tonk, Churu, Jaisalmer and Barmer districts obtained the last five ranks respectively.

It can be seen from Table 1 that the district Jaipur again stood first in the order of socio-economic development followed by Ajmer, Jodhpur, Kota and Ganganagar districts. Banswara, Jhalawar, Jalore, Jaisalmer and Sawai Madhopur districts obtained the last five ranks in socio-economic development during the period 1990-91. The value of composite indices varied from 0.434 to 0.964 with mean index of socio-economic development as 0.771 and CV 15.133 per cent.

Further the table depicts that the district Jaipur ranked first in the order of socio-economic development during the period 1996-97 also, followed by Ajmer, Jodhpur, Ganganagar and Kota. The districts Dungarpur, Jalore, Barmer, Jhunjhunu and Jaisalmer obtained the last five ranks respectively in the ranking of socio-economic development. Two districts had shown major changes in their ranking this year over the year 1990-91. The district Sawai Madhopur improved its ranking from twenty sixth to fourteenth while Jhunjhunu district moved down from thirteenth to twenty third rank. The value of composite indices varied from 0.490 to 0.976 with mean index 0.798 and CV 12.891 per cent.

Table 1 : Composite indices of Socio-economic development of each district for three points of time

District		1980-81		1990-91		1996-97	
		CI	Rank	CI	Rank	CI	Rank
1.	Ajmer	0.646	4	0.601	2	0.642	2
2.	Alwar	0.718	8	0.671	6	0.708	6
3.	Banswara	0.853	21	0.867	22	0.877	21
4.	Barmer	0.880	25	0.843	19	0.894	24
5.	Bharatpur	0.708	6	0.673	7	0.772	8
6.	Bhilwara	0.754	9	0.745	9	0.774	9
7.	Bikaner	0.774	11	0.758	10	0.802	11
8.	Bundi	0.829	17	0.840	18	0.872	20
9.	Chittorgarh	0.780	12	0.767	11	0.787	10
10.	Churu	0.849	20	0.820	16	0.847	16
11.	Dungarpur	0.864	23	0.857	21	0.878	22
12.	Ganganagar	0.645	3	0.670	5	0.689	4
13.	Jaipur	0.312	1	0.434	1	0.490	1
14.	Jaisalmer	0.898	26	0.952	25	0.976	26
15.	Jalore	0.877	24	0.875	24	0.879	23
16.	Jhalawar	0.830	18	0.861	23	0.866	18
17.	Jhunjhunu	0.757	10	0.786	13	0.896	25
18.	Jodhpur	0.641	2	0.623	3	0.669	3
19.	Kota	0.685	5	0.668	4	0.705	5
20.	Nagaur	0.795	15	0.792	14	0.810	12
21.	Pali	0.787	13	0.778	12	0.811	13
22.	Sawai Madhopur	0.794	14	0.964	26	0.830	14
23.	Sikar	0.805	16	0.803	15	0.836	15
24.	Sirohi	0.860	22	0.853	20	0.870	19
25.	Tonk	0.834	19	0.837	17	0.852	17
26.	Udaipur	0.713	7	0.708	8	0.723	7
Mean	0.765		0.771		0.798		
S.D.	0.120		0.117		0.103		
CV	15.647		15.133		12.891		

CI = Composite index

II. Significance of overall change in socio-economic development indices over three points of time

Having obtained the measure of 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. Data in Table 2 illustrate the composite indices of socio-economic development of each district and their ranking over three points of time. The rankings over different points of time have been examined by the slippage test proposed by Rai (1987) and the value of test statistic M was worked out to be 29.85 which was significant at 1 per cent level of

significance. This indicates the rejection of null hypothesis of no change in development in districts over time. It was concluded that the level of socio-economic development was significantly different over three points of time. Since the null hypothesis was rejected, multiple comparisons to determine the significance of difference in socio-economic development over individual pairs of time periods i.e. t_1 and t_2, t_1 and t_3, and t_2 and t_3 were made. Following differences of sums of ranks were obtained

$$|R_{t1} - R_{t2}| = 10$$

$$|R_{t1} - R_{t3}| = 28$$

$$|R_{t2} - R_{t3}| = 38$$

The critical difference (C.D.) at 1 per cent level of significance was computed as 21.27. The difference between the periods t_1 and t_3, and t_2 and t_3 was

Table 2. Ranking of composite indices of socio-economic 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	0.646	3	0.601	1	0.642	2
Alwar	0.718	3	0.671	1	0.708	2
Banswara	0.853	1	0.876	2	0.877	3
Barmer	0.880	2	0.843	1	0.894	3
Bharatpur	0.708	2	0.673	1	0.772	3
Bhilwara	0.754	2	0.745	1	0.774	3
Bikaner	0.774	2	0.758	1	0.802	3
Bundi	0.829	1	0.840	2	0.872	3
Chittorgarh	0.780	2	0.767	1	0.787	3
Churu	0.849	3	0.820	1	0.847	2
Dungarpur	0.864	2	0.857	1	0.878	3
Ganganagar	0.645	1	0.670	2	0.689	3
Jaipur	0.312	1	0.434	2	0.490	3
Jaisalmer	0.898	1	0.952	2	0.976	3
Jalore	0.877	2	0.875	1	0.879	3
Jhalawar	0.830	1	0.861	2	0.866	3
Jhunjhunu	0.757	1	0.786	2	0.896	3
Jodhpur	0.641	2	0.623	1	0.669	3
Kota	0.685	2	0.668	1	0.705	3
Nagaur	0.795	2	0.792	1	0.810	3
Pali	0.787	2	0.778	1	0.811	3
Sawai Madhopur	0.794	1	0.964	3	0.830	2
Sikar	0.805	2	0.803	1	0.836	3
Sirohi	0.860	2	0.853	1	0.870	3
Tonk	0.834	1	0.837	2	0.852	3
Udaipur	0.713	2	0.708	1	0.723	3
Rank Total (R_i)		46		36		74
Mean	0.765		0.771		0.798	

found significant whereas difference between socio-economic development in the period t_1 and t_2 was observed to be non-significant.

The perusal of the table further shows that mean value of composite index has increased from 0.765 in the year 1980-81 to 0.798 in the year 1996-97. This indicates that level of socio-economic development has gone down in the successive years. It can be said that development programmes undertaken by the government for the socio-economic development could not bring the desired change. The efforts made by the government might have been nullified by the rapidly growing population.

CONCLUSION

(i) For the selected points of time, Jaipur, Jodhpur, Ajmer, Ganganagar, Kota and Alwar districts were found to be better developed in comparison with other districts. Jaisalmer, Jhunjhunu, Barmer, Jalore, Dungarpur and Banswara were identified as poorly developed in socio-economic sector.

(ii) The mean composite index increased from 0.765 in the year 1980-81 to 0.771 in the year 1990-91 and 0.798 in the year 1996-97 which indicates that level of socio-economic development has gone down during these periods.

REFERENCES

Bhargava, P. 1987. Regional Economic Planning in India. Twenty-First Century Publishers, Meerut, pp. 221-223.

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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CONSTRAINTS IN EFFECTIVE TRANSFER OF TECHNOLOGY TO THE FARM WOMEN THROUGH KVKs

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ABSTRACT

The major constraint for low agricultural production in India is considered to be lack of transfer of technology from the research laboratories to its ultimate users, which is the farm household. Furthermore, it is not possible for the farmers to increase their size of land holding. Rather, it is going on decreasing day by day, due to increasing population and continuous fragmentation of land. Hence, the only solution to the above problem is to conduct more practical researches and to provide intensive and frequent exposure to the farming community for adopting new technology which can help them to obtain higher production per unit area. The researcher in this study has tried to find out the constraints in effective transfer of technology to the farm women through KVKs. It was found that the scientists perceived "Lack of Motivation among the farm women" while the farm women perceived "Lack of resources and inputs" as major constraints in the effective implementation of KVK activities.

INTRODUCTION

The Krishi Vigyan Kendras continue to play a vital role in carrying out the latest technology from the laboratory to the fields and also feeding back the practical field problems to the laboratory for further research. Through the various important activities being carried out in these Kendras at the district, block and village level for imparting latest technology to the farmers and farm women, the latest technical knowhow is transferred from the research stations to the ultimate user, i.e., the farmer in a speedy way.

Hence, looking to the importance of the KVKs it is imperative that the role, organization and functions of these Kendras must be evaluated on scientific lines and suggests some measures to strengthen them. It is believed that scientist working at KVKs might have difference of opinion about the roles prescribed for them and the roles perceived by them. It is believed that the activities of the KVKs will increase the knowledge level of farm women and that will in increase their awareness and motivate them to work effectively. In current scenario, where a numbers of stakeholders are involving in agricultural extension, hence, opportunity to reach a greater number of farmers is increasing. Indian agriculture has an impressive long-term record of taking the country out of serious food shortages, given heavy reliance on its pluralistic extension system. In India, extension has a mixed record. At one side, it shows role in promoting productivity, sustainable resources use, and agricultural development (Singh, 1999), on other side, public extension has fallen short of expectations. Planning Commission (2008) narrated that the links between research, extension, and farmers are seen to be inadequate and uncoordinated. Extension has grown over last six decades and is traditionally funded, managed and delivered by the public sector. Indian agriculture is becoming more pluralistic in nature, where a large number of private sector firms and civil society extension service providers co-exist with this public extension system.

With these views in mind from the available literature, the present study was conducted to find out the constraints in effective transfer of technology to the farm women through KVKs with following objectives-

(i) To study the demographic characteristics of the farm women.

(ii) To study the personal Characteristics of KVK trainers.

(iii) Identification of various constraints faced by Subject Matter Specialists and farm women in transfer and adoption of recommend technologies.

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RESEARCH METHODOLOGY

Locale of the study & selection of samples

The study was conducted in Jodhpur district of Rajasthan. Jodhpur district comprises of total nine Panchayat Samities. Out of which two Panchayat Samities namely, Mandore and Luni were selected purposely, because these Panchayat Samities are under the working areas of Home Science programme of the KVK, Jodhpur. Out of these two Panchayat Samities, three villages from each Panchayat Samities were selected randomly. (Satlana, Madhopura and Luni from Luni Panchayat Samiti & Ghadav, Jipasani and Karvad from Mandore Panchayat Samiti).

A list of all the beneficiaries of the KVK was obtained from its office and fifteen farm women from each village were taken by simple random sampling technique. Thus the total farm women contacted were (15x6) 90. Also, 20 subject matter specialists from KVK, CAZRI as well as the SMS from the NGO who were instrumental in various programmes of KVK formed a part of the sample of the present investigation.

Thus the total sample comprised of (90+20) 110 respondents.

RESULTS AND DISCUSSION

Constraints in effective transfer of technology through KVK

The data in the Table 1 and 2 presents the constraints in effective transfer of technology by KVK as perceived by KVK trainers & farm women. Their responses were recorded against twelve aspects.

(i) As Perceived by KVK Trainers

It is evident from the Table 1 that "Lack of motivation among farm women" was ranked first important constraint by the KVK trainers in implementation of the KVK Programmes effectively. The next important constraint seemed to be "Lack of resources and inputs with farm women". "Specialists being used more as a journalist than extension personnel" & "Paucity of funds for extension work", were both considered to be the third most important constraints by the scientists followed by "More emphasis on table work" (60 percent), "Lack of training facilities at KVK" & "Lack of interpersonal relationships" (55 percent), "Lack of incentives and recognition to the scientists" (50 percent), "Inadequate technologies suited to farm women's conditions (45 percent), "Lack of transport facilities" (40 percent), "Lack of leadership at KVK (35 percent) and "political interference" (15 percent).

From the finding mentioned above, it may be stated that due to lack of suitable technologies, the farm women and scientist do not have the motivation to implement the programme effectively. There is Lack of resources and inputs with farm women which is coupled with Paucity of funds, Lack of interpersonal relationships, Lack of training facilities and transport facilities and thus leads to ineffective programme implementation. The above findings are in line with the findings of Bhatnagar and Singh (1973) and who found that Lack of resources, inadequate researches and interpersonal relationships are the various constraints often mentioned by the SMS in performing their roles.

(ii) As perceived by farm women

It is evident from the Table 2 that "Lack resources and input" was ranked first important constraint by the farm women in implementation of KVK programmes effectively. The next important constraint seemed to be "Specialist being used more as a journalist than as extension personnel", followed by "Lack of motivation" as third most important constraint. The other important constraints were ranked in the order as – "More emphasis on table work" (55.5%), "Paucity of funds" (50%), "Lack of leadership" (44.4%), "Lack of interpersonal relationship" (38.8%), "Lack of training facilities" (33.3%), "Inadequate technology suited to the farm women's conditions" (27.7%), "Lack of transport facilities" (16.6%), "Lack of incentives and recognition to scientist" (11.1%), and "Political interference" (0%).

From the findings mentioned above it can be said that due to lack of resources, inputs, motivation and recognition, the farm women do not participate in the effective implementation of KVK programmes. Lack of interpersonal relationships coupled with lack of transport and training facilities, lack or leadership

Table 1. Constraints in effective implementation of KVK programmes as perceived by KVK Trainers

n=20

S.No.	Type of Constraints	Number of Responses	Percentage of Responses	Rank Position
1.	Lack of interpersonal relationships	11	55	5
2.	Inadequate technologies suited to the farm women's conditions	9	45	7
3.	Lack of transport facilities	8	40	8
4.	Lack of resources and inputs with farm women	15	75	2
5.	Lack of motivation among farm women	18	90	1
6.	Lack of incentives and recognition to the scientists	10	50	6
7.	Lack of leadership at KVK	7	35	9
8.	Lack of training facilities at KVK	11	55	5
9.	Specialists being used more as a journalist than extension personnel	14	70	3
10.	Paucity of funds for extension work	14	70	3
11	More emphasis on table work	12	60	4
12.	Political interference	3	15	10

Table 2. Constraints in effective implementation of KVK programmes as perceived by farm women.

n=90

S.No.	Type of Constraints	Number of Responses	Percentage of Responses	Rank Position
1.	Lack of interpersonal relationships	35	38.88	7
2.	Inadequate technologies suited to the farm women's conditions	25	27.77	9
3.	Lack of transport facilities	15	16.66	10
4.	Lack of resources and inputs with farm women	65	72.22	1
5.	Lack of motivation among the farm women	55	11.11	3
6.	Lack of incentives and recognition to the scientists	10	11.11	11
7.	Lack of leadership at KVK	40	44.44	6
8.	Lack of training facilities at KVK	30	33.33	8
9.	Specialists being used more as a journalist than extension personnel	60	66.66	2
10.	Paucity of funds for extension work	45	50	5
11.	More emphasis on table work	50	55.55	4
12.	Political interference	3	0	12

and emphasis on table work lead to ineffective programme implementation. The findings are in line with the findings of Sharma (1985) who found that lack of proper implementation of programme, lack of awareness, no active participation of local people and lack of technical guidance are the important constraints in effective implementation of a programme.

CONCLUSION

Based on findings of the study, it can be concluded that the constraints perceived by KVK Trainers and farm women should be taken care by the planners for effective transfer of technology. The findings revealed that "Lack of motivation" was ranked first constraint by the scientists. While the farm women ranked "Lack of resources and inputs" as major constraints in the effective implementation of the programme. More programmes should be organized for various categories of farm women in the villages. For such training camps the extension personnel having firsthand knowledge should be invited from time to time so that the farm women as well as KVK trainers may develop confidence in their subject matter knowledge.

REFERENCES

Birner, R. and Anderson, J. 2007. How to make agricultural extension demand-driven? The case of India's agricultural extension policy. *Discussion Paper 00729*.Washington D.C., International Food Policy Research Institute.

Swanson, B.E. 2006. Extension strategies for poverty alleviation: lessons from China and India. *Journal of Agricultural Education and Extension* **12**(4): 285–299.

Department of Agriculture and Cooperation 2010. Ministry of Agriculture, Government of India: 2010. Guidelines for Modified support to State Extension programs for Extension Reforms scheme, June, 2010.

Singh, K. M., Swanson, Burton E., Jha, A. K. and Meena, M.S. 2012. Extension Reforms and Innovations in Technology Dissemination-The ATMA Model in India (October 30, 2012). (Available at http://dx.doi.org/10.2139/ssrn.2168642).

Singh, K.M; Meena, M.S; and Jha, A.K. 2011. Agricultural Innovations in India- Experiences of ATMA Model, Paper presented in International Conference on Innovative Approaches to Agricultural Knowledge Management: Global Extension Experiences from November 9-12, 2011 at NAAS New Delhi organized by International Society of Extension Education (INSEE).

Planning Commission, 2008. Eleventh Five Year Plan (2007-12).Vols. I & III, New Delhi. Government of India.

Singh. A.K. 1999. Agricultural extension: Impact and assessment. Jodhpur, India: AGROBIOS, INDIA.

Trivedi, G. 1963. Measurement and analysis of socio-economic status of rural families. Ph.D. Thesis, IARI, New Delhi.

Sharma, S.K. 1985. Attitude of farmers towards and constraints in rearing cross-bread animals in Jaipur district. M.Sc. (Ag.) Thesis, S.K.N. College of Agriculture, Jobner.

Bhatnagar, O.P. and Singh, K.N. 1973. Problems of Subject Matter Specialists. *IJEE* **9**(3&4): 131-134

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CONSTRAINTS FACED BY THE KVK FUNCTIONARIES IN DISSEMINATING THE FARM TECHNOLOGY

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ABSTRACT

Present study was conducted in Rajasthan, there are 42 KVKs. Out of these, KVK Jhunjhunu was selected purposely. Jhunjhunu KVK has been awarded at national level as the best KVK for the year 2004-05 by the ICAR in the year 2005-06 for effective and successful execution of KVK mandates and seed production programme. All the subject matter specialists and technical personnel working under the KVK were interviewed for measuring the constraints being faced by them in disseminating the farm technology. Most important constraints perceived by the kvk functionaries in disseminating farm technology were "Lack of technical staff" , "Lack of staff quarters" , "Paucity of budget" and "More emphasis on the table work" , where as "Lack of farmers hostel" and "Farmers themselves are not interested" were perceived least.

INTRODUCTION

The ICAR has established KVK all over country as an institutional innovation for application of agricultural science and technology on the farmers field with the help of a multidisciplinary team i.e. SMS. The KVK are playing strategic role in technology back stopping, knowledge management and advisory to the different stackholders like farmers, farm women, rural youths and extension personnel. The Krishi Vigyan Kendra is the district level farm science centre established by the Indian Council of Agricultural Research (ICAR) for speedy transfer of technology to the farmer's fields. It serves as the light house for rapid agricultural and rural development. They act as linkers between agricultural universities, research institutes and farmers. The aim of KVK is to reduce the timelag between generation of technology at the research institution and transfer to farmer's fields for increasing production, productivity and income from the allied sectors. The main purpose of KVK programme is to provide new knowledge and develop new skills for adoption of new latest technology and build up desirable attitude among farmers, rural youth and extension functionariesThe major constraints for low agricultural production in India are lack of irrigation facilities, uncertain, rainfall, low fertility status of soil and lack of transfer of technology from the research laboratories to its ultimate users *i.e.* the farmers. KVK's has been considered one of the most important extension centres to transfer the technology from research station to the farmers field. The government was initiated the process of establishing two KVK in each district.

RESEARCH METHODOLOGY

In Rajasthan, there are 42 KVKs. Out of these, KVK Jhunjhunu was selected purposely. . All the subject matter specialists and technical personnel working under the KVK were interviewed for measuring the constraints being faced by them in disseminating the farm technology.

RESULTS AND DISCUSSION

The Krishi Vigyan Kendra has been working in the study area since 1989 but the desired achievements have not been obtained so far. It is an established fact that no programme is full proof so there has been scope of modification. The activities of KVK were no exception to above fact.That is why an attempt was made to know the constraints of the KVK functionaries in disseminating farm technology. A structured dichotomous schedule was developed to identify the major constraints. The response were recorded and expressed in terms of percentage and ranks were awarded accordingly

The data in table 1 incorporates the findings of the constraint which were responsible for KVK functionaries in disseminating farm technology. The table reveals that the constraints "Lack of technical

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Table 1. Constraints faced by the KVK functionaries in disseminating the farm technology

n = 6

S.No.	Major constraints	Freq.	Percent	Rank
1.	Lack of interpersonal relationship	6	33.33	XI
2.	Inadequate technology suited to the farmers conditions	9	50.00	VIII
3.	Lack of transport facilities	8	44.44	IX
4.	Lack of staff quarters (accommodation facilities)	15	83.83	II
5.	Lack of resources/ inputs with farmers	9	50.00	VIII
6.	Lack of motivation to the farmers	7	38.88	X
7.	Lack of incentives and recognition to the scientist or KVK officials	13	72.22	IV
8.	Lack of leadership at KVK	8	44.44	IX
9.	Paucity of budget	14	77.77	III
10.	Lack of farmers hostel	11	61.11	VI
11.	Lack of training facilities at KVK	6	33.33	XI
12.	Lack of coordination with other developmental departments	6	33.33	XI
13.	More emphasis on the table work	12	66.66	V
14.	Lack of technical staff	16	88.88	I
15.	Political interferences	7	38.88	X
16.	Lack of cooperation from farmers	6	33.33	XI
17.	Farmers themselves are not interested	10	55.55	VII
18.	Specialists being used more as journalists than extensionists	6	33.33	XI
19.	Lack of crop museum or technical part at KVK farm programmes	9	50.00	VIII

staff" (88.88%), "Lack of staff quarters" (83.83%), "Paucity of budget" (77.77), "Lack of incentives and recognition to the scientist or KVK officials" (72.22%), "More emphasis on the table work" (66.66), ""Lack of farmers hostel" (61.11%) and "Farmers themselves are not interested" (55.55%), which were ranked at I, II, III, IV, V, VI and VII, respectively. The constraints at eighth ranks were "Inadequate technology suited to the farmers conditions" (50.00%) and "Lack of resources/inputs with farmers" (50.00%). The ninth ranked constraints were "Lack of transport facilities" (44.44%), "Lack of leadership at KVK" (44.44%). The tenth ranked constraints were "Lack of motivation to the farmers" (38.88%) and "Political interferences" (38.88%) Last and less serious problems were "Lack of training facilities of KVK" (33.33%), "Lack of coordination with other developmental departments" (33.33%), "Lack of cooperation from farmers" (33.33%) and "Specialists being and used more as journalists then extensionists" (33.33%).

From the findings it may be stated that the important constraints considered by the KVK functionaries in disseminating farm technologies were "Lack of technical staff", "Lack of staff quarters", "Paucity of budget", "Lack of incentives and recognition of the scientists or KVK functionaries hence motivation does not come from the farmers.The findings are in conformity with findings of Kumar et al.(2003) Nainawat (2000),and Singh et al. (2007).

CONCLUSION

Thus, from the above results, it may be concluded that the major constraints which were responsible as perceived by the KVK functionaries in disseminating farm technology were Lack of technical staff, Lack of staff quarters, Paucity of budget in the study area.

REFERENCES

Kumar, A.M.K. and Basantha Kumar, A.S. 2003. Constraints faced by small and marginal farmers in dairy farming as a subsidiary occupation. *Rural India* : 118-119.

Nainawat, S.K. 2000. Impact of Krishi Vigyan Kendra on farmers in panchayat samiti Kotputli of Jaipur district (Rajasthan). M.Sc. (Ag.) Thesis, R.A.U., Bikaner, Campus - Jobner.

Sharma, R. and Sharma, S.K. 2002. Constraints faced by extension personnel in effective implementation of kishan mandals and Kishan Seva Kendra. *Raj. J. Ext. Edu.* **10**: 134-137.

Singh, D.K.; Gautam, U.S. and Pandey, S.N. 2007. Constraints Analysis of Technological Awareness of the Farmers. *Indian Res. J. Ext. Edu.* **7**(1): 59-61.

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DEVELOPMENT OF SCALE TO MEASURE ATTITUDE OF EXTENSION PERSONNEL TOWARDS e-EXTENSION

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ABSTRACT

The study was conducted to develop and standardize the reliable and valid scale, to measure attitude of extension personnel towards e- Extension. 'Scale product method' which combines Thurstone and Likert techniques was used, 27 statements were selected for judgment; a panel of 50 judges was requested to assign the score for each statement in five continuums. Based on the scale (median) and Q values, 10 statements were finally selected to constitute scale to measure attitude of extension personnel towards e- Extension. Reliability was found 0.89.

INTRODUCTION

At present ratio of farmers to the extension worker is 1000:1, which is really very less. Although the appointed village local workers (VLWs) disseminated the information, they hardly accept any accountability. These two issues have created the urgency to help and guide the farmers properly. The cost factor in face to face agricultural information dissemination at the right time, and the difficulties in reaching the target audiences, has created the urgency to introduce e-extension. E-extension will empower extension system in general and extension agents in particular for becoming an effective and efficient extension manager.

To know existing sensitivity of the agricultural extension educationists towards e extension in using smart services for the development of their profession, it was decided to develop the scale to measure attitude of extension personnel towards e-extension.

RESEARCH METHODOLOGY

In the present study attitude is conceptualized as positive or negative feelings towards e-extension.

Scale product method' which combines the Thrustone's technique of equal appearing interval scale(1928), for selection of items and Likert's technique of summated rating (1932) and for ascertaining the response on the scale as proposed by Eysenck and Crown (1949) was selected to develop the scale.

STATEMENT COLLECTION

In initial stage of developing the scale, 34 numbers of statements about reflecting feelings towards e - extension were collected. The collected statements were edited according to the criteria laid down by Edward (1957). From the 32 statements, 27 statements were selected for judgment.

STATEMENT ANALYSIS

In order to judge the degree of "Unfavorableness" to "Favorableness" of each statement on the five point equal appearing interval continuum i.e. strongly agree, agree, undecided, disagree, strongly disagree, a panel of 50 judges of social science group was selected.

DETERMINATION OF SCALE VALUES

Based on judgment, the median value of the distribution and the Q value for the statement concerned were calculated with the help of

$$S = L + \frac{0.50 - \sum Pb}{Pw} \times i$$

The inter-quartile range (Q = Q3 - Q1) for each statement was also worked out. Only those statements were selected whose median values were greater than Q value. When a few statements had the same scale values, the statements having lowest Q Values were selected (Thurstone, L. L. 1946).

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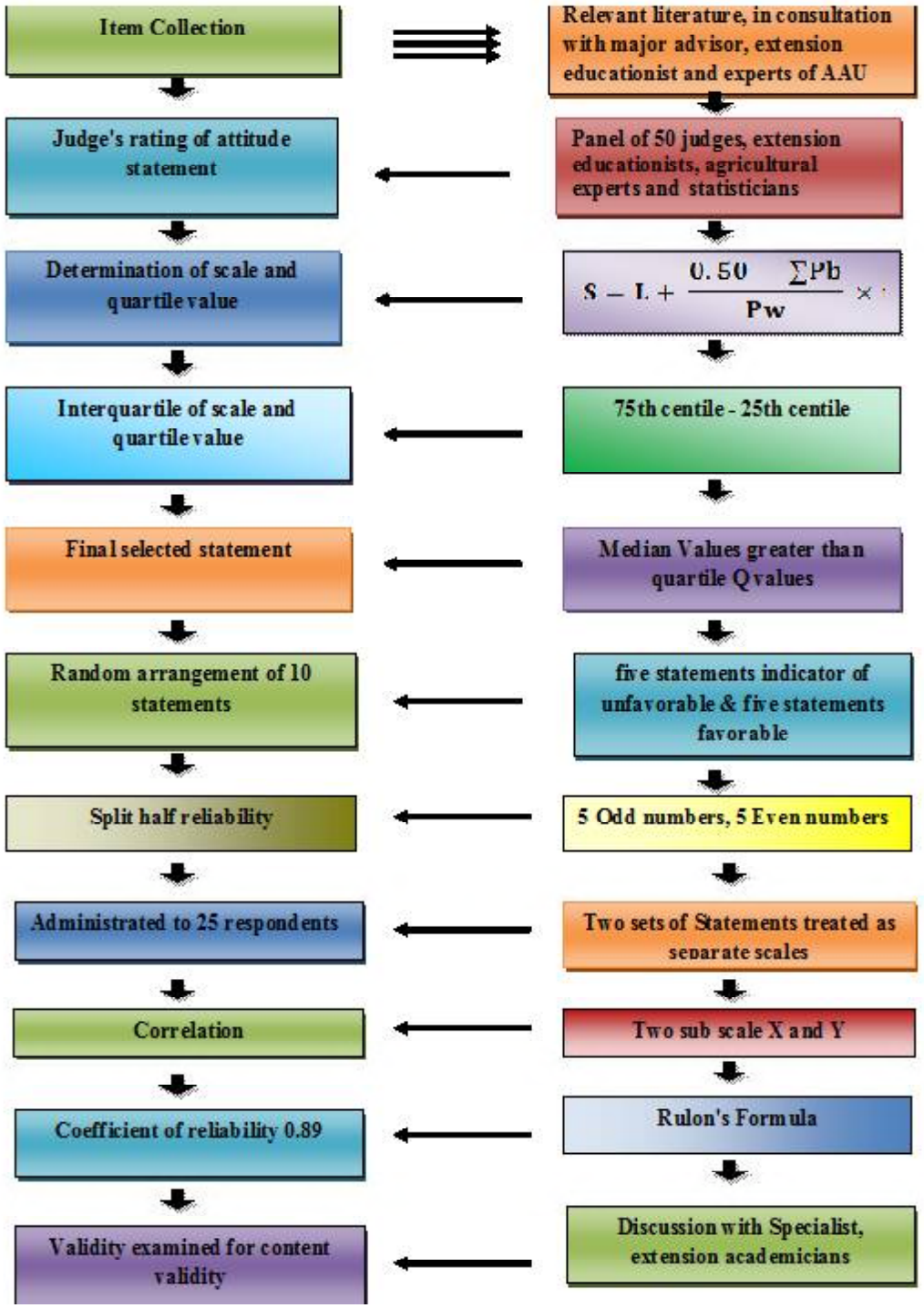
Figure No. 1: Diagrammatical presentation of steps used for the development of attitude scale towards e-extension



RESULTS

Based on the scale and Q values out of 27 statements 10 statements were finally selected to constitute attitude scale.

No	Statements	SA	A	UD	DA	SDA
1.	I think that e–extension is acting as a key agent for sharing knowledge to farmers					
2.	E–extension can become an effective tool for IT-based personalized Agro advisory system.					
3.	E–extension is an effectual integrated Agri- expert service to carry out mass delivery of custom solutions.					
4.	I think e–extension services are useful to show demonstrated way of doing thing.					
5.	E–extension creates enabling environments for extension personals to adopt new communicating approaches.					
6.	E–extension constitute one of the most effective available ways of meeting basic extension personals needs					
7.	E–extension has a tremendous potential to improve credibility of agricultural extension.					
8.	I concur that e–extension provide technique to demonstrate complex farm technology in simpler term.					
9.	E–extension provides better ability to harness information to improve rural livelihood.					
10.	I think that e- extension is not suitable for farmers as they are used to with traditional method of extension services.					

RELIABILITY OF THE SCALE

The split-half technique was used to measure the reliability of the scale. The 10 statements were divided into two equal halves with 5 odd numbered and 5 even numbered. These were administered to 25 extension personnel (KVK, FTC and extension personnel trainees of training programme on "organic farming" held at ATIC, AAU, Anand). Each of the two sets was treated as separate scales having obtained two score, for each of the 25 respondents. Co-efficient of reliability between the two sets of score was calculated by Rulon's formula (Guilford 1954), Reliability was found 0.89

VALIDITY OF THE SCALE

The validity of the scale was examined for content validity by determining how well content were selected by discussing it with specialists, of extension and statisticians.

SCORING TECHNIQUE

Against each of selected statements there were five columns, representing a five point continuum of agreement or disagreement to the statements as followed by Likert (1932). The points on continuum were strongly agreed, agree and disagree with weight of 5, 4, 3, 2 and 1, respectively for positive statements and reverse scoring for negative statement. To know level of attitude of extension personals towards e-extension Score of each statement will be summed up.

REFERENCES

Edward, A.L.1957.Techniques of attitude scale construction, Appleton Century Crofts, Inc., New York.

Eysenck, H.J. and S. Crown.1949. An Experimental Study in Opinion and Attitude Methodology. *International J. of Attitude Research* **3**: 47-86.

Guilford, J. P. 1954. Psychometric Methods. Tata McGraw-Hill Publication Co. Ltd., Bombay: 378-382.

Likert, R.A.1932. A technique for the measurement of Attitude Scales, Psychol, New York, No 140.

Thurston. L.L. and Chave, E.G. 1928. The measurement of opinion. *J. of Abnormal social psychology* **22**: 415-430.

Thurstone, L. L. 1946. The measurement of attitude. *American J. Soci., Chicago* : 39-50.

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OPINION OF TRIBAL WOMEN REGARDING ORGANIC FARMING

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ABSTRACT

The study was conducted in Jhadol and Gogunda Panchayat Samiti of Udaipur district. The sample consisted of randomly selected 100 respondents from the Panchayat samitis villages. Interview technique was used for collecting data from the respondents. Findings of the study revealed that more than fifty percent of Tribal women were in the favourable opinion of organic farming practices. In vermicompost, compost making, mulching, green manuring, liquid manuring and river bed soil 54, 73, 89, 62, 15 and 51 percent of respondents were having favourable opinion respectively.

INTRODUCTION

Agriculture in India is not merely an occupation, it is a way of life. Sustaining crop production and productivity without damaging the resources and environment are big challenge and this problem can be overcome by several ways but the first and foremost way is organic farming. Organic agriculture is not new to Indian agriculture community. Several forms of organic agriculture are being successfully practiced in diverse climate, particularly in rain fed, tribal, mountains and hill areas of the country. Among all agriculture systems, organic agriculture is gaining wide attention among farmers, entrepreneurs, policy makers and agricultural scientists for varied reasons such as it minimizes the dependence on chemical inputs (fertilizers pesticides, herbicides and other agro- chemicals). Organic farming is becoming more popular because consumers are demanding healthful and environmentally friendly food. Organic farming is a production system that sustains the health of soils, eco-systems and people if relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationship and good quality of life for all involved. A survey was done on certified organic farms in the country to ascertain the real benefits and feasibility of organic farming in terms of the production potential, economics and soil health in comparison to the conventional farms. The study revealed that organic farming, in spite of the reduction in crop productivity by 9.2 percentage, provided higher net profit to farmers by 22.0 percentage compared to conventional farming. However, there was an over all improvement in soil quality in terms of various parameters ,viz physical chemical biological properties indicating an enhanced soil health and sustainability of crop production in organic farming system. An opinion is a subjective belief, and is result of emotion or interpretation of facts. An opinion may be supported by an argument, although people may draw opposing opinions from the same set of facts. Opinions rarely change without new arguments being presented. However, it can be reasoned that one opinion is better supported by facts than another by analyzing the supporting arguments.

RESEARCH METHODOLOGY

Organic farming was promoted in two panchayat samitsi namely kotra and Jhadol by voluntary organisation Gandhi Manav Kalyan Society. The study was conducted on 100 tribal women in four villages namely Kantharia, Jambua, Dhoya and Basaria of Udaipur district. Interview method was considered appropriate for the data collection. Frequency and percentages were used to analyze the opinion of tribal women.

RESULTS AND DISCUSSION

1. General information related to agency and its programme

Table 1 indicates that all the respondents

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(beneficiaries) were aware about the agency GMKS working in their village and running the various practices of organic farming. Agency was working from last 15 years was known by 57 percent respondents but other 43 percent respondents were little bit confused about exact time period of working. About training, 62 percent respondents received training related to organic farming practices and 48 percent respondents have not received the training but their family members attended the training.

The Table further indicates that according to all of the respondent field functionaries of GMKS visit the area weekly.

Data presented in Table 1 illustrate that all of the respondents had information about the various inputs provided by the agency as tiles, plastic sheets, earthworms, bricks, seeds and agricultural implements were received by the respondents, for various practices of organic farming. These data indicates that majority of the respondents received one or other inputs.

It is apparent from the data presented in Table 2 that 54 percent respondents had favourable and 25 percent had even most favourable opinion respectively towards **vermicompost**. Overall, it can be said that most of the respondents (79%) expressed favourable opinion towards the vermicompost.

The Table illustrate that majority (73%) of respondents had favourable opinion towards **compost making** as well as 20 percent had most favorable opinion. Over all it can be stated that most of the respondents (93%) expressed favourable opinion towards compost making. It is appreciable to note that most of the respondents (89%) were of favourable opinion and only 11 percent respondents had neutral opinion towards **mulching**. Regarding **green manuring,** it is evident from the table that 62 percent of the respondents had of favourable opinion where as 18 and 17 percent respondents owned neutral and unfavourable opinion respectively respondents towards green manuring. Data in Table pertaining to the opinion of the respondents regarding **liquid manuring** reveals that 51 and 13 percent of respondents had favourable and most favourable opinion respectively. Over all it can be said that nearly two third respondents expressed favourable opinion towards liquid manuring. The overall opinion of the

Table 1. Distribution of the respondents on the basis of general information related to agency and its programme

n=100

S.No.	Items	f / %
1	Name of agency working in their village	100
2	Agency running Organic farming practices programme	100
3	Agency working in the area from last 15 years	
	a) Does not know	43
	b) know	57
4	Received formal training related to the Organic farming practices	
	a) Yes	62
	b) No	38
	Weekly visits of agency personnel	100
5	Agency provides inputs for the installation of technology	100
6	Input received by respondents	
7	a) Tiles (vermicompost)	25
	b) Plastic sheet(mulching and vermicompost)	75
	c) Earthworms (vermicompost)	85
	d) Bricks (vermicompost)	45
	e) Seeds(Green manuring)	100
	f) Agricultural implements (All practices)	75

Table 2. Distribution of respondents by their overall opinion towards organic farming practices

n=100

S.No.	Organic farming practices	MUF (f / %)	UF (f / %)	N (f / %)	F (f / %)	MF (f / %)
i	Vermicompost	0	11	10	54	25
ii	Compost Making	0	0	7	73	20
iii	Mulching	0	0	11	89	0
iv	Green Manuring	0	17	18	62	0
v	Liquid Manuring	0	19	17	51	13
vi	River Bed Soil	0	5	24	51	20

MUF=Most unfavourable, UF= Unfavourable, N=Neutral, F= Favourable, MF= Most favourable.

respondents regarding **River bed soil** that 51 percent of respondents had favourable opinion, where as nearly 24 percent had neutral opinion.

CONCLUSION

The changing agro-ecosystem environment has put up a question mark before us on agricultural crop production and productivity without damaging the resources and environment. In the face of these agricultural and food production challenges, organic farming provides viable methods of maintaining and building healthy soil. The opinion may be the result of a person's perspective, understanding, particular feelings, beliefs, and desires. In general, it was found that, more than half of the respondents had favorable opinion (54%) towards vermicompost. In compost making (73%) had favorable opinion. For mulching (89%) were favourable. More than half of respondents (62%) had favourable opinion towards green manuring. For liquid manuring and river bed soil 51 percent of respondents were favourable.

REFERENCES

Jeyakumar, S. 2011. Organic Agriculture – A good quality of life for all. *Kisan World* **1**: 47-51.

Khan, M.S., Krishnan, T. and Rao, P.P. 2002. Adoption pattern of ecofriendly technologies by rice growers. *Agriculture extension Review* **14**: 23.

Rathore, G.S. 2008. Problems & Prospects of organic farming: An option for sustainable agriculture in udaipur distinct (Raj) unpublished thesis submitted to RCA, MPUAT, Udaipur.

Singh, K. 2004. Knowledge and adoption behaviour of farmers about vermiculture technology in Udaipur district, Rajasthan unpublished M.Sc. thesis submitted to RCA, MPUAT, Udaipur.

Soni, R.L and Bhimawat, B.S. 2004. Adoption of organic farming practices by small farmers in maize. *In proceedings of 2nd national extension education congress* held at MPUAT, Udaipur in May 22-24 : 147-148.

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EXPERTS OPINION ON INDIGENOUS FOOD CONSUMPTION PRACTICES FOLLOWED BY FARM FAMILIES OF BAGESHWAR DISTRICT (UTTARAKHAND)

Tara Negi*, Dhriti Solanki and Manisha Pandey*****

ABSTRACT

The present study was conducted to examine experts opinion regarding indigenous food consumption practices followed by farm families in purposely selected two blocks of Bageshwar district of Uttarakhand state viz., Garur and Kapkot. From each block two villages selected purposely and from each village 25 farm families were selected by using random sampling technique, there by constituting a total sample of 100 respondents. Personal interview along with participatory rural appraisal techniques and discussion with farm families were used as a technique to collect the information. For experts opinion a questionnaire was prepared for scientific validation of the documented indigenous practices on 3 point continuum as scientific, unscientific and uncertain. The collected data were tabulated, analyzed and interpreted with the help of appropriate statistical tools. However, majority of the indigenous food consumed by farm families were validated as scientific in nature. Thus it is suggested that scientific practices should be disseminate to other parts of the state and country for its wider applicability and mass use.

INTRODUCTION

Food is the source of energy and consumption of healthy and nutritious food in diet keeps the body fit and gives a sense of happiness. Around the worldwide there are several food consumption pattern prevailing both in urban and rural areas. Whatever food is consumed by population is greatly influenced by thoughts, beliefs, notions, traditions and taboos of the society. In other words food and food habits are deeply related to culture and ecology. Himalayan communities remain essentially agricultural and farming systems are the key determinants of household food security. What people eat depends largely on what they grow and raise in their surroundings (Jenny and Egal, 2002).

In order to ensure the food and nutritional security, local farming communities have encouraged the utilization of cultivated as well as wild edible plant species, available in the surrounding environment. There are many recipes used as a substitute of the items, which are meagrely produced in the region. Traditional farming system, identification of wild plant species for their food importance, diversification of food items and value addition in local recipes are of paramount importance to secure the food availability in the region (Mehta *et. al.*2010). A number of traditional foods are prepared and consumed by people in Uttarakhand state for centuries, and these form a part of socio-cultural life of the hill people. However, the production of these traditional foods has been limited to household level. The products made by local people are highly nutritious, easily prepared and conveniently preserved and very popular among the rural populations. There is need to document and validate scientifically the indigenous food consumption practices and disseminate the recipes to other parts of country for its wider applicability. Hence an attempt was made to document the indigenous food consumption practices of farm families and examine the expert opinion either the practices are scientific, unscientific or uncertain in nature.

RESEARCH METHODOLOGY

The present study has been carried out in Bageshwar district of Uttarakhand state and total four villages were selected from *Garur* and *Kapkot* blocks namely *Garkhet, Tilsari, Loharkhet* and *Ason.* From each village 25, well experienced farm families, above 40 years of age were selected purposively on the basis of consumption of indigenous food in daily

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routine and in health problems. Information was collected with the help of interview schedule and PRA techniques. Along with this, focused group discussions were organised to get the desired information from the respondents and key informants of the village. Thus, the total sample consisted of 100 farm families. For expert opinion a separate questionnaire was constructed after recording and compiling the documented indigenous food consumption practices followed by farm families on a three point continuum i.e. scientific, unscientific and unknown practices by the panel of 10 experts from the areas of Foods and Nutrition, Food connoisseurs and Dieticians. The data collected from the experts was scored, tabulated and analyzed by using suitable statistical tools such as frequency and percentage.

RESULTS AND DISCUSSION

Background Information of the Respondents

Regarding background information of the respondents, more than half of the respondents belonged to the age group of 51-60 years and 42 per cent of the respondents of the study area were illiterate. Majority of the farm families (73%) belonged to upper caste and 68 per cent respondents were marginal farmers who possessed the land below 2.5 acres. Majority of the respondents had more than 20 years of farming experience and as far as the occupational status was concerned, majority (66%) of the respondents had agriculture as their main occupation with no subsidiary occupation. Regarding organizational membership majority of the respondents (77%) had no membership in any organization and 13 per cent of the respondents had

Table 1. Background information of the respondents

(n=100)

SNo.	Variable	Category	f / %
1	**Age(Years)**	40-50	24
		51-60	56
		Above 61 years	20
2	**Education**	Illiterate (Cannot read and write)	42
		Literate (Can read and write)	22
		Primary	24
		Middle	12
3	**Caste**	Upper caste	73
		Backward caste	12
		Lower caste (SC/ST)	15
4	**Land holding(in acres)**	Marginal (below 2.5 acres)	68
		Small (2.6-5.0 acres)	24
		Medium(5.1-10.0 acres)	08
		Large(Above 10.0 acres)	0
5	**Farming experience(in years)**	Less than 10	0
		10-20	25
		More than 20	75
6	**Family occupation**	Agriculture alone	66
		Agriculture + Business	12
		Agriculture + Labourers	08
		Agriculture + Caste occupation	09
		Agriculture + Service	05
7	**Organizational membership**	No membership	77
		Membership in one organization	13
		Membership in more than one organization	05
		Holding position in organization	05

membership in one organization **(Table 1).**

EXPERTS OPINION ON INDIGENOUS FOOD CONSUMPTION PRACTICES

In Kumaon Himalayan region farm families mostly consumed cereals, pulses and wild edible vegetables which grow in their cultivated fields and in nearby forest areas. Certain foods are consumed by people in festive season and some are in health problems. Food consumed by Himalayan people is cent per cent organic and nutritious in nature but people are unaware about their scientific importance. Experts opinion on documented indigenous food consumption practices was recorded on a three point continuum i.e. scientific in nature (those practices which are correct and can be trusted without fear and doubt), unscientific (indigenous practices which have no base and are incorrect) and uncertain (practices where experts have no idea and further more research is needed).**Table 2** shows that there are many practices which have scientific base, some are unscientific and some need further research and experts have reasons for these practices.

Scientific Practices

- All the experts judged the practice of consuming *Kaffa* (Dish of green leafy vegetables) as scientific. The experts from the area of Foods and Nutrition and dietician reasoned that dark green leafy vegetables are rich source of nutrients, minerals (including iron, calcium, potassium, and magnesium) and vitamins, including vitamins K, C, E, and many of the B vitamins.
- Majority of the (70%) experts considered the practice of consuming Stinging nettle (*Sisun Saag)* as scientific. The experts reasoned that stinging nettle (*Utrica dioica* Linn.) contains ingredients that decrease inflammation of joints and swelling and efficacious in sciatica, gout and rheumatic pains.
- Regarding consumption of Whole horse gram (*Gahat dal*) in dissolving kidney stone, cent per cent experts considered this practice as scientific. The reason given by experts that whole horsegram seeds are anti-urolithiasis and breakdown the calcium and oxalate. Srinivas *et. al*. (2010) in a study on 'Anti-nephrolithiatic Potential of *Macrotyloma uniflorum*' reported the same that urinary stones could be dissolved with aqueous extract *Macrotyloma uniflorum* and without the aid of surgical intervention. The recurrence of stones could also be prevented to a great extent.
- All the experts considered scientific the consumption of finger millet (*Madua*) chapattis for controlling diabetes and increasing bowl movements. The experts from Foods and Nutrition department reasoned that finger millet flour is rich in minerals like thiamine, calcium and iron. Also a good laxative and helpful in constipation. Mal *et al*.(2010) reported the same that nutritionally finger millet have high micronutrient content, particularly calcium and iron, high dietary fibre, higher amount of essential amino acids and low glycemic index and thus play an important role in the food and nutritional security of the poor.
- Majority of the experts (70%) considered scientific the practice of consuming black soybean (*Bhatt*) as it is helpful in curing jaundice whereas 30 per cent were uncertain about this. Experts reported that black soybean regulates the excessive secretion of bilurubin content in blood.
- Majority of the experts (70%) considered consumption of rhododendron (*Buransh*) flower sauce as scientific as it prevent from heat stroke. The experts reasoned that it act as expectorant and astringent and also applied as poultice in headaches.
- The practice of consuming *Timul ka rayata* (Ficus auriculata) for controlling diarrhoea was considered scientific by majority of the experts (70%).The experts reasoned that the unripe fruits are astringent, carminative, digestive, stomachic in nature and used for controlling diarrhoea and dysentery.
- Regarding *Bhatt Ki Churkani*, 70 per cent experts considered it as scientific. Experts reported that black soybean (*Glycine max*) is highly nutritious as it contains 36g/100g protein, hence it should be given to growing children for meeting out their protein requirement.
- All the experts support the farm families' practice

Table 2. Experts opinion on Indigenous food consumption practices followed by farm families of Uttarakhand

Indigenous food practices followed by farm families	Parts Used	Experts opinion n=10			Reason given by experts
		S*	US**	UC***	
Consumption of Kaffa	Green leafy vegetables	10 (100)			Dark green leafy vegetables are rich source of nutrition, minerals and vitamins
Consumption of Sisun (Utrica dioca)	Tender shoots	7(70)		3(30)	It contains ingredients that decrease inflammation of joints, swelling and efficacious in sciatica, gout and rheumatic pains
Consumption of Gahat (Macrotyloma uniflorum)	Seeds	10(100)			Anti urolithiasis and breakdowns the calcium and oxalate salts
Consumption of Bhang ki Chutney(Cannabis sativa)	Seeds		3(30)	7(70)	Research is needed
Consumption of Mandua (Elucine coracana) chapattis	Grinded flour	10(100)			1. Good laxative for people suffering from constipation 2. Suffering from diabetes as it controls blood glucose level
Consumption of Bhatt ka Dubka (Glycine max)	Seeds	7(70)		3(30)	Regulates the excessive bilurubin level
Consumption of Buraans ke phoolo ke chatni (Rhododendron arboretum)	Flower	7(70)		3(30)	Act as expectorant and astringent and also applied as poultice in headaches
Consumption of Liun ki sabji (Diplanzium esculentum)	Stem			10(100)	Research is needed
Consumption of Timul ka raita (Ficus auriculata)	Unripe fruit	7(70)		3(30)	Fruit are astringent, carminative, digestive, stomachic and used for

					controlling diarrhoea and dysentery
Consumption of Bhatt Ki Churkani (Glycine max)	Seed	7(70)		3(30)	Highly nutritious as it contain 36g/100g protein
Consumption of Lal Chawal Ki Kheer (Red rice)	Grain	10(100)			Highly nutritious and healthy and it is rich in fibre, vitamins and minerals
Consumption of Kauni Pulao(Foxtail millet)	Grain	10(100)			1.Foxtail millet releases glucose steadily without
Controlling measles in children	Grain		2(20)	8(80)	affecting the metabolism of the body and rich in dietary fibre and fat 2.Research is needed

Figures in parenthesis denote percentage
*S=sintific, **US=unsintific, ***UC=uncertain

of consuming red rice as it is highly nutritious and healthy and it is rich in fibre, vitamins and minerals.

- Cent per cent experts considered the practice of consuming foxtail millet (*Kauni*) by diabetic person as scientific. The experts reasoned that the millets are rich in dietary fibre (6.7%), protein (11%) and low in fat (4%).Unlike rice, foxtail millet releases glucose steadily without affecting the metabolism of the body. The experts from Foods and Nutrition areas reported that the incidence of diabetes is rare among the population which consumes foxtail millet diet and millets are free of gluten.

Unscientific Practices

It is reported that those indigenous food were documented by researcher there were no unscientific food consumption practices but there are uncertain practices which were not known by experts.

Uncertain Practices

- Majority of the experts were unaware about the practice of consuming hemp (*Bhang*) seeds in healing wounds and ulcer. Hence further research is needed in this direction.
- All the experts were uncertain about the medicinal properties of fiddlehead (*Lieun*) for curing malaria fever, jaundice and constipation. Hence a strong research is needed to prove the practices carried out by farm families.
- About the role of foxtail millet in curing measles, majority of the experts (80%) were uncertain. Hence a strong research is needed to prove this.

CONCLUSION

A large number of traditional foods and beverages are prepared in rural and tribal areas of Uttarakhand state. These traditional products are unique to Uttarakhand and some of the traditional foods still form a staple diet of sizeable population of the state. Some foods and beverages are also prepared during special occasions and constitute an important part of culture and tradition of the state. It can be concluded from the findings that most of the indigenous practices related to consumption of indigenous food were found to be scientific while consumption of hemp seeds and spreading of foxtail millets during measles were uncertain where more research and experiment is needed. A large numbers of traditional recipes are mainly attributed to the cause of sustainability of livelihood of local inhabitants in watershed of *Kumaon* Himalaya. The need of the hour is to scientifically validate the reason given by farm families about consumption of indigenous food so that it is disseminate to other parts of the state.

REFERENCES

Jenny, A. L and Egal, F. 2002. Household food security and nutrition in mountain areas. Nutrition Programmes Service, FAO-ESNP.

Mal, B., Padulosi, S. and Bala,S. R.(editors). 2010. Minor millets in south Asia: Learnings from IFAD-NUS Project in India and Nepal. Bioversity International, Maccarese, Rome, Italy and the M.S. Swaminathan Research Foundation, Chennai, India. Retrieved from http:// www.nuscommunity.org/ fileadmin/NUS_Docs/ documents/ publications/books/1407_Minor_ millets_in_South_Asia_learnings_ from_IFAD-NUS_project_in_India_and_Nepal.pdf. p19 on 10 May, 2014 at 7:43 pm.

Mehta, P. S., Negi, K. S. and Ojha, S. N. 2010. Native plant genetic resources and traditional foods of Uttarakhand Himalaya for sustainable food secutity and livelihood. *Indian Journal of Natural Products and Resources* **1**(1): 89-96.

Srinivas,V. D. N., Sumalatha, G., Jagannath, P. P. V., Kishore, D. S., Kiran,P. M. and Jhansi M R.2010. Anti nephrolithiatic potential of Macrotyloma uniflorum aqueous extract in rats. *Research Journal of Pharmacognosy and Phytochemistry* **2**(1): 75-78.

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FACTORS AFFECTING ENTREPRENEURIAL BEHAVIOR OF DAIRY FARMERS

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ABSTRACT

The study was conducted on 80 dairy farmers selected from all the dairy farmers of Morar block of Gwalior District of Madhya Pradesh who were practicing dairy and possessing minimum six dairy animals such as cow/buffalo/both to find out the entrepreneurial behavior of dairy farmers. The study revealed that majority of dairy farmers found to have medium level of entrepreneurial behavior followed by high and low level of entrepreneurial behavior. The entrepreneurial behavior was positively and significantly related with education, dairy experience, organization participation, land holding, livestock possession, annual income, material possession, economic motivation, market orientation, scientific orientation and knowledge of improved dairy management practices found to have positive and significant relationship with entrepreneurial behavior. Distance location of A.I. centres and lack of veterinary facilities in the village were major constraints reported by dairy farmers.

INTRODUCTION

Demand for dairy products in India is likely to grow significantly in the coming years, driven by more consumers, higher incomes and greater interest in nutrition. The vast resources of livestock in the country play an important role in the national economy as well as in the socio-economic development of millions of rural households. Dairy enterprise could play a more constructive role in promoting rural welfare and reducing poverty by generating employment at farm level is increasingly being recognized. A sustainability and financially viable dairy farming, which will generate income and self employment through entrepreneurship, is need of the day (Patel *et al.* 2014). In the present era, it is being realized that entrepreneurship contributes to development of a country in several ways, viz. assembling and harnessing the various inputs, bearing the risks, innovating and imitating the techniques of production to reduce the cost and increase its quality and quantity, expanding the horizons of the market, and coordinating and managing the manufacturing unit at various levels. In fact, the rapid economic development of a country crucially depends upon the number of abilities of entrepreneurs. In this context entrepreneur is one of the most important inputs for development of dairy enterprise which may provide phenomenal for economic development of farming community.

Keeping the above facts in view, the present study was carried out with following objectives:

1. To determine the level of entrepreneurial behaviour of dairy farmers
2. To analyse the relationship between personal, socio-economic & psychological characteristic of dairy farmers and their entrepreneurial behaviour.
3. To find out the constraints faced by dairy farmers with regards to dairy management.

RESEARCH METHODOLOGY

The present study was conducted in Morar block of Gwalior district of M.P. Out of 156 villages in the block; eight villages were selected purposely for the study. After the selection of villages, a village wise list of farmers who were involved in dairy and possessing minimum five dairy animals obtained and ten dairy farmers were selected randomly. Thus, the total sample consisted of 80 dairy farmers spread over ten selected villages. The data were collected through semi-structured pre-tested interview schedule during 2013.

The term entrepreneurial behavior has been operationalized as a composite skill, the resultant of mix of many qualities and traits. The entrepreneurial behavior of the respondents was studied using scale developed by Chaudhari *et al* (2007) comprising nine

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dimensions *viz.*, innovativeness, achievement motivation, decision making ability, risk – orientation, co-ordination ability, planning ability, information seeking behavior, cosmopoliteness, self-confidence. Based on entrepreneurial behavior score the respondents were classified into three groups viz; low, medium and high on the basis of Mean ± SD. The data were subjected to simple analysis like percentage, averages, multiple correlation and regression

RESULTS AND DISCUSSION

Entrepreneurial behavior of dairy farmers

The perusal of data in Table 1 show the distribution of dairy farmers according to their entrepreneurial behavior. It is apparent from the data that majority (68.75%) of dairy farmers found to have medium level followed by high (17.50%) and low (13.75%). These findings are accordance with the findings of Patel *et al.* (2014) and Bhagyalaxmi *et al.* (2003). However, the dairy farmers should have high level of entrepreneurship. Hence, special consideration is required to develop the entrepreneurship in dairy farmers because dairy enterprise is one of the promising sectors of entrepreneurship development in India.

Table 1. Entrepreneurial behavior of dairy farmers (n = 80)

S.No.	Category	Frequency	Percentage
1.	Low	11	13.75
2.	Medium	55	68.75
3.	High	14	17.50

Components of Entrepreneurial behavior

The entrepreneurial behavior of dairy farmers comprised nine components, such as, innovativeness, achievement motivation, decision making ability, risk orientation, coordinating ability, planning ability, information seeking, cosmopoliteness and self confidence. Data collected in this regard have been furnished in Table 2. The profile of dairy farmers on entrepreneurial characteristics is conferred below:-

1. **Innovativeness:** Innovativeness as one of the key factors explaining competitive advantages and superior performance. The data on this parameter presented in Table 2 reveled that majority (62.50%) of dairy farmers had medium level of innovativeness; whereas 20.00 per cent of them had high and 17.50 per cent had low level of innovativeness. These results are in accordance with the findings of Reddy (1997) and Bhagyalaxmi *et al.* (2003).

2. **Achievement motivation:** The term achievement motivation refers to motivation stemming from a desire to perform well or a striving for success. The data on this parameter revealed that near about half (51.25%) of the dairy farmers had medium level of achievement motivation, whereas more than one fourth of (27.50%) the dairy farmers had low level of achievement motivation. Only 21.50 per cent had high achievement motivation. The similar results have reported by Patel *et al.* (2014).

4. **Decision making ability:** Decision Making is the act of choosing between two or more courses of action. The data on this parameter depicted in Table 2 revealed that more than half (57.50%) of the dairy farmers found to have medium level of decision making ability, followed by low (23.75%) and high (18.75%). Similar trend have been reported by Patel *et al.* (2014).

5. **Risk orientation:** The data on this parameter described in Table 2 revealed that more than half (55.00%) of the dairy farmers found to have medium level of risk orientation followed by low (31.25%) and high (13.75%) level of risk orientation. These findings are accordance with the findings of Bhagyalaxmi *et al.* (2003).

6. **Coordinating ability:** The data on this parameter explained in Table 2 discovered that medium level of this attribute was possessed by that majority (63.75%) of the dairy farmers. However, 20.00 per cent had high and only 16.25 per cent had low level of coordinating ability.

7. **Planning ability:** As regard the planning

Table 2. Distribution of dairy farmers based on components of entrepreneurial behavior

(n = 80)

S.No.	Component	Category	Frequency	Percentage
1.	Innovativeness	Low	14	17.50
		Medium	50	62.50
		High	16	20.00
2.	Achievement motivation	Low	22	27.50
		Medium	41	51.25
		High	17	21.50
3.	Decision making ability	Low	19	23.75
		Medium	46	57.50
		High	15	18.75
4.	Risk Orientation	Low	25	31.25
		Medium	44	55.00
		High	11	13.75
5.	Co-ordinating ability	Low	16	20.00
		Medium	51	63.75
		High	13	16.25
6.	Planning ability	Low	21	26.25
		Medium	40	50.00
		High	19	23.75
7.	Information seeking behaviour	Low	10	12.50
		Medium	60	75.00
		High	10	12.50
8.	Cosmopoliteness	Low	22	27.50
		Medium	46	57.50
		High	12	15.00
9.	Self confidence	Low	17	21.25
		Medium	45	56.25
		High	18	22.50

ability of dairy farmers the data present in Table 2 indicated that maximum number (50.00%) of dairy farmers had medium level of planning ability whereas equal number of them had low (26.25%) and high (23.75%) level of this trait similar findings have reported by Patel *et al*. (2014).

8. **Information seeking behaviour:** Majority of the dairy farmers i.e. 75.00 per cent had medium information seeking behaviour followed by low and high information seeking behaviour i.e. (12.50%). These findings are accordance with the findings of Reddy& Reddy (2005),. This might be due to that the dairy farmers require recent information about dairy management practices.

9. **Cosmopoliteness:** Medium level of cosmopoliteness was possessed by 57.50 per cent of dairy farmers. While above one fourth (27.50%) of them possessed low and 15 per cent possessed high level of cosmopoliteness. The similar findings have been reported by Saha (2004).

10. **Self confidence:** Possession of this trait explains the degree to which an individual conveys confidence in his own capability to complete a task or meet a challenge. The majority (56.25.00%) of dairy farmers had medium level of self confidence whereas equal number of dairy farmers had high (22.5%) and low level of self confidence

(21.50%). The findings are in conformity with empirical evidence reported by Bhagyalaxmi *et al.* (2003).

Correlates of entrepreneurial behavior

With assumption that entrepreneurial behavior is inclined by socio-personal, economic and psychological traits, the relationship of these traits were analyzed. To assess the relationship between entrepreneurial behavior and selected variables the coefficient of correlation was worked out and illustrated in Table-3, the data revealed that the correlation coefficient with personal characteristics viz; education and dairy experience were significant, while age, family size and organization participation were found no significant relationship. In case of socio - economic characteristics i.e. land holding, livestock possession, annual income and material possession were significant relationship with entrepreneurial behavior of dairy farmers. Regarding psychological characteristics i.e. economic motivation, market orientation, scientific orientation and knowledge of improved dairy management practices found to have positive and significant relationship with entrepreneurial behaviour at 0.01 level of probability..

Contributory influence of selected characteristics of dairy farmers on their entrepreneurial behavior

In order to assess the contribution of independent variables towards the entrepreneurial behavior, multiple regression analysis was carried out and results are presented in Table 4and 5. In the first stage of multiple regression analysis entire set of independent variables (13 variables) viz, age, education, dairy experience, family size, land holding, livestock possession, annual income, material possession, economic motivation, organization participation, market orientation, scientific orientation and knowledge of improved dairy management practices was considered. The R^2 value was 0.45 and indicates that all the independent variables taken together could explain a variation of 45 per cent in the entrepreneurial behavior of dairy farmers.

Constraints faced by dairy farmers with regards to dairy management

It is observed from the data presented in Table 5

Table 3. Relationship between selected socio personal, economic and psychological characteristics of dairy farmers with their entrepreneurial behavior

S.No.	Characteristics	"r" value	"t" value
Personal characteristics			
1.	Age	0.05^{NS}	0.44
2.	Education	0.44	4.32
3.	Dairy experience	0.30	2.77
4.	Family size	-0.12^{NS}	1.06
5.	Organization participation	0.03^{NS}	0.26
Socio - economic characteristics			
1	Land holding	0.34	0.34
2	Livestock possession	0.48	4.83
3	Annual income	0.45	4.45
4	Material possession	0.36	3.40
Psychological characteristics			
1	Economic motivation	0.38	3.62
2	Market orientation	0.34	3.19
3	Scientific orientation	0.31	2.87
4	Knowledge of improved dairy management practices	0.45	4.45

Table 4. Multiple regression analysis of predictor variables with their entrepreneurial behaviour

S.No.	Characteristics	Regression coefficient "b"
1.	Age	0.18
2.	Education	-0.09
3.	Dairy experience	0.10
4.	Family size	-0.08
5.	Land holding	0.36
6.	Livestock possession	0.02
7.	Annual income	0.06
8.	Material possession	-0.17
9.	Economic motivation	0.29
10.	0rganization participation	0.41
11.	Market orientation	1.75
12.	Scientific orientation	0.06
13.	Knowledge of improved dairy management practices	0.49

R^2=0.45 F value=11.42 with 5 and 74 DFS

Table 5. Distribution of respondents according to the constraints faced in dairy management

(n=80)

S.No.	Constraints	Respondents	
		F	%
(I)	**Economic constraints**		
1.	High cost of concentrate	20	25.00
2.	High cost of crossbreed cow/ improved buffalo	48	60.00
3.	High cost of veterinary medicines	33	41.25
4.	High investment	19	23.75
5.	Difficult loan procedure	41	51.25
6.	Inadequate finance by bank for purchasing milch animals	29	36.25
(II)	**Technical constraints**		
1.	Lack of veterinary facilities in the village	55	68.75
2.	Highly expensive consultancy service of private practitioners	45	56.25
3.	Lack of availability of veterinary literature in the village	23	28.75
4.	Lack of technical knowledge to manage the dairy enterprise	47	58.75
5.	Poor conception rate in dairy animals	49	61.25
(III)	**Marketing constraints**		
1.	Non-remunerative price for milk	38	47.50
2.	Poor marketing outlet of milk	08	10.00
3.	Difficulty to store milk in summer season	54	67.50
4.	Competition from established and large units	47	58.75
(IV)	**General constraints**		
1.	Distance location of A.I. centres	64	80.00
2.	Poor irrigation facilities for growing fodder crops	02	02.50
3.	Lack of knowledge about silage preparation	52	65.00
4.	Non-availability of improved fodder seeds	43	53.75
5.	Susceptibility of animals to diseases	35	43.75

that the major economic constraint expressed by dairy farmers was high cost of cross breed cow/buffalo (60.00%) followed by difficult loan procedure (51.25%), high cost of veterinary medicines (41.25%), inadequate finance by bank for purchasing milch animals (36.25%) ,high cost of concentrate (25.00%) and high investment (23.75%).

In case of technical constraint, major constrain expressed by respondents was lack of veterinary facilities in the village (68.75%), followed by poor conception rate in dairy animal (61.25%), lack of technology knowledge to manage the dairy enterprise (58.75%), highly expensive consultancy service to private practitioners (56.25%), whereas, only 28.75% of dairy farmers had expressed lack of veterinary literature in the village.

The major marketing constraint expressed by dairy farmers was difficulty to store milk in summer season (67.5%), followed by competition from established and large units (58.75%), non remunerative price of milk (47.5%) and poor marketing outlet of milk (10%).

The major general constraint expressed by respondents was distance location of A.I. centres (80.00%), lack of knowledge about silage preparation (65%), non availability of improved fodder seeds (53.75%), susceptibility of animals to disease (43.75%) and only poor irrigation facilities for growing fodder crops (2.5%).

CONCLUSION

The study revealed that majority of dairy farmers found to have medium level of entrepreneurial behavior followed by high and low level of entrepreneurial behavior. Hence, special consideration is required to develop the entrepreneurship in dairy farmers. The entrepreneurial behavior was positively and significantly related with education, dairy experience, organization participation, land holding, livestock possession, annual income, material possession, economic motivation, market orientation, scientific orientation and knowledge of improved dairy management practices found to have positive and significant relationship with entrepreneurial behavior. Distance location of A.I. centres (80.00%) and lack of veterinary facilities in the village (68.75%) were major constraints reported by dairy farmers.

REFERENCES

Bhagyalaxmi, K., Gopalakrishna Rao, V. and Sudarshanreddy, M. 2003. Profile of the rural women micro-entrepreneurs. *Journal of Research*, Acharya N.G. Ranga Agricultural University, Hyderabad **31**(4): 51-54.

Chaudhari, R. R., Hirevenkanagoudar L. V., Hanchinal S. N., Mokashi A. N., Katharki P. A. and Banakar B. 2007. A scale for measurement of entrepreneurial behaviour of dairy farmers. *Karnataka J. Agric. Sci*. **20** (4): 792-796.

Patel Pooja, Patel, M.M., Badodia, S.K. and Sharma Prabhakar 2014. Entrepreneurial Behaviour of Dairy farmers. *Indian Res. J. Ext. Edu*. **14** (2): 46-49.

Reddy, S.M. and Reddi, M.S. 2005. Relationship between management attributes of dairy farmers and their farming performance. *Indian Veterinary Journal* **82**(4): 455-456.

Saha, B., Jancy Gupta and Sabyarachi Das 2003. Knowledge of clean milk production practices among dairy farmers of West Bengal. *Indian Journal of Extension Education* **39**(3&4): 230-233.

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ASSOCIATION BETWEEN PERSONAL TRAITS AND ADOPTION OF PEA PRODUCTION TECHNOLOGY IN KOTA REGION OF RAJASTHAN

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ABSTRACT

The present study was conducted in Kota region of Rajasthan. Total 200 pea growers from 20 identified villages were selected for present study. Data were collected through prestructured interview schedule, thereafter, data were analysed, tabulated and interpretated in the light of the objective of study. The results indicated that age of respondents was significantly associated with adoption of improved pea cultivators technology. Whereas personal variables namely education, annual income, cosmopolitan outlook, economic motivation, extension contact and social participation were not significantly associated with adoption of improved pea cultivation technology.

INTRODUCTION

Vegetables occupy an important place in diversification of agriculture and have played a pivotal role in food and nutritional security of ever growing population of our country. India is the second largest producer of vegetables after China. Pea is one of the important vegetable crops grown all over the world. The important pea producing countries are USA, China, India, France, UK, Netherlands, Hungary, Russia, Egypt and Australia. Pea has been grown in India for several decades and is quite adapted to this part of the world. In India pea is cultivated in Uttar Pradesh, Madhya Pradesh, Himachal Pradesh, Punjab, Haryana, Rajasthan, Maharashtra, Bihar, and Karnataka, which contributing to 67 percent of total pea production. The Kota region of Rajasthan is leading in area and production of pea. The soil and climatic condition of this region is most favourable for pea cultivation, while the productivity is fare below as compared to recommend by the scientists. The productivity of the crop is dependent on the personal variables of the pea growers. Therefore, the present study was conducted to see the factors affecting adoption of pea production technology in Kota region of Rajasthan.

RESEARCH METHODOLOGY

The present study was conducted in Kota region of Rajasthan. Kota region consist of five districts, out of which three districts namely Bundi, Kota and Tonk were selected purposely on the basis of maximum area under pea cultivation. Two tehsils from each identified districts were selected on the basis of maximum area under pea cultivation. Thus, in all six tehsils were taken for the present study. Total twenty villages were identified on the basis of proportionate sampling from the selected tehsils. To select the respondents, a comprehensive list of all pea growers was prepared for all villages. Thereafter, the farmers were categorized into two groups *i.e.* small and marginal on the basis of pea cultivation. The respondents selected randomly from each category of the farmers. It was planned to select 10 respondents *i.e.* five in each category from the each selected village. Thus, the total sample size of the study was 200 respondents. Data were collected through prestructured interview schedule. Thereafter, data were analysed, tabulated and interpretated in the light of the objective of the study.

RESULTS AND DISCUSSION

The association between socio-economic and psychological variables of respondents and their level of adoption about pea production technology were calculated by applying chi-square test and results of the same have been presented in subsequent tables.

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Hypotheses:

NH_{01}: There is no association between age of pea growers and adoption of pea production technology.

RH_1: There is an association between age of pea growers and adoption of pea production technology.

Table 1 reveals that out of the 66 pea growers from young age group, 26 (39.39%) had high level of adoption, while 36 (54.54%) and 4 (6.07%) farmers were found in the medium and low level of adoption group respectively. In the middle age group, 46, 14 and 28 farmers possessed medium, high and low level of adoption respectively. In case of old age group, out of 46 pea growers, 23.92, 50.00 and 26.08 per cent farmers had low, medium and high adoption levels about pea production technology respectively.

Further analysis of Table 1 clearly indicates that the calculated chi-square value (19.91) was higher than its tabulated value at 1 per cent level of significance and 4 degree of freedom. Therefore, null hypothesis was rejected and alternative hypothesis (RH_1) "there is an association between age of pea growers and adoption of pea production technology" was accepted. This reveals that there is an association between age of farmers and adoption of pea production technology. It can be inferred that age has an association with innovativeness of farmers or in other words younger farmers have adopted pea production technology more than older farmers. It means that age played a significant role in adoption of pea production technology in the study area. The findings are similar with the findings of Srivastava *et al*. (2002) who observed that age of respondents had significant and positive relationship with the adoption of S.49 variety of chilli.

Hypotheses:

NH_{02}: There is no association between education of the pea growers and adoption of pea production technology.

RH_{02}: There is an association between education of the pea growers and adoption of pea production technology.

Table 2 indicates that out of total 61 respondents in the illiterate group, 15 respondents possessed low level of adoption, 37 and 9 respondents had medium and high level of adoption about improved pea production technology respectively. In the literate group, 18.39, 49.42 and 32.19 per cent respondents were to be noted in low, medium and high level of adoption group respectively. While, in case of educated group of respondents, 28.84, 48.08 and 23.08 per cent farmers had high, medium and low level of adoption respectively about pea production technology.

Data in Table further show that the calculated chi-square value (6.76) was less than tabulated value

Table 1. Association between age and adoption of pea production technology by the farmers

n=200

S. No.	Age group	Adoption level			Total	Chi-square value
		Low	Medium	High		
1.	Young (< 34 years)	4 (6.07)[1] (9.30)[2]	36 (54.54)[1] (34.30)	26 (39.39)[1] (50.00)[2]	66 (100) (33.00)	
2.	Middle (34-56 years)	28 (31.82)[1] (65.12)[2]	46 (52.28)[1] (43.80)[2]	14 (15.90)[1] (29.93)[2]	88 (100) (44.00)	19.91**
3.	Old (> 56 years)	11 (23.92)[1] (25.58)[2]	23 (50.00)[1] (21.90)[2]	12 (26.08)[1] (23.07)[2]	46 (100) (23.00)	
	Total	**43 (21.50) (100.00)**	**105 (52.50) (100.00)**	**52 (26.00) (100.00)**	**200 (100) (100.00)**	

** = Significant at 1 per cent level, 1 = Percentage of row, 2 = Percentage of column

Table 2. Association between education and adoption of pea production technology by the farmers

n=200

S. No.	Education Status	Adoption level			Total	Chi-square value
		Low	Medium	High		
1.	Illiterate	15 (24.59)[1] (34.90)[2]	37 (60.65)[1] (35.24)[2]	9 (14.76)[1] (17.30)[2]	61 (100) (30.50)	
2.	Literate	16 (18.39)[1] (37.20)[2]	43 (49.42)[1] (40.96)[2]	28 (32.19)[1] (53.85)[2]	87 (100) (43.50)	6.76^{NS}
3.	Educated	12 (23.08)[1] (27.90)[2]	25 (48.08)[1] (23.80)[2]	15 (28.84)[1] (28.85)[2]	52 (100) (26.00)	
	Total	**43 (21.50) (100)**	**105 (52.50) (100)**	**52 (26.00)[1] (100)[2]**	**200 (100) (100)**	

NS = Non-significant, 1 = Percentage of row, 2 = Percentage of column

at 4 degree of freedom and 5 and 1 per cent level of significance. Therefore, research hypothesis (RH_2) was rejected and null hypothesis (NH_{02}) entitled "there is no an association between education of the pea growers and adoption of pea production technology" was accepted. This shows that there is no association between education of respondents and adoption of pea production technology. Hence, it is concluded that education did not play a vital role in the adoption of pea production technology.

The findings are contradictory with the findings of Kumar (2004) who reported that education of farmers was significantly associated with the adoption of recommended gram production technology.

Hypotheses:

NH_{03}: There is no association between annual income and adoption of pea production technology.

RH_3: There is an association between annual income and adoption of pea production technology.

Table 3 shows that out of the total 41 pea growers from low income group, 9 (21.95%), 22 (53.66%) and 10 (24.39%) respondents were found in the low,

Table 3. Association between annual income and adoption of pea production technology by the farmers

n=200

S. No.	Income level	Adoption level			Total	Chi-square value
		Low	Medium	High		
1.	Low income (upto Rs. 49000/year)	9 (21.95)[1] (20.97)[2]	22 (53.66)[1] (20.95)[2]	10 (24.39)[1] (19.23)[2]	41 (100) (20.50)	
2.	Medium income (Rs. 49001-97000/year)	20 (21.50)[1] (46.97)[2]	41 (44.08)[1] (39.05)[2]	32 (34.42)[1] (61.54)[2]	93 (100) (46.50)	8.39^{NS}
3.	High income (above Rs. 97000/year)	14 (21.21)[1] (32.56)[2]	42 (63.63)[1] (40.00)[2]	10 (15.16)[1] (19.23)[2]	66 (100) (33.00)	
	Total	**43 (21.50) (100)**	**105 (52.50) (100)**	**52 (26.00) (100)**	**200 (100) (100)**	

NS = Non significant, 1 = Percentage of row, 2 = Percentage of column

medium and high adoption level respectively. Whereas, in the medium income group 41, 32 and 20 farmers were found in medium, high and low adoption level respectively. In the case of high income group, 63.63, 15.16 and 21.21 per cent pea growers had medium, high and low adoption respectively.

Further analysis of Table 3 indicates that the calculated chi-square value (8.39) is lower than its tabulated value at 5 per cent level of significance and 4 degree of freedom. Therefore, null hypothesis (NH_{03}) "there is no association between annual income and adoption of pea production technology" was accepted and alternative hypothesis (RH_3) was rejected. It means that there is no association between income level of farmers and adoption of pea production technology.

The present findings are in contradiction with the findings of Jadav and Munshi (2004) who observed that annual income was positively and significantly correlated with the level of adoption of recommended onion production technology by the onion growers.

Hypotheses:

NH_{04}: There is no association between cosmopolitan outlook and adoption of pea production technology.

RH_4: There is an association between cosmopolitan outlook and adoption of pea production technology.

Data accorded in Table 4 reveal that out of 56 pea growers from low cosmopolitan group, 18 (32.14%) had low level of adoption, while 28 (50.00%) had medium level of adoption and 10 (17.86%) farmers had high level of adoption respectively. In the middle cosmopolitan group, 56, 30 and 16 farmers possessed medium, high and low level of adoption respectively. In case of high cosmopolitan group, out of 42 pea growers, 50.00, 28.58 and 21.42 per cent farmers possessed high, medium and low level of adoption of pea production technology respectively.

Further analysis of table shows that the calculated chi-square value (6.77) was lower than its tabulated value at 5 per cent level of significance and 4 degree of freedom. Therefore, research hypothesis (RH_4) was rejected and null hypothesis (NH_{04}) entitled "there is no association between cosmopolitness and adoption of pea production technology" was accepted. This reveals that there is no association between cosmopolitan nature of the farmers and adoption of pea production technology. It means cosmopolitan nature did not play a significant role in adoption of pea production technology.

The present findings are contradictory with the findings of Vashishtha (2011) who reported that

Table 4. Association between cosmopolitan outlook and adoption of pea production technology by the farmers

n=200

S. No.	Cosmopolitan level	Adoption level			Total	Chi-square value
		Low	Medium	High		
1.	Low	18 (32.14)[1] (41.87)[2]	28 (50.00)[1] (26.67)[2]	10 (17.86)[1] (19.23)[2]	56 (100) (28.00)	
2.	Medium	16 (15.69)[1] (37.20)[2]	56 (54.90)[1] (53.33)[2]	30 (29.41)[1] (57.69)[2]	102 (100) (51.00)	6.77^{NS}
3.	High	9 (21.42)[1] (20.93)[2]	21 (50.00)[1] (20.00)[2]	12 (28.58)[1] (23.08)[2]	42 (100) (21.00)	
	Total	**43 (21.50) (100)**	**105 (52.50) (100)**	**52 (26.00) (100)**	**200 (100) (100)**	

NS = Non-significant, 1 = Percentage of row, 2 = Percentage of column

cosmopolitan nature had significant relationship with adoption of improved chilli production technology.

Hypotheses:

NH_{05}: There is no association between economic motivation and adoption of pea production technology.

RH_5: There is an association between economic motivation and adoption of pea production technology.

Table 5 indicates that out of 55 pea growers who had low economic motivation level, 8 (14.54%) had low level of adoption, while 27 (49.09%) and 20 (36.37%) pea growers had medium and high level of adoption respectively. In the medium motivational group, 60, 23 and 28 farmers possessed medium, high and low level of adoption respectively. In the case of high motivation category of farmers, 52.94, 26.48 and 20.58 per cent pea farmers had their adoption level high, medium and low respectively about pea production technology.

Further analysis of data incorporated in Table 5 clearly reveals that the calculated chi-square value (5.61) was lower than tabulated value at 5 per cent level of significance and 4 degree of freedom. Therefore, research hypothesis (RH_5) was rejected and null hypothesis (NH_{05}) "there is no association between economic motivation and adoption of pea production technology" was accepted. This reveals that there is no association between extent of economic motivation and adoption of pea production technology. The findings are not similar with the findings of Vashishtha (2011) who reported that level of economic motivation is significantly associated with adoption of improved practices of chilli.

Hypotheses:

$NH\text{-}_{06}$: There is no association between extension contact and adoption of pea production technology.

RH_6: There is an association between extension contact and adoption of pea production technology.

It was noted from the Table 6 that out of the 51 pea growers from low extension contact group, 5 (9.80%) had low level of adoption, while 34 (66.67%) and 12 (23.53%) farmers were found in medium and high level of adoption group respectively. In medium extension contact group, 58, 32 and 32 respondents possessed medium, low and high adoption respectively. In case of high extension contact group, 48.14, 29.63 and 22.23 per cent pea growers were reported in medium, high and low level adoption respectively about pea production technology.

Further analysis of Table 6 shows that the calculated chi-square value (7.39) is less than

Table 5. Association between economic motivation and adoption of pea production technology by the farmers

n=200

S. No.	Motivation level	Adoption level			Total	Chi-square value
		Low	Medium	High		
1.	Low	8 (14.54)[1] (18.60)[2]	27 (49.09)[1] (25.71)[2]	20 (36.37)[1] (38.47)[2]	55 (100) (27.50)	
2.	Medium	28 (25.22)[1] (65.12)[2]	60 (54.06)[1] (57.15)[2]	23 (20.72)[1] (44.23)[2]	111 (100) (55.50)	5.61^{NS}
3.	High	7 (20.58)[1] (16.28)[2]	18 (52.94)[1] (17.14)[2]	9 (26.48)[1] (17.30)[2]	34 (100) (17.00)	
	Total	**43 (21.50) (100)**	**105 (52.50) (100)**	**52 (26.00) (100)**	**200 (100) (100)**	

NS = Non-significant, 1 = Percentage of row, 2 = Percentage of column

Table 6. Association between extension contact and adoption of pea production technology

n=200

S. No.	Extension contact level	Adoption level			Total	Chi-square value
		Low	Medium	High		
1.	Low	5 (9.80)[1] (11.63)[2]	34 (66.67)[1] (32.38)[2]	12 (23.53)[1] (23.08)[2]	51 (100) (26.50)	
2.	Medium	32 (26.23)[1] (74.41)[2]	58 (47.54)[1] (55.24)[2]	32 (26.23)[1] (61.53)[2]	122 (100) (60.00)	7.39[NS]
3.	High	6 (22.23)[1] (13.96)[2]	13 (48.14)[1] (12.38)[2]	8 (29.63)[1] (15.39)[2]	27 (100) (13.50)	
	Total	**43 (21.50) (100)**	**105 (52.50) (100)**	**52 (26.00) (100)**	**200 (100) (100)**	

NS = Non-significant, 1 = Percentage of row, 2 = Percentage of column

tabulated value at 5 per cent level of significance and 4 degree of freedom. Therefore, research hypothesis (RH_6) was rejected and null hypothesis (NH_{06}) "there is no association between extension contact and adoption of pea production technology" was accepted. This reveals that there is no association between extension contact and adoption of pea production technology. It can be inferred that extent of extension contact had not association with adoption of pea production technology. Contradictory findings are reported by Vashishta (2011) who inferred that extent of extension contact of farmers had an association with adoption of chilli cultivation technology.

Hypotheses:

NH_{07}: There is no association between social participation and adoption of pea production technology.

RH_7: There is an association between social participation and adoption of pea production technology.

Table 7 reveals that out of total 38 respondents from low social participation group, 17 (44.74%) had medium level of adoption whereas, 11 (28.94%) and 10 (26.32%) farmers had low and high level of adoption about pea production technology. In the

Table 7. Association between social participation and adoption of pea production technology

n=200

S. No.	Social participation level	Adoption level			Total	Chi-square value
		Low	Medium	High		
1.	Low	11 (28.94)[1] (25.58)[2]	17 (44.74)[1] (16.19)[2]	10 (26.32)[1] (19.23)[2]	38 (100) (19.00)	
2.	Medium	21 (20.38)[1] (48.84)[2]	50 (48.55)[1] (47.62)[2]	32 (31.07)[1] (61.54)[2]	103 (100) (53.50)	6.48[NS]
3.	High	11 (18.65)[1] (25.58)[2]	38 (64.40)[1] (36.19)[2]	10 (16.95)[1] (19.23)[2]	59 (100) (27.50)	
	Total	**43 (21.50) (100)**	**105 (52.50) (100)**	**52 (26.00) (100)**	**200 (100) (100)**	

NS = Non-significant, 1 = Percentage of row, 2 = Percentage of column

medium participation group 50, 32 and 21 farmers had medium, high and low level of adoption. In case of high participation group, 64.40, 16.95 and 18.65 per cent farmers were found in medium, high and low adoption category respectively regarding adoption of pea production technology.

Further analysis of Table 7 shows that the calculated chi-square value (6.48) is less than its tabulated value at 5 per cent level of significance and 4 degree of freedom. Therefore, null hypothesis (NH_{07}) entitled "there is no association between social participation and adoption of pea production technology" was accepted and alternative hypothesis (RH_7) was rejected. This reveals that there is no association between level of social participation and adoption of pea production technology. The findings are in line with the findings of Mankar *et al.* (2006) who found that social participation of respondents had non-significant relationship with the intensity of problems faced by the respondents.

CONCLUSION

It is concluded that age of respondents was significantly associated with adoption of improved pea cultivation technology. Whereas, personal variables namely education, annual income, cosmopolitan outlook, economic motivation, extension contact and social participation were not significantly associated with adoption of improved pea cultivation technology. It means that these variables did not play a significant role in adoption of pea production technology in the study area.

REFERENCES

Jadav, N.B. and Munshi, M.A. 2004. Adoption of recommended onion production technology. *Gujarat Journal of Extension Education* **15**: 44-46.

Kumar, M. 2004. Status and future strategy of gram (*Cicer arietinum* L.) cultivation in Jhunjhunu District of Rajasthan. M.Sc. thesis submitted to Maharana Pratap University of Agriculture and Technology, Udaipur, Rajasthan.

Mankar, D.M., Sawant, V.Y. and Badve, G.P. 2006. Association of selected personal characteristics of the tribals with the intensity of problems faced by them. *Rural India* **69**: 49-52.

Srivastava, K.K., Sarkar, J.D. and Lakhera, M.L. 2002. Adoption behaviour of farmers about chilli cultivation technology. *Maharashtra Journal of Extension Education* **21**: 59-62.

Vashishtha, U. 2011. An Assessment of Knowledge and Adoption of Chilli (*Capsicum annum* L.) Production Technology in Udaipur District of Rajasthan. Ph.D. thesis submitted to MPUAT, Udaipur (Raj.).

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KNOWLEDGE OF WOMEN DAIRY COOPERATIVE MEMBERS AND NON-MEMBERS ABOUT IMPROVED DAIRY PRODUCTION TECHNOLOGIES

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ABSTRACT

The present study was conducted in two panchayat samities namely Asind and Shahpura of Bhilwara district of Rajasthan were selected for the study as about 50 per cent (53 WDCS) were operating in the above two panchayat samities. From each of the selected panchayat samities 12 WDCSs were randomly selected for the study constituting 24 WDCSs in all. The study included two categories of respondents i.e. women milk producers who were members of the cooperative society (member) and women milk producers who has not obtained the membership of women dairy cooperative society (non-member). A comparative view of the knowledge level of Women Dairy Cooperative members and non-members clearly reveals that majority i.e. 58.33 per cent members were categorized under 'medium' knowledge level followed by 37.5 per cent members possessing 'high' level of knowledge. Majority of non members i.e. 62.5 per cent also possessed medium level of knowledge followed by 43 (35.83%) respondents possessing low level of knowledge and only 2 (1.67%) respondents came under high knowledge category. It may be concluded that WDCS member's knowledge towards improved dairy production technologies was much higher than the non-members. It indicates that WDCS has helped women to increase their knowledge in various aspects of dairy production technologies.

INTRODUCTION

Livestock sector play an important role in Indian Economy and it can be gauged from the contribution it makes to the National Economy. Women contribute significantly to the dairy sector, without their contribution one just can't think of dairying in India. Animal husbandry occupies as an important position in the rural economy of the state. It contributes substantially to the farmer's income in combination with crop production. Women members were trained and educated about improved animal husbandry/ dairy production technology, health and sanitation, literacy and decision making power to empower the women socially & economically. The study of knowledge level of the WDCS members about advanced dairy production technology would help in knowing effectiveness of training and other extension activities conducted by dairy union & provide a guideline for further strengthening of the same for better empowerment of WDCS members. The present study will also help in understanding the structure and functioning of women dairy cooperative societies in the district and judging the effectiveness of the societies in terms of providing employment opportunities, generating additional income to the dairy farm women.

RESEARCH METHODOLOGY

The present study was conducted in 2 panchayat samities namely Asind and Shahpura of Bhilwara district of Rajasthan were selected for the study as about 50 per cent (53 WDCS) were operating in the above two panchayat samities. From each of the selected panchayat samities, 12 WDCSs were randomly selected for the study constituting 24 WDCSs in all. The study included two categories of respondents i.e. women milk producers who were members of the cooperative society (member) and women milk producers who has not obtained the membership of women dairy cooperative society (non member). This non-member group of respondents served as the control group of the study. The sample consisted of a total of 120 cooperative members and 120 non-members. A comprehensive interview schedule was developed by the investigator, keeping in mind the objectives and purpose of the study on

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the Test to measure knowledge of advanced technologies of activities including dairy production technologies. Personal interview technique was adopted for obtaining the required information. Each WDCS is the centre for enhancement of milk production through Artificial insemination, Animal health services, fodder production and distribution of balanced cattle feed in addition to dairy activity. The WDCS has also underline literacy programme, rural health and sanitation, income generation and awareness programme to achieve the objective set forth. To analyse the collected information, the statistical (Percentage, Mean Scores, Mean Percent Scores, Standard deviation, 'Z' Test) measures[4] were used to interpret the data.

RESULTS AND DISCUSSION

In present investigation knowledge of women dairy cooperative members and non members about different activities like literacy, women cooperative organization input service, employment activities, health and sanitation, awareness generation and information dissemination etc. with special references to improved dairy production technology were assessed.

Knowledge about improved dairy production technologies

Knowledge test was used to measure the status of knowledge of women dairy cooperative members as well as non-members about improved dairy production technologies. The test covered four components i.e. breeding, feeding, management and health care aspects. To get an overview of the status of knowledge, the respondents were grouped under these categories of knowledge namely 'low' knowledge, 'medium' knowledge and 'high' knowledge level. It is evident from the data presented in table-1 that majority of the respondents i.e. 60.41 per cent fell in medium knowledge and 47 (19.58%) were placed under high knowledge level. These findings were further supported by Yadav et al. (2004) that majority of the member dairy farmers had medium level of knowledge regarding improved dairy farming practices followed by high and low level of knowledge.

Table 1 presents information regarding knowledge of respondents about employment generating activities. It is evident from table-1 that medium level of knowledge was possessed by majority 155 (64.58 per cent) respondents. Only 27 (11.25%) respondents had high level of knowledge about employment activity generated by WDCS. A comparative view of the knowledge level of women dairy cooperative members and non members clearly depicts that majority of members (65.83%) and non members (63.33%) were having the medium level of knowledge about employment activity, followed by 20.83 per cent members possessing high level of knowledge as compared to only 2 (1.67%) non members in this category.

As apparent from Table 1 that majority of respondents (40.42%) were in the medium knowledge category. Where as a comparative view of the knowledge level of WDCS members and non-members that majority (55 %) members categorized under high knowledge category as compared to only 2 (1.67%) non members in this category. The number of non- members (57.5%) in low knowledge category was considerably higher than members. Whereas, almost equal percentage i.e. 40 per cent members and 40.83 per cent non-members were possessing medium knowledge about this activity. This shows that members were having better knowledge of women cooperative organization and input services as compared to non-members. Similar findings were observed by Awasthi, et al. (2002).

Comparison of knowledge level of members and non-members with regards to improved dairy production technologies

There is no significant difference between members and non-members with regards individual component and over all knowledge of improved dairy production technologies. A comparative look of data presented in table-2 indicates that the member had higher mean scores of the knowledge (47.67) as compared to non members whose mean scores was 23.98. This shows that members had higher knowledge than the non-members regarding improved dairy production technologies.

Comparison of knowledge of women dairy corporation member and non-members with regards to improved dairy management practices

Data presented in table-3 reveal that the overall

Table 1. Level of Knowledge of Women Dairy Cooperative Members and Non Members about different dairy activities

Knowledge level	Members		Non members		Over all	
	f	%	f	%	f	%
Dairy Production						
Low (below 22)	5	4.17	43	35.83	48	20
Medium (22 to 49)	70	58.33	75	62.5	145	60.41
High (above 49)	45	37.5	2	1.67	47	19.58
Total 120		120		240		
Mean= 35.82			**S.D.=13.40**			
Employment Programme						
Low (below 2)	16	13.34	42	35	58	24.17
Medium (2 to 8)	79	65.83	76	63.33	155	64.58
High (above 8)	25	30.84	2	1.67	27	11.25
Total 120	100	120	100	240	100	
Mean= 5			**S.D.=3.49**			
Literacy Programme						
Low (below 4)	4	3.33	26	21.6	30	12.5
Medium (4 to 8)	52	43.33	93	77.5	145	60.41
High (above 8)	64	53.34	1	0.9	65	27.08
Total 120	**100**	**120**	**100**	**240**	**100**	
Mean= 6.59			**S.D.=2.42**			
Women Cop. Programme						
Low (below 4)	6	5	69	57.5	75	31.25
Medium (4 to 12)	48	40	49	40.83	97	40.42
High (above 12)	66	55	2	1.67	68	28.33
Total 120	100	120	100	240	100	
Mean= 8			**S.D.=4.55**			
Awareness generation						
Low (below 5)	0	0	47	39.17	47	19.58
Medium (5 to 13)	56	56.67	73	60.83	129	53.75
High (above 13)	64	53.33	0	0	64	26.67
Total 120	100	120	100	240	100	
Mean= 9			**S.D.=3.99**			
Health and Sanitation						
Low (below 6)	2	1.67	42	35	44	18.33
Medium (6 to 10)	35	29.16	67	55.83	102	42.5
High (above 10)	83	69.17	11	9.17	94	39.17
Total 120	100	120	100	240	100	
Mean= 8			**S.D.=2.55**			

Table 2. Comparison of WDCS members and non members regarding knowledge of improved dairy production technology

S.No.	Dairy Production Technology	Members (n=120) mean scores	Non-members (n=120) mean scores	'Z' values
1.	Health care	8.57	5.54	17.32**
2.	Management	11.23	5.6	14.03**
3.	Feeding	10.82	6.12	9.096**
4.	Breeding	17.5	6.72	49.22**
	Over all knowledge	47.67	23.78	73.75**

** Significant at 1 percent level of significance

Table 3. Comparison of WDCS members and non-member regarding knowledge of different activities other than dairy production technology

S.No.	Dairy Production Technology	Members (n=120) mean scores	Non-members (n=120) mean scores	'Z' values
1.	Employment activity	7.82	1.78	35.57**
2.	Women cooperative organization and input services	11.9	3.68	46.95**
3.	Literacy activity	8.22	4.96	18.9**
4.	Awareness generation and information dissemination	12.65	5.78	37.57**
5.	Health and sanitation	10.3	6.79	19.96**

** Significant at 1 per cent level of significance

knowledge of health and sanitation as possessed by the member respondents is significantly higher than by non-member respondents. The mean scores obtained by both the categories are 10.3 for member and 6.79 for non-member respondents. Perusal of table-3 clearly depicts that in case of members and non-members there existed significant difference in knowledge between member and non-member as regard to their knowledge about health and sanitation.These observations were similar with the findings of Pulinilkunnathil and Subhadra (2002) and Kanan, et al. (2004).

REFERENCES

Awasthi, H.K., Singh, P.R., Khan, M.A. and Sharma, P.N. 2002. Knowledge and attitude of dairy farmers towards improved dairy practices. *Indian Journal of Extension Education* **38**(1&2): 104-105.

Kanan, M., Sankhala,G. and Das, B.C. 2004. Knowledge level of dairy entrepreneurs about improved dairy farming practices. *Indian Research Journal of Extension Education* **4**(3): 49-52.

Pulinilkunnathil, R.G. and Subhadra, M.R. 2002. Knowledge of farmwomen about scientific selection and housing of calves: An impact study. *Indian Veterinary Journal* **79**(3): 286-288.

Sankhala, G. and Sharma, B.M. 2001. Role performance of farm women in agriculture and dairy husbandry: An analysis. *Rajasthan journal of Extension Education* **8&9**: 10-13.

Snedecor, G.W. and Cochran, W.G. 1994. Statistical methods. 7th Ed. The Iowa State University Press, Ames.

Yadav, J.P., Bangarva, G.S. and Yadav, J.P. 2004. Knowledge level of members of women dairy cooperative societies about improved dairy practices in Jaipur Dairy. *Indian Research Journal of Extension Education* **4**(3): 64-67.

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ATTITUDE OF THE MANGO ORCHARDISTS TOWARDS ECO-FRIENDLY MANAGEMENT PRACTICES

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ABSTRACT

The present study was conducted in Ratangiri and Sindhudurg districts of south konkan in Maharashtra to know level of attitude of mango orchardists towards eco-friendly management practices of mango. By interviewing 200 mango orchardists it is found that majority of the respondents had favourable attitude towards eco-friendly management practices of mango and there was significant difference in attitude of small and big respondents towards eco-friendly management practices of mango. There was a significant correlation between small and big respondents with regards to ranks assigned to different aspects of attitude towards eco-friendly management practices of mango. It is recommended that personal and group counselling of the orchardists should be done by extension scientist and horticulturist jointly for improving the attitude.

INTRODUCTION

Attitude is a pre-conditional factor for any action. Attitude of an individual plays important role in determining one's behaviour with respect to a particular psychological object. Also attitude is the degree of positive effects of mango growers towards eco-friendly management practices has immense relevance to their adoption. Adoption of eco-friendly management practices depends upon the favourable attitude towards them. It has been reported in many studies and literature that the attitude of an individual plays an important role in the adoption or rejection of an innovation. The greater adoption of any agriculture package to a large extent depends upon the favourable attitude of its clientele towards the proposed package. Therefore, it was felt necessary to study the attitude of the mango orchardists towards eco-friendly management practices of mango in the study area with following objectives.

1. To study level of attitude of mango orchardists towards eco-friendly management practices of mango.
2. To know the statement-wise attitude of mango orchardist towards eco-friendly management practices of mango.

RESEARCH METHODOLOGY

The present study was conducted in Ratangiri and Sindhudurg districts of south Konkan in Maharashtra. The two districts, four tehsils and 20 villages were selected on the basis of maximum area under mango cultivation. Ten mango orchardists were selected randomly from each village. The 200 mango orchardist were interviewing with special designed interview schedule. The statistical tools like percentages, standard deviation, frequency and rank correlation were used.

RESULTS AND DISCUSSION

The results are presented herewith as below:

1. Attitude of mango orchardists towards eco-friendly management practices of mango

The distribution of respondents according to their level of attitude towards eco-friendly management practices is presented in Table 1.

The data incorporated in Table 1 reveals that out of total 200 respondents, 71.00 per cent had favourable attitude towards eco-friendly management practices of mango. Whereas, 14.50 per cent mango growers of the total respondents had most favourable attitude and remaining 14.50 per cent respondents

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Table 1 : Distribution of respondents according to their attitude towards eco-friendly management practices

n = 200

S. No.	Degree of Attitude	Small orchardists		Big orchardists		Total mango growers	
		F	%	F	%	F	%
1.	Least favourable (< 63)	17	17.00	12	12.00	29	14.50
2.	Favourable (64 to 79)	73	73.00	69	69.00	142	71.00
3.	Most favourable (> 79)	10	10.00	19	19.00	29	14.50
	Total	**100**	**100.00**	**100**	**100**	**200.00**	**100**
	Average (score)	**70.42**		**72.68**		**71.55**	

F = Frequency, % = Percentage

possessed least favourable attitude towards eco-friendly management practices of mango in the study area. It means that majority of the total respondents had positive and favourable attitude towards eco-friendly management practices of mango.

Further analysis of Table 1 shows that 73 per cent small and 69 per cent big orchardists had favourable attitude towards eco-friendly management practices of mango. It can also be seen that 17 per cent and 12 per cent small and big orchardists had least favourable attitude, respectively, while 10 per cent and 19 per cent small and big orchardists were having most favourable attitude, respectively. It is encourage observing an overall positive attitude towards eco-friendly management practices possessed by mango orchardists in the study area.

The findings are similar with findings of Singh (2010) ,Anony (2012) and dissimilar with findings of Lalita *et.al* (2012).

2. Statement-wise attitude of mango orchardist towards eco-friendly management practices of mango

A total 20 attitude statements were considered to measure the attitude of mango orchardists following the Likert technique to determine aspect-wise attitude of mango growers towards eco-friendly management. For this, mean per cent score (MPS) for each statement was calculated and ranked accordingly. The results are presented in Table 2.

It is seen from Table 2 that majority orchardists clearly noted positive attitude towards statements 'eco-friendly management practices is the only option to achieve sustainable production of mango (88 %) in both categories and was accorded with 1st rank, The statement 'mango obtained from eco-friendly management practices has high demand in market' (87.40 %) was accorded 2nd rank with little difference in both groups. Similarly, 'eco-friendly management practices in mango increase its export value' (86.50 %), 'mango produced through eco-friendly management practices is good for normal health' (86.30 %), 'eco-friendly management practices can be adopted by all categories of orchardists' (85.90 %) accorded 3rd, 4th and 5th ranks with MPS more than 85 per cent and little difference in both category.

The favourable attitude was also reported to the statements namely 'the quality of mango produced through eco-friendly management practices is much superior' (84.20 %), 'application of eco-friendly management practices in mango practices in mango should be made compulsory for orchardists for better future (82.60 %), 'eco-friendly management practices of mango are suitable for diversification of agriculture' (81.50 %), 'adoption of eco-friendly management practices contribute to economic empowerment of orchardists' (81.10 %) accorded 6th, 7th, 8thand 9th ranks with MPS more than 80 per cent.

The quite less MPS was found in the statements 'one can make best use of money by spending it in the use of eco-friendly management practices of mango (79.70 %), 'adoption of eco-friendly management practices on large farms requires more

Table 2. Attitude of mango orchardists towards different aspects of eco- friendly management practices

n = 200

No.	Statement	Small orchardists		Big orchardists		Total	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Eco-friendly management practice is the only option to achieve sustainable production of mango	86.20	3	89.80	2	88.00	1
2.	Eco-friendly management practices of mango are nothing new to offer to mango grower	61.60	15	60.20	20	60.40	18
3.	Mango obtained from eco-friendly management practices have high demand in market	84.20	5	90.60	1	87.40	2
4.	Adoption of eco-friendly management practices on large farms requires more human and other resources	61.80	16	71.00	12	66.40	11
5.	Eco-friendly management practices can be adopted by all categories of orchardists	84.00	6	87.8	3	85.90	5
6.	Technology on eco-friendly management practices of mango is beyond the comprehension of ordinary mango grower	58.40	17	64.80	15	61.60	16
7.	Eco-friendly management practices in mango increases its export value	86.60	2	86.40	4	86.50	3
8.	Eco-friendly management practices of mango have less visibility hence orchardists are not easily convinced	65.50	12	65.00	14	65.25	12
9.	The quality of mango produced through eco-friendly management practices is much superior	84.20	4	84.20	6	84.20	6
10.	Eco-friendly management practices of mango can be tried by small orchardists only	61.60	14	68.20	13	64.90	13
11.	Application of eco-friendly management practices in mango should be made compulsory for orchardists for better future	82.60	7	82.60	7	82.60	7
12.	The production and productivity of mango is adversely affected when eco-friendly practices are used	57.80	18	71.00	11	64.40	14
13.	One can make best use of money by spending it in the use of eco-friendly management practices of mango	77.80	10	81.60	10	79.70	10
14.	All mango related problems can be solved by the use of eco-friendly management practices	62.80	13	62.80	16	62.80	15
15.	Adoption of eco-friendly management practices contribute to economic empowerment of orchardists	80.20	9	82.00	9	81.10	9
16.	Eco-friendly management practices of mango does not guard against economic loss	60.60	11	62.40	17	61.50	17
17.	Eco-friendly management practices of mango are suitable for diversification of agriculture	81.00	8	82.00	8	81.50	8
18.	I don't think that eco-friendly management practices are making any impact on mango yield	53.80	20	62.20	18	58.00	19
19.	Mango produced through eco-friendly management practices is good for normal health	87.60	1	85.00	5	86.30	4
20.	Adoption of eco-friendly management practices of mango is more time consuming	55.20	19	60.40	19	57.30	20

MPS = Mean Per cent Score, ** Significant at 1 per cent level, rs = 0.83**

human and other resources. (66.40 %), 'eco-friendly management practices of mango have less visibility hence orchardists are not easily convinced. (65.30 %) worth accorded 10th, 11th and 12th rank in the rank order with more than 65 per cent MPS.

The very poor attitude i.e. less than 65 MPS was found in the statements 'eco-friendly management practices of mango can be tried by small orchardist only' (64.90 %), 'the production and productivity of mango is adversely affected when eco-friendly practices are used' (64.40 %), 'all mango related problems can be solved by the use of eco-friendly management practices (62.50 %), 'technology on eco-friendly management practices of mango is beyond the comprehension of ordinary mango grower' (61.60 %), 'eco-friendly management practices of mango does not guard against economic loss' (61.50 %), 'eco-friendly management practices of mango are nothing new to offer to mango grower' (60.90 %),' I don't think that eco-friendly management practices are making any impact on mango yield' (58 %) and 'adoption of eco-friendly management practices of mango is more time consuming'(57.30 %) and ranked 13th to 20th accordingly.

The rank order correlations co-efficient was calculated between the ranks assigned by the small and big orchardists to different statements of attitude about mango cultivation. It is reveals from table 33 that the calculated value of ranks order correlation was 0.85 which was found to be statistically significant at 1 per cent level of significance. Thus, it was inferred that there was a significant correlation between small and big respondents with regards to ranks assigned to different aspects of attitude towards eco-friendly management practices of mango. The present findings are in line with the findings of Singh (2010).

CONCLUSIONS

The attitude plays a significant role in the adoption of eco-friendly management practices. It is noted that three fourth orchardists are in favourable attitude toward eco-friendly management practices. This in turn reflects that still there is scope to bring the respondents into most favourable category. This was ultimately lead to increase in adoption of eco-friendly management practices. Therefore, it is recommended that personal and group counselling of the orchardists should be done by extension scientist and horticulturist jointly for improving the attitude.

REFERENCES

Lalita, A., Agarwal, S. and Kalla, P.N. 2012. Knowledge, attitude and practices regarding vermiculture biotechnology of hostel students of Rajasthan University. *Rajasthan Journal of Extension Education* **20**: 53-56.

Likert, R.A. 1932. A Technique for the measurement of attitude scales. Psychology, New York, No.140.

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

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CONSTRAINTS FACED BY EXTENSION PERSONNEL IN FACILITATING CIGS AND FARM SCHOOLS IN NORTH-EAST STATES

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ABSTRACT

The present study was conducted in eight North-East states of India. Total, 30 respondents were selected and responses were collected from them through mail questionaire technique. The results indicated that inadequate finacial support under the ATMA scheme, non-availability of production inputs at the farmer's doorsteps, lack of extension trainer in close proximity were the most important constraints preceived by the extension personnel.

INTRODUCTION

Most of the poverty alleviation programmes implemented by Govt. of India in the past could not succeed to the desirable extent as these programmes did not consider the needs and interest of the peoples at the grass root level. It has been realized that the public sector extension system on its own is not capable enough to meet the ever increasing and multi faceted demands of the farming community. So It was felt that extension system should be made broad based and holistic by utilizing a farming system approach and involving various stakeholders.

To address the situation, the Government of India (GOI) and the World Bank pilot-tested a new, decentralized, market-driven extension model under the National Agricultural Technology Project (NATP). The Key institution in implementing this new approach was the agricultural technology management agency which was responsible for facilitating and coordinating "farmer-led" extension activities within each district. 'Co-ordination' is linking individuals, groups and organization as a team to attain the organization objectives. The Agricultural Technology Management Agency (ATMA) calls for integrated approach wherein different stakeholders come closer to plan, organise, and execute the activities to take full advantage of the technologies demonstrated in the operational area (*Kumar et.al, 2011*). The critical analysis of constraints faced by the extension functionaries at various levels in facilitating farmer's organizations is important for successful implementation of this programme.

It is in this context, the proposed study was conducted with the following objectives 1. To identify the constraints faced in facilitating CIGs in NE states. 2. To identify the constraints faced in facilitating Farm Schools in NE states.

RESEARCH METHODOLOGY

The study was conducted in eight states of North East including Assam, Mizoram, Nagaland, Manipur, Meghalaya, Sikkim, Tripura and Arunachal Pradesh. A questionnaire was prepared keeping in view the objectives of the study and sent by post to P.D, ATMA of selected states of North East. However, responses were obtained only from 30 nos. of P.D, ATMA. The responses were obtained from five districts of Assam, six districts of Nagaland, seven districts of Arunachal Pradesh, six districts of Mizoram and two districts each from Manipur, Sikkim and Meghalaya. The collected data were tabulated, analyzed and interpreted in accordance with the objectives by using appropriate statistical techniques like percentage and frequency.

FINDINGS AND DISCUSSION

Constraints faced by extension personnel in facilitating CIGs

Three different constraints faced by the extension personnel in promoting CIGs were reported in the study. The percentage and frequency distribution relating to the constraints are tabulated in Table 1 and the explanations on each of the constraints are presented thereof. The constraints reported are

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1. Inadequate financial support under the ATMA Scheme
2. Unavailability of production inputs at the farmer's doorsteps
3. Involvement of ATMA functionaries in the schemes other than ATMA

Table 1. Constraints faced by extension personnel in facilitating CIGs

n=30 ATMA districts

No.	Statements	Frequency & percentage
1	Inadequate financial support under the ATMA Scheme	21(70)
2	Unavailability of production inputs at the farmer's doorsteps	12 (40)
3	Involvement of ATMA functionaries in the schemes other than ATMA	9 (30)

(Figure within parenthesis indicate percentage)

The data presented in the Table 1 reveals that extension personnel of majority (70%) of the districts reported the constraints of 'Inadequate financial support under the ATMA Scheme' followed by 'Unavailability of production inputs at the Farmer's doorsteps' (40%) and 'Involvement of ATMA functionaries in the scheme other than ATMA' (30%).

1. Inadequate financial support under the Scheme for organizing CIG

It was reported that the cost norms provision under the head of 'Mobilizing Farmer's Groups' as per the 'ATMA Cafeteria' is less and inadequate to meet the required expenses. The provision of cost norms of Rs. 5000.00 per group per year for 'capacity building, skill development and support services' was reported as inadequate for organizing and promoting CIGs.

Further, it was reported that the clause restricting 'seed money' only on 'emerging/high value/high yield gap/problematic crops/area preferably on cluster basis' appeared as a constraint in organizing and promoting CIGs. As reported, the provision worked as a de-motivating factor in case of organizing CIGs of other types under the scheme.

2. Unavailability of production inputs at the Farmer's doorsteps

It was reported that CIGs involved in 'Agri-Horti' crops under the ATMA scheme finding it difficult to continue their production avenues due to lack of critical inputs in their doorsteps at appropriate time.

3. Involvement of ATMA functionaries in the schemes other than ATMA

The BTT convenors are still working as drawing and disbursing officers at block level ATMA activities. It was reported that they had to carry out multifarious responsibilities of a number of departmental schemes in addition to ATMA scheme**.** Further they have to involved in the activities like flood relief, election etc which often delays the formation of CIGs and their proper functioning.

Constraints faced by extension personnel in facilitating Farm Schools

Three different constraints faced by the extension personnel in promoting Farm Schools were reported in the study. The percentage and frequency distribution relating to the constraints are tabulated in Table 2 and the explanations on each of the constraints are presented thereof. The constraints reported are

1. Inadequate financial support under the Scheme for organizing Farm school
2. Involvement of ATMA functionaries in the schemes other than ATMA
3. Lack of external trainer in close proximity

Table 2. Constraints faced by extension personnel in facilitating Farm Schools

n=30 ATMA districts

No.	Statements	Frequency & percentage
1	Inadequate financial support under the ATMA Scheme	24 (80)
2	Involvement of ATMA functionaries in the schemes other than ATMA	12 (40)
3	Lack of external trainer in close proximity	6 (20)

(Figure within parenthesis indicate percentage)

The data presented in the Table 2 reveals that extension personnel of majority (80%) of the districts reported the constraint of 'Inadequate financial support under the ATMA Scheme' followed by 'Involvement of ATMA functionaries in the schemes other than ATMA' (40%) and 'Lack of external trainer in close proximity' (20%).

1. Inadequate financial support under the ATMA Scheme

The cost norms provision for organizing and promoting Farm School as per the ATMA Cafeteria in respect to 'logistics support', 'honorarium provision', 'food expenses', 'travel expenses' and for 'printed literature' were reported to be inadequate to meet the expenses.

The provision of cost norms in the Cafeteria for 'travel expenses'@ Rs.150 per trainer per visit, 'honorarium' @ Rs.250 per trainer per visit, 'printed literature'@ Rs.50 per participant, 'food expenses' @Rs.30 per participant and 'logistics support' @ Rs.1000 per Farm School were reported to be minimum due to which the smooth functioning of Farm Schools are hampered.

2. Involvement of ATMA functionaries in the schemes other than ATMA

About 40 percent districts have reported this constraint and the percentage is similar to that reported in case of CIGs. It was reported that BTT convenors had to carry out multifarious responsibilities of a number of departmental schemes in addition to ATMA scheme which often delays the formation and promotion of Farm Schools.

3. Lack of external trainer in close proximity

Six (6) of the hill districts in North East reported that resource persons/external trainer for all the subject areas are not available nearby area particularly in Dairy and Fishery sectors. Further, it was reported that the nominal rate of travel expenses in the ATMA cafeteria restricted the hiring of external trainer from the distant places. It creates problem in upgrading the skills & knowledge of achiever farmers and often leads to the selection of limited area of subject matters.

CONCLUSION

The reported constraints affect the CIGs and Farm School movements which ultimately affect the usefulness of the ATMA schemes in the NE states. The reported constraints are needed to be addressed seriously for smooth formation and functioning of CIGs and Farm Schools in the NE region. The constraint 'Involvement of ATMA functionaries in the schemes other than ATMA' has been reported by the extension functionaries in both the cases of facilitating CIGs and Farm Schools which has to be addressed immediately.

REFERENCES

Kumar, K.A., Eswarappa, G. and Manjunatha, B.N. 2011. Constraints faced by stakeholders in implementation of agricultural technology management agency Programme, *Karnataka J. Agric. Sci.,24 (2):255-257*

Braun, A.R., Thiele, G. and Fernandez, M. 2000. Farmer Field Schools and local agricultural research committees: complementary platforms for integrated decision-making in sustainable agriculture, Agren, *Network Paper No.105*

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PROBLEM FACED BY THE BENEFICIARIES IN AVAILING THE BENEFITS UNDER NATIONAL HORTICULTURE MISSION

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ABSTRACT

The present study was conducted in three taluka of Mehsana district of Gujarat state. Total, 120 beneficiaries were selected as sample of study. The results of the present study indicated that insufficient information given by the government officials, non-availability of labour, lack of adequate information at right time were the important problems faced by the respondents in the study area.

INTRODUCATION

Horticulture plays an important role in Indian agriculture and ultimately in Indian economy. Horticulture plantation constitutes specialized from of farm business and is of highly commercial in nature. During last few decades Indian horticulture has changed from traditional to modern. Our country has become self reliance in food grains, so the focus has been now shifted for improving returns from unit area and developing nutritional security to the masses through promotion of horticultural crops. India holds a vast potential for developing horticulture sector on much wider scale. By diversification in horticulture, farmers can derive many advantages of growing variety of horticultural crops.

RESEARCH METHODOLOGY

The present investigation was conducted in randomly selected Mehsana district of Gujarat state. Mehsana district is composed of 9 taluka. From which three taluka viz. Mehsana, Kheralu and Satlasana were selected randomly. Four villages from each selected taluka were selected randomly. From each selected village ten beneficiaries by making sample of 120 respondents of National Horticultural Mission which had implemented this scheme in year 2005 were selected randomly. The data from selected 120 beneficiaries were collected by contacting them personally through structured interview schedule. Frequencies, percentage, standard deviation, correlation coefficient, were employed to find out the results.

RESULTS AND DISCUSSION

Problems faced in availing benefits under National Horticulture Mission may be many however, they can be minimized. The respondent beneficiaries were requested to express the problems faced by them in availing the benefits. Frequency and percentage for each problem were calculated. Then they were presented in Table 1.

The depiction of data in Table 1 show that, a probe into the problem faced by the respondent beneficiaries revealed that over whelming majority (97.50 per cent) of respondent beneficiaries expressed that they did not have adequate information about the various schemes given under National Horticulture Mission at right time. Similarly over whelming majority (95.00 per cent) of the respondent beneficiaries expressed that non-availability of labour at proper time is also a major problem and slightly more than vast majority (90.00 per cent) of the respondent beneficiaries expressed that subsidy on fertilizers and insecticides are not given commensurate with the existing market price. Whereas vast majority (86.67 per cent) of the respondent beneficiaries faced the problem of lengthy documentation or procedure for getting the benefits and more than four fifth (82.50 per cent) of the respondent beneficiaries had faced the problem of expenditure standard for labor work is very less compared to existing wages. While, subsidy is given late and time consuming procedure were expressed by slightly more than three fourth (77.50 per cent) and great majority (71.67 per cent) of the respondent

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Table 1. Distribution of respondent beneficiaries according to problem faced by them in availing the benefits

S.No.	Problem faced	Respondents	
		Frequency	Percentage
1.	Lengthy documentation and procedure for getting benefit	104	86.67
2.	Time Consuming	86	71.67
3.	Expenditure standard for labour work are very less compaired to existing wages	99	82.50
4.	Non-availability of labour	114	95.50
5.	Subsidy on fertilizers and insecticides is not given commensurate with the existing market price	108	90.00
6.	Selling rates of fruits are very low at peak period	62	51.67
7.	Lack of training	55	45.83
8.	Insufficient information given by Government officials	76	63.33
9.	Lack of adequate information at right time	117	97.50
10.	Subsidy if given late	93	77.50

beneficiaries respectively.

Insufficient information given by government officials, selling rates of fruits are very low at peak period and lacks of training were the other constraints put forth by the respondents.

Suggestions offered by the beneficiaries to overcome the problems faced National Horticulture Mission

An attempt was also made to ascertain suggestions from beneficiaries to overcome various problems faced by them in availing the benefits under National Horticulture Mission. The respondents were requested to offer their valuable suggestions against difficulties faced by them in availing the benefits under National Horticulture Mission. The suggestions given by the respondent beneficiaries were collected summarized and presented in table 2.

It is obvious from the table 2 that majority (96.67 per cent) of the respondent beneficiaries suggested that the rate of subsidy need to be increased by considering price hike of input and wages. While, 95.00 per cent of the respondent beneficiaries expressed that subsidy should be given as soon as the work is completed. Whereas, 91.67 per cent of the respondent beneficiaries suggested that, provide the adequate information about the various schemes included in programme at right time and vast majority (90.83 per cent) of the respondent beneficiaries suggested that government should fix the prices of fruits every year and purchase the same on the line of wheat oil seed etc. Make easy procedure for getting benefits under National Horticulture Mission and training about processing and marketing facilities should be available for sale of product was suggested by more than three fourth (76.67 per cent) and more than half (54.17 per cent) of the respondent beneficiaries.

It can be concluded that major suggestions given by respondent beneficiaries regarding the rate of subsidy need to be increased by considering price hike of input and wages, subsidy should be given as soon as the work is completed and provide the adequate information about the various schemes included in programme at right time.

CONCLUSION

The respondent beneficiaries expressed that they did not have adequate information about the various schemes given under National Horticulture Mission at right time, non-availability of labor at proper time, subsidy on fertilizers and insecticides are not given commensurate with the existing market price, lengthy

Table 2. Suggestions given by beneficiaries of National Horticulture Mission to overcome constraints faced by them

S.No.	Problem faced	Respondents	
		Frequency	Percentage
1.	Make easy procedure for getting benefits under NHM	92	76.67
2.	Provide adequate information about the various schemes included in programme at right time	110	91.67
3.	Subsidy should be given as soon as the work is completed	114	95.00
4.	The rate of subsidy need to be increased considering price hike of input and wages	116	96.67
5.	Government should fix the prices of fruits every year and purchase the same on the line of wheat, oil seed etc.	109	90.83
6.	Training about processing and marketing facilities should be available for sale of product	65	54.17

documentation or procedure for getting the benefits.

The major suggestions given by respondent beneficiaries regarding the rate of subsidy need to be increased by considering price hike of input and wages, subsidy should be given as soon as the work is completed and provide the adequate information about the various schemes included in programme at right time.

REFERENCES

Hiremath, V.M. 1993. A study of Knowledge and Attitude of the Farmers towards Horticultural Development Programme in Pune District. M.Sc (Agri.) Thesis (Unpub.), M.P.K.V, Rahuri (M.S).

Kausadikar, K.D. 2000. A Study on Attitude of farmers towards Horticultural Development Programme in Parbhani District. M.Sc (Agri.) Thesis (Unpub.); M.A.U, Parbhani (M.S).

Kausadikar, K.D., Suradkar, D.D. and Narkar, G.S. 2002. Determinants of Attitude towards Horticultural Development Programme. *Mah. J. Ext. Educ.* **21**(2): 2-4.

Sharnagat, P.M. 2008. Attitude of Beneficiaries towards National Horticulture Mission. M.Sc (Agri.) Thesis (Unpub.), Dr. P.D.K.V, Akola (M.S).

Sinha, R.R., Lanjewar, D.M. and Raoot, G.W. 1983. Knowledge and Attitude of Contact Farmers towards Training and Visit system. *Mah. J. Ext. Edn.* **2**: 89-91.

Sinha, R.R. 1984. Attitude of Farmers towards Soil Conservation Programme. *Mah. J. Ext. Edn.* **3**: 72-74.

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ADOPTION OF SCIENTIFIC ANIMAL HEALTH CARE AND FEEDING PRACTICES AND TECHNOLOGIES BY TRIBAL LIVESTOCK OWNERS IN BANSWARA DISTRICT OF RAJASTHAN

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ABSTRACT

This paper focused on adoption level of different scientific animal health care and feeding practices by tribal livestock owners in Banswara district of Rajasthan. A total of 120 tribal livestock owners were selected from eight randomly selected villages of two tehsils namely Bagidora and Kushalgarh. The quantitative and qualitative data were collected from respondents using specially designed and pre-tested interview schedule. The study revealed that the highest adoption was found in case of vaccination of the animals among different health care practices followed by veterinarian advice for diseased animals. In case of feeding practices, highest adoption was found for provide special ration to animals just after calving but no one were pronded balance return to their live some and appropriate quantity of balance ration at different stages were having adoption index 0.

INTRODUCTION

In developing countries like India, where a greater proportion of the population lives in rural areas, and livestock provide the potential source of employment and in turn contribute to the national income, livestock production related technologies could be used as a potential means of increasing productivity and subsequently raising the incomes and living standard of the livestock owners. Higher milk production can be achieved by proper implementation of the scientific livestock management practices and technologies but many research evidences revealed that the livestock owners in India are not keeping pace with the constantly changing improved technologies. Many farmers are still using traditional husbandry practices which may be the cause of low production and productivity of the livestock. The low productivity can be attributed to many factors, viz. genetic, feeding, managemental, health care, breeding and technological. However, one major impediment in increasing the livestock productivity has been the primitive methods of livestock production followed by millions of farmers scattered throughout the country, who mainly keep livestock as a supplementary source of income. Scientific livestock management practices need to be transferred to these sections of farmers. The ability of the livestock owners to generate more income from livestock farming largely depends on the effective adoption of scientific livestock management practices that lead to increase in productivity. The extent of adoption of these practices by the livestock owners could be influenced by a set of factors including, socio-economic characteristics of the farmers and lack of knowledge of the farmers regarding scientific livestock management practices. Livestock farming is considered to be an important tool for self employment and socioeconomic transformation of rural folk, especially for small farmers, landless labours, educated unemployed and also for tribal people. Therefore it is expected that with the adoption of scientific livestock management practices and technologies, tribal people will be able to achieve better level of production leading to higher income. Thus, this study was designed to see the adoption level of scientific animal health care and feeding practices followed by the tribal livestock owners in Banswara district of Rajasthan.

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RESEARCH METHODOLOGY

The present study was conducted in Banswara district of Rajasthan. It was selected purposively as it has largest tribal population in the Rajasthan. The two tehsils namely viz. Bagidora and Kushalgarh were also selected purposively due to the existence of large number of tribal families. A village wise comprehensive list of number of tribal families residing in different villages was prepared with help of panchayat samities, village patwari and local tribals. From two selected tehsils total eight villages were selected randomly. A comprehensive list of each of tribal families residing in all the eight selected villages owning large number of livestock and depended significantly on them as major family source of income were prepared with the help of panchayat officials and villagers. Out of these, fifteen families were selected randomly from each village. Thus, a total of 120 tribal families were select randomly from eight selected villages of two tehsils. The selected respondents were interviewed personally with the help of a well structured and pre-tested interview schedule in order to get relevant information.

Scientific livestock health care practices and technologies were divided in seven sub areas for estimation of adoption level. Likewise, feeding practices and technologies were divided in fifteen sub areas for the same as above. The respondents were asked to give their response about adoption of animal health care technologies/practices on three point continuum i.e. always, sometimes and never adopted and scores of 2, 1 and 0 were allotted, respectively. But in case of feeding practices and technologies six sub areas were asked on two point continuum i.e. yes and no and scores of 1 and 0 were allotted, respectively and other nine sub areas were asked same as health care practices. The total score obtained for each sub area by all the respondents was calculated and divided by expected maximum score. For this, Adoption Index was used to measure the level of adoption of the scientific livestock health care and feeding practices and technologies.

$$\text{Adoption Index} = \frac{\text{Total number of scores obtained}}{\text{Expected maximum score}} \times 100$$

RESULTS AND DISCUSSION

Adoption level of different health care practices and technologies

Table 1 shows that highest adoption was found in vaccination of the animals among different health care practices and technologies with adoption index 60 and stands ranked first. It may be due to that organising various vaccination programmes by state animal husbandry department and NGOs. Whereas, deworming of the animals, veterinarian advice for diseased/ill animals, isolation of sick animals from healthy ones and keeping house hygiene condition at animal shed were scoring adoption index of 56.25, 56.25, 45 and 32.91 and stands ranked second, second, third and fourth, respectively. Lowest adoption were found in disposal of carcass through burial/ burning method and ligation and disinfection of the naval cord after birth with adoption index 19.16 and 15 and stands ranked 5th and 6th, respectively. The present finding is almost in agreement with the findings of Sandeep *et al.* (2006), Nchinda and Mendi (2008), Parmar *et al.* (2009), and Rathore *et al.* (2009). The extent of adoption for disease control practices was found to be 70.58 per cent (Veeranna and Singh, 2004). In Latur distrct, Mande and Thombre (2009) reported that adoption of cattle health care practices for prevention parasites possess higher score followed by different cattle diseases and naval cord treatment. Thombre *et al.* (2010) adoption index for goat health care practices was obtained (32.55) and the overall adoption index was found 47.92 in Osmanabad district. In Ada'a district of Oromia state Ethiopia, extent of adoption of the recommended practices in animal health and disease control was found to be 60.70 per cent (Fita and Trivedi, 2012). Adoption of improved animal husbandry practices in organized dairy village has 45.72 to 65.05% in health care practices in Sikar district of Rajasthan (Kumar *et al.*, 2012).

Adoption level of different feeding practices and technologies

Data presented in Table 2 reveals that highest adoption was found to provide special ration to animals just after calving with adoption index 94.16 and stands ranked first. However, provide clean water during feeding to animals, provide special ration to bullock and provide extra ration during pregnancy

Table 1. Distribution of respondents according to adoption level of different health care practices and technologies

n=120

S.No.	Different health-care practices	Adoption Index	Rank Order
1.	Keeping house hygiene condition at animal shed	32.91	IV
2.	Ligation and disinfection of the naval cord after birth	15	VI
3.	Isolation of sick animals from healthy ones	45	III
4.	Veterinarian advice for diseased/ill animals	56.25	II
5.	Vaccination of the animals	60	I
6.	Deworming of the animals	56.25	II
7.	Disposal of carcass through burial/burning method	19.16	V

Table 2. Distribution of respondents according to adoption level of different feeding practices and technologies

n=120

S.No.	Different feeding practices	Adoption Index	Rank Order
1.	Balanced ration feeding	0	XIV
2.	Appropriate quantity of balance ration at different stages	0	XIV
3.	Feeding chaffed fodder to animals	18.75	IX
4.	Feeding green fodder to animals	47.50	VII
5.	Provide concentrates to animals	52.50	VI
6.	Provide clean water during feeding to animals	72.91	II
7.	Provide extra ration during pregnancy and lactation to dam	60.83	IV
8.	Provide special ration to animals just after calving	94.16	I
9.	Provide extra ration during breeding period to breeding sire	17.50	X
10.	Provide first milk of mother to the calf	53.75	V
11.	Feeding recommended quantity of colustrum to new born calf	5.83	XII
12.	Provide grower ration to calf from right time	3.33	XIII
13.	Feeding of mineral mixture and vitamin supplement to animal	23.33	VIII
14.	Conservation of the fodder in the form of hay and silage	10.00	XI
15.	Provide special ration to bullock	62.08	III

and lactation to dam were scoring adoption index of 72.91, 62.08 and 60.83 and stands ranked second, third and fourth, respectively. Low level of adoption related to feeding practices were observed in case of conservation of the fodder in the form of hay and silage, feeding recommended quantity of colustrum to new born calf and feeding grower ration to calf from right time with adoption index of 10, 5.83 and 3.33 and stands ranked 11th, 12th and 13th, respectively. Interestingly, in balanced ration feeding and appropriate quantity of balance ration at different stages were having adoption index 0. It may be due to lack of knowledge about balance ration feeding. Table 2 further reveals that medium level of adoption were found in case of feeding green fodder, feeding of mineral mixture and vitamin supplement, feeding chaffed fodder and provide extra ration during breeding period to breeding sire with adoption index of 47.50, 23.33, 18.75 and 17.50 and stands ranked 7th, 8th, 9th and 10th, respectively. Intodia (2001) reported that farmers had only 20.84 per cent extent of adoption of improved cattle feeding practices. He further highlighted that no animal in dry condition was provided concentrate. Even the milch animals were also not given adequate quantity of concentrate as per the recommendation. Sathiadhas *et al.* (2003) found that majority of farmers do not follow the recommended feeding practices. They were feed their cattle with concentrates (54%) but the recommended ration was not given. Mineral and vitamin was seldom

supplemented in the ration. Around 43 per cent of the farmers only provide green fodder/roughages. In Raipur city of Chhattisgarh, 64 per cent adoption was found in the use of improved feeding practices by dairy farmers. (Dubey *et al.*, 2013). The results are supported by Joshi *et al.* (2012) that majority of the respondents were in the category of average level of adoption of improved feeding practices by the tribal women promoted under NAIP.

CONCLUSION

Findings was concluded that most of the tribal livestock owners vaccinate and dewormed their animal through animal health services provided by state department of animal husbandry. But they were not adopted the animal house hygienic technology and thrown carcasses in open area. Most of them were found provide extra ration just after parturition of animal but no one were provided balance ration to their livestock. Thus, it was felt that tribal livestock owners were provide some training on scientific feeding and health management so that they can get maximum output from their livestock and improve their living standard.

REFERENCES

Dubey, Y.K. Sharma, M.L. Yadav, K.N. 2013. Adoption behaviour of improved dairy farming practices by dairy farmers of Raipur city of Chhattisgarh, India. *Plant Archives* **13**(1): 123-128.

Fita, L. and Trivedi, M.M. 2012. Extent of adoption of improved dairy husbandry practices in Ada'a district of Oromia state, Ethiopia. *Wudpecker Journal of Agricultural Research* **1**(6): 203 – 207.

Intodia, S.L. 2001. Documentation of farming system in operational area Udaipur district. A brief survey and analysis. *Rajasthan Journal of Extension Education* **10**: 103-104.

Joshi, V., Solanki, D., Barotia, P. and Sisodia, S.S. 2012. Adoption of improved animal husbandry practices by the tribal women promoted under NAIP. *Rajasthan Journal of Extension Education* **20**: 198-202.

Kumar, U., Yadav, C.M. and Khan, P.M. 2012. Impact of adoption of certain selected improved animal husbandry practices in Sikar district of Rajasthan. *Agricultural Research and Reviews* **1**(3): 86–88.

Mande, J.V. and Thombre, B.M. 2009. Adoption of cattle rearing practices by dairy cattle owners in Latur district. *Journal of Dairying, Foods & Home Science* **28**(3&4): 176-180.

Nchinda, V.P. and Mendi, S.D. 2008. Factors influencing the adoption of yoghurt technology in the Western Highlands Agro-ecological zone of Cameroon. *Livestock Research for Rural Development* **20**(7): 320-328.

Parmar, O.S., Saini, A.L., Sahota, R.S. and Singh, K.B. 2009. Extent of adoption of improved practices by dairy farmers of Punjab. *Indian Journal of Dairy Science* **62**(2): 140-144.

Rathore, R.S., Singh, R. and Kachwaha, R.N. 2009. Adoption of recommended management practices and relationship between selected traits of the respondents. *Indian Journal of Dairy Science* **62**(4): 327-334.

Sandeep, J., Malik, S. and Singh, S.D. 2006. Comparative adoption level of farmers regarding improved animal husbandry practices in watershed and non-watershed villages. *Journal of Dairying, Foods and Home Science* **25**(1): 51-54.

Sathiadhas, R., Noble, D., Immanuel, S., Jayan, K.N. and Sindhu, S. 2003. Adoption level of scientific dairy farming practices by IVLP farmers in the Coastal agro ecosystem of Kerala. *Indian Journal of Social Research* **44**(3): 243-250.

Thombre, B.M., Suradkar, D.D. and Mande, J.V. 2010. Adoption of improved goat rearing practices in Osmanabad district. *Indian Journal of Animal Research* **44**(4): 260–264.

Veeranna, K.C. and Singh, D.P. 2004. Attitude and adoption of improved dairy production practices by Lambani tribe. *Karnataka Journal of Agricultural Science* **17**(2): 299-302.

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ASSOCIATION BETWEEN INDEPENDENT VARIABLES AND TRAINING NEEDS OF CAULIFLOWER GROWERS

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ABSTRACT

The present study was conducted in Jaipur district of Rajasthan which was selected purposively. The Jaipur district consists of 13 panchayat samities, Out of which two panchayat samities namely Bassi and Amber were selected by purposively on the basis of the highest area and production. Amber and Govindgarh panchayat samities comprise 48 and 45-gram panchayats, respectively. Among these, 3-gram panchayats from Amber panchayat samiti and 3-gram panchayats from Govindgarh panchayat samiti were selected randomly. In all 12 villages were selected from the selected gram panchayats by using simple random sampling technique and a sample of 84 cauliflower growers was selected from these villages by using proportionate random sampling technique. Positive and significant association was observed between training needs of cauliflower growers about recommended cauliflower production technology with their age, education, and extension participation while their size of land holding and size of family was found to be non-significantly associated.

INTRODUCTION

Vegetables play an important role in the maintenance of human health. These make diet nutritive and balanced. A balanced diet requires a proper quota of fresh vegetables. About 300 gm of vegetables are needed (90 gm root vegetables, 120 gm green vegetables and 90 gm other vegetables). But, about 220.8 gm vegetables per day per capita are available (Indian Agriculture, 2011).

The word 'cole' seems to have been abbreviated from the world "Caulis" meaning stem. Cauliflower is grown for its white tender head or curd, which is used as a vegetable, for soup and pickle. It is having a good nutritive value. It contains good amount of vitamins like vitamin A, C and fair amount of proteins and fibrers. The cauliflower is also a good source of minerals like Ca, Mg, P, Fe, Na and S.

RESEARCH METHODOLOGY

The present study was conducted in Jaipur district of Rajasthan which was selected purposively. The Jaipur district consists of 13 panchayat samities, Out of which two panchayat samities namely Bassi and Amber were selected by purposively on the basis of the highest area and production. Amber and Govindgarh panchayat samities comprise 48 and 45-gram panchayats, respectively. Among these, three gram panchayats from Amber panchayat samiti and three gram panchayats from Govindgarh panchayat samiti were selected randomly. In all 12 villages were selected from the selected gram panchayats by using simple random sampling technique and a sample of 84 cauliflower growers was selected from these villages by using proportionate random sampling technique.

RESULTS AND DISCUSSION

In order to ascertain the association between selected independent variables of cauliflower growers and their training needs with recommended cauliflower production technology correlation and multiple regression tests were applied. Paradigm shows association between personal attributes of cauliflower growers and their training need with recommended cauliflower production technology. The association between selected independent variables of cauliflower growers and their training needs with recommended cauliflower production technology was calculated by applying zero order

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correlation (r). The results have been presented.

The data in Table 1 show that age, education level and extension participation were found positively and significantly associated with their training needs with cauliflower production technology at 1 per cent level of significance. It means that these variables were contributing towards the training needs of farmers in positive direction. This does not support the hypotheses $H_{01.1}$, $H_{01.2}$ and $H_{01.5}$ that "there was no association between age, education and extension participation and training needs of farmers with cauliflower production technology hence these null hypotheses were rejected and alternative hypotheses accepted Table1.

Table 1. Association between independent variables and training needs of cauliflower growers regarding cauliflower production technology

(n=84)

S.No.	Independent variable	Coefficient of correlation 'r' values
1.	Age	0.407**
2.	Education	0.429**
3.	Size of land holding	0.094NS
4.	Size of family	0.126NS
5.	Extension participation	0.400**

** Significant at 0.01 level of probability

Further the findings revealed that independent variables namely size of land holding and size of family were non-significantly associated with the training needs of farmers' with cauliflower production technology. Hence, it supported the hypotheses ($H_{01.1}$) that "there was no association between size of land holding and size of family with training needs of with cauliflower production technology". Hence, the null hypothesis was accepted. The findings of the study are in line with the findings of Dangi, K.L. (1983), Dangi, K.L. and Intodia, S.L. (1992), Jaitawat, V.S. (2006), Neeta, (2007) and Patel, B.P. (1979).

CONCLUSION

It was observed that positive and significant association was observed between training needs of cauliflower growers about recommended cauliflower production technology with their age, education, and extension participation while their size of land holding and size of family was found to be non-significantly associated.

REFERENCES

Dangi, K.L. 1983. Impact of training programme in adoption of improved practices by the farmers in command area development programme in Rajasthan canal project (RCA) area. M.Sc. (Ag.) Thesis, Sukhadia University, Udaipur.

Dangi, K.L. and Intodia, S.L. 1992. Adoption behavior of contact and follower farmers under T and V system in Indira Gandhi and Project Area of Rajasthan. *Rajasthan Journal of Extension Education* **2**(1) : 50-55.

Jaitawat, V.S. 2006. Knowledge and adoption of recommended cumin cultivation technology among the farmers of Jodhpur region. Rajasthan. Ph.D. (Ag.) Thesis (Unpub.) RAU, Bikaner, campus- Jobner.

Neeta, 2007. Impact of Swarnjayanti Gram Swarozgar Yojana (SGSY) in terms of employment generation in Chittorgarh district of Rajasthan. Ph.D. Thesis RAU, Bikaner.

Patel, B.P. 1979. Training of farmers of Deesa Taluka of Banaskantha District (Gujarat) with special reference to cultivation of wheat and bajra crops. M.Sc. (Ag.) Thesis, MPUAT, Udaipur.

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IMPACT OF TRAINING AND DEMONSTRATION ON ADOPTION OF MAIZE PRODUCTION TECHNOLOGY BY THE FARMERS

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ABSTRACT

Maize is one of the major Indian food crops. The Bhilwara region occupies a place of pride in production of maize, contributing about 36.0percent of the total production and more than 39.0 percent area of the Rajasthan state. Krishi Vigyan Kendra in Rajsamand district is engaged in transfer of technology in all major crops in its operational area. Therefore, an attempt has been made to assess the impact of technologies transferred. The present investigation was based on the experimental design of social research considering beneficiary as experimental group and non-beneficiaries as a control group. It can be concluded that there is significant role of KVK in promotion of improved production practices of Maize and ensuring their adoption. Substantial impact of training over the existing knowledge and adoption of the beneficiary farmers than the non-beneficiary farmers was observed.

INTRODUCTION

Maize is one of the major Indian food crops. With a rise in the demand of the recent era the production of maize as a food crop is also increasing. Rajasthan has the largest area of maize in India i.e.1.05million ha with production of 1.96 million tonnes and productivity of 1,100 kg/ha. If contributes about 12.93 percent and 10.34 percent of national Area & production. The crop is predominantly cultivated under rain fed conditions in *kharif* season. In winter, cultivation is done in assured irrigated conditions. Maize is mainly used as a food crop in the state and productivity can be enhanced with cultivation of early maturing hybrids and improved composite varieties.

Maize is an important crop for Bhilwara region in Rajasthan. The Bhilwara region occupies a place of pride in production of maize, contributing about 36.0percent of the total production and more than 39.0 percent area of the Rajasthan state. The acreage of maize in Rajsamand district was 0.07 Million ha in year 2010-11 This district has greater potential of maize production due to favourable climatic and soil condition. KVK Rajsamand is engaged in transfer of technical know how of agriculture in its operational area. Therefore, an attempt has been made to assess as how far KVK has been able to promote improved production practices of maize in the area.

RESEARCH METHODOLOGY

The present investigation was based on the experimental design of social research considering beneficiary as experimental group and non-beneficiaries as a control group. The investigation is confined to purposely selected Rajsamand district of Rajasthan because it is the jurisdiction area of KVK. For the selection of respondents, 36 trainees (beneficiary) for knowledge level and 12 beneficiaries for adoption level were selected randomly from the list of trainees who participated in training programmes on Maize production technology and cultivated the crop during 2011. After selecting beneficiaries, equal number of non-beneficiaries (36+12) were also selected randomly as control group to measure the knowledge and adoption level. Thus in all 96farmers constituted the sample for this study. In the present investigation the role of KVK was assessed in terms of gain in knowledge and adoption by the beneficiary farmers as a result of demonstration and training imparted to them in comparison with non-beneficiary as controlled group. The role was measured in terms of impact index with the help of following formula.

$$\text{Impact index} = \frac{[\text{MIK of beneficiary} - \text{MIK of non beneficiary}] + [\text{MIA of beneficiary} - \text{MIA of non beneficiary}]}{2}$$

MIK = Mean Index of Knowledge, MIA = Mean Index of Adoption

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$$\text{Impact (\%) change} = \frac{\text{Sum of difference of index of knowledge + adoption}}{2}$$

RESULTS AND DISCUSSION

To measure the knowledge and adoption level about improved production of Maize, ten important maize cultivation practices were identified and data were collected accordingly.

Knowledge and adoption of Maize production technology by the farmers

The data presented in Table. 1 revealed that all the beneficiary farmers had knowledge about high yielding varieties, intercultural operations and irrigation stage. Whereas, the 66.67 per cent non-beneficiary farmers had knowledge about these practices. The beneficiary farmers having knowledge about improved maize production practices viz. Recommended seed rate, Time of sowing, Spacing and recommended fertilizers was 86.11 percent. Whereas, the percentage of non-beneficiary farmers having knowledge about above practices was, 61.11, 63.89, 61.11 and 66.67 respectively. Table-1 shows that the 77.78 percent beneficiary farmers had knowledge about Seed treatment and Chemical weed control whereas, 58.33 and 50.00 percent non beneficiary farmers, had knowledge about these practices The close observation of table showed that the maximum knowledge gap between beneficiary and non-beneficiary was about Plant protection measures.

In case of adoption, cent percent beneficiary farmers had adopted high yielding varieties, intercultural operations and irrigation stage whereas, 58.33 , 66.67 and 41.67 percent non-beneficiary had adopted these practices.The 83.33 percent beneficiary farmers had adopted the improved practices viz. Recommended Sees rate , Time of sowing and spacing. The percentage of non-beneficiary farmers adopting these practices were 33.33, 41.67 and 50 respectively. The 75.00 percent beneficiary farmers had adopted the improved practices viz. Sees treatment, and Recommended Fertilizers. The percentage of non-beneficiary farmers adopting these practices was only 25.00.The tables also shows that maximum adoption gap between beneficiaries and non-beneficiaries exist regarding Chemical weed control, and Plant protection measures.

Impact of trainings in terms of knowledge and adoption:

The impact of KVK trainings as a whole was computed as the sum total of the differences of both the indices

Table 1. Knowledge and adoption of Maize production technology by the Beneficiary and Non-beneficiary farmers

(n=96)

S.No.	Improved Technology	Knowledge				Adoption			
		Beneficiary (n=36)		Non-beneficiary (n=36)		Beneficiary (n=12)		Non-beneficiary (n=12)	
		f	%	f	%	f	%	f	%
1	High yielding varieties	36	100.00	24	66.67	12	100.00	7	58.33
2	Seed treatment	28	77.78	21	58.33	9	75.00	3	25.00
3	Recommended Sees rate	31	86.11	22	61.11	10	83.33	4	33.33
4	Time of sowing	31	86.11	23	63.89	10	83.33	5	41.67
5	spacing	31	86.11	22	61.11	10	83.33	6	50.00
6	Intercultural operation	36	100.00	24	66.67	12	100.00	8	66.67
7	Recommended Fertilizer	31	86.11	24	66.67	9	75.00	3	25.00
8	Chemical weed control	28	77.78	18	50.00	8	66.67	2	16.67
9	Irrigation stage	36	100.00	24	66.67	12	100.00	5	41.67
10	Plant protection measures	24	66.67	16	44.44	8	66.67	2	16.67

Table 2. Impact of trainings in terms of knowledge and adoption.

S.No.	Particular	Beneficiary	Non-Beneficiary	Difference
1.	Mean knowledge index	86.67	60.56	26.11
2.	Mean adoption index	83.33	37.50	45.83
	Total	170	98.06	71.94
3.	Impact (percent) $= \frac{\text{Sum of difference of index}}{2} = 35.97$			

i.e., mean index of knowledge and adoption divided by two. The data thus obtained have been presented in Table 2.

It is evident from Table 2 that there was an impact of training and demonstration was up to the extent of 35.97 percent over the existing knowledge and adoption by the beneficiary which was found to be substantial over the non-beneficiary farmers. Therefore, it could be stated that there was a remarkable impact of the trainings and demonstration on those farmers who attended the training programme and participated in demonstrations conducted by KVK Rajsamand in terms of the knowledge about maize production technology and its adoption by them as compared to their counterparts i.e. the farmers who did not participated in the training programmes and demostrations.The findings are in line with Kumbhare (1996)& Kumawat(2008) who reported the significant impact of KVK training & demonstrations on their beneficiaries.

CONCLUSION

It can be concluded from this investigation that there is significant role of KVK in promotion of improved.

Production practices of maize and ensuring their adoption. It is also could be ascertained that there is substantial impact of training and demostrations over the existing knowledge and adoption of the beneficiary farmers than the non-beneficiary farmers about improved Maize production technology.

REFERENCES

Khumbhare, N. V. 1996. Impact of Krishi Vigyan Kendra on the adoption of improved practices by the farmers. M. Sc.(Ag.) Thesis, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra.

Lakhera, J.P. and Sharma, B.M. 2002. Impact of frontline demonstrations on adoption of improved mustard production technology. *Raj. J. Extn. Edu.* **14**: 43-47.

Deshmukh, V., Shinde, P.S. and Bhople, R. S. 2003. Impact of training imparted by Krishi Vigyan Kendra on Cotton Growers. *Maharashtra Journal of Extension Education* **22** (1): 106-109

Singh, Navab and Sharma, F.L. 2004. Impact of front line demonstrations on gain in knowledge about mustard production technology among farmers. 2nd National Ext. Edu. Congress, May 22-24, 2004, Society of Extension Education, Agra & MPUAT, Udaipur : 56

Singh, N and Sharma, F.L. 2005. Impact of FLD on gain in knowledge about mustard production technology among farmers of Bharatpur district. *Indian Res. J. Extn. Edu.* **5** (1): 41-43

Kumawat, S.R. 2008. Impact of frontline demonstration on adoption of improved caster production technology. *Raj. J. Extn. Edu.* **16**:143-47

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TRAINING NEEDS OF EXTENSION PROFESSIONALS FOR ICT APPLICATION IN AGRICULTURE

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ABSTRACT

In India more than 60 percent of the farmers have no access to any source of modern agriculture information. Reaching to these farmers is a big challenge before the extension system. Although a large number of extension personnel are working for farmers but the ratio of the farmers to extension worker is pathetically inadequate. Presently extension personnel of government and non-government organisations are using ICTs in agriculture but due to poor knowledge and skills they are facing many constraints in effective use of ICTs. Therefore, knowledge and skills of the extension personnel about ICTs is needs to be increased. Need based trainings are necessary for equipping extension personnel with specialized knowledge and skills about ICTs. Considering the training needs of extension personnel present study was carried out in Udaipur district of Rajasthan state to assess training needs of extension personnel about ICT application in agriculture. A total of 160 extension personnel 80 from GO and 80 from NGOs were selected from three clusters of GO and eight NGOs. To study training needs of extension personnel five commonly used ICT tools namely computer, Internet, mobile phone, kisan call center and information kiosks were selected. Data from the respondents were collected through face to face interview technique with the help of developed instrument.

The findings revealed that more than two-third of the extension personnel had training needs about ICT application either medium or higher level. Out of five selected ICT tools highest training need of GO personnel was recorded about mobile phone application whereas, NGOs personnel wanted maximum training about information kiosks. Trainings about use of GPRS and 3G services for mobile phone; services provided by the information kiosks; uploading and downloading of files from websites; digital content development & retrieving and skill in diagnosis of farmer's problem were perceived as most needed training areas by GO & NGOs personnel. Further outcomes reveals that training needs of GO was more than NGOs. There was significant difference in training needs of GO and NGOs personnel.

INTRODUCTION

In India more than 760 millions of farmers are engaged in agriculture. According to an estimate more than 60 percent of the farmers have no access to any source of modern agriculture information. Reaching to these unreached farmers is a great big challenge before the extension system. Although a large number of extension personnel are working for dissemination of agriculture information among the farming community but the ratio of the farmers to the extension worker is pathetically inadequate. Presently extension personnel of government and non-government organisations are using various information & communication technologies for transfer of agriculture technologies but due to poor knowledge and skills about ICT application in agriculture they are facing many constraints in effective use of ICTs. In earlier decades modern information and communication technologies have proved their potentialities in terms of accuracy, cost effectiveness, speed, quality, quantity and timeliness. Therefore, knowledge and skills of the extension personnel about ICTs is needs to be increased so that they can use ICTs to deliver right information at right time in affordable cost among farming community. Training is an effective tool to increase awareness, knowledge; develop appropriate skills; change attitude about ICT application in agriculture. Training can be effectively used to improve, update and refresh the knowledge of learners. A systematically arranged training proramme brings about desirable changes in behaviour of the people. Therefore, need based trainings are necessary for equipping extension personnel with specialized knowledge and skills. Considering the extensive needs of ICT application in agriculture, present study was carried out. In this study an effort has been made

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to identify the training needs of the extension personnel regarding ICT application in agriculture. The training needs about various aspects of information and communication technology have been presented in the subsequent tables.

RESEARCH METHODOLOGY

The present study was conducted in Udaipur district of Rajasthan. Udaipur district was selected purposively on the basis of facts that a large numbers of extension personnel are working in the state department of agriculture, similarly large number of NGOs are working in the district. For the purpose of study government and non-government organisations 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 GO (Government Organisation), so the extension unit of state department of agriculture was selected purposively as GO on the basis of the fact that large number of extension personnel are working in the department at the field level. To select the sample from NGOs a complete list of all the non-government organisations of the district which are using ICTs in the transfer of agriculture technology among the farming community was prepared. The list so prepared was further discussed with the leading NGOs to confirm the maximum use of ICTs for transfer of agricultural technology in agriculture. From the list so confirmed eight NGOs with more use of ICTs were selected for the study purpose.

To select a sample of respondents from the GO, a preliminary list of all those extension personnel (Agriculture Supervisor, Assistant Agriculture Officers and Agriculture Officers) who are using ICTs for transfer of agriculture technology work was prepared with the help of officials of agriculture department. Udaipur district is divided into three agriculture clusters i.e. Girwa, Badgaon, and Salumber for effective transfer of agriculture technology. There were 109 extension personnel working in all three clusters of the district, out of these 80 extension personnel were selected using random sampling technique.

Likewise, for the selection of respondents from NGOs a preliminary NGO wise list of all those field level personnel who are engaged in transfer of agriculture technology work was prepared with the help of officials of the selected NGOs. Total number of 476 extension personnel were working in all eight selected NGOs, out of them 80 extension personnel were selected on the basis of proportionate sampling procedure. The details of selected respondents from NGOs are given in table 1. Consequently, a total of 160 respondents 80 from GO & 80 from NGOs were included in the sample of study. In selecting the respondents care was taken to ensure that selected respondents are making use of ICTs directly or indirectly in transfer of agricultural technology. The use of ICTs by selected respondents was reconfirmed from concerned higher officers. For the purpose of study five ICT tools namely computer, internet, mobile phone, kisan call centers and information kiosks were selected. It was observed that these identified tools are commonly used by both GOs and NGOs for transfer of technology in agriculture. Thereafter, data were collected from the selected respondents by employing personal interview technique. The interviews were conducted at extension personnel's homes as well as office in the month of April to June 2012. About 50-60 minutes were spent to interview each respondent.

To assess the training needs of the extension personnel, a scale was developed. Five major tools of ICT were included in the scale. For each ICT tool several statements were constructed. Finally a total numbers of 36 statements were included in the scale. Maximum obtainable score was 108. To find out level of training needs overall score for each respondent was calculated and respondents were categorized into three groups on the basis of the overall scores obtained by each respondent.

Frequency and percentage of respondents in each category i.e. low, medium and high were calculated. To find out the intensity of training needs, the responses were recorded on three point continuum *viz*. most needed; needed and somewhat needed by assigning score 3, 2 and 1 respectively. The recorded responses were counted and converted into mean per cent score for each statement and were ranked accordingly.

In order to find out the significant difference

between the respondents of GO and NGOs about training needs, 'Z' test was used. Finally the data were analyzed, tabulated, interpreted and conclusion was drawn accordingly.

RESULTS AND DISCUSSION

Distribution of the respondents according to their level of training needs about ICT application in agriculture

To get an overview of the training needs, the extension personnel were grouped under high, medium and low level of training needs on the basis of mean and standard deviation of the scores obtained by the respondents.

Extension personnel in general appeared to be enthusiastic about accepting and participating in the training programmes about information and communication technologies. Table 2 reveals that majority of the extension personnel 93 (58.13%) were in the medium training need group. While, 49 respondents (30.63%) had high level of training needs about ICT application in agriculture and 18 (11.25%) respondents were observed in low training need group.

Further, among the categories of the respondents 56.25 and 60.00 per cent respondents of GO and NGOs respectively, expressed medium level of training needs. While, 33.75 per cent of GO respondents and 27.50 per cent of NGOs personnel fell under the

Table 1. Distribution of respondents according to their training needs about ICT application in agriculture

n = 160

S. No.	Training Needs	GO Personnel		NGOs Personnel		Total	
		F	%	f	%	f	%
1.	Low (below 59.56)	08	10.00	10	12.50	18	11.25
2.	Medium (Between 59.57 to 84.02)	45	56.25	48	60.00	93	58.13
3.	High (above 84.02)	27	33.75	22	27.50	49	30.63
	Total	**80**	**100.00**	**80**	**100.00**	**160**	**100.00**

f = Frequency, % = Per cent

Table 2. Training needs of respondents regarding computer application in agriculture

n=160

S.No.	Training needs	GO Personnel		NGOs Personnel		Total	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Computer handling and operation	72.08	4	53.33	10	62.70	7
2.	Assembling and disassembling of computers	67.92	6	64.58	4	66.25	4
3.	Editing of text image and audio-video files	77.08	3	67.92	2	72.50	2
4.	File creation and conversion process	77.50	2	61.66	5	69.58	3
5.	Computer virus and anti-virus softwares	65.83	8	58.75	7	62.29	8
6.	Burning and playing of CD-ROMs and DVDs by using computer	70.83	5	51.66	11	61.24	9
7.	Connecting and using of external devices of computer	63.75	9	56.25	9	60.00	10
8.	Installation and updating of computer softwares	67.50	7	60.00	6	63.75	5
9.	Digital content development and retrieving	80.42	1	68.75	1	74.58	1
10.	Use of multimedia softwares	61.25	10	65.00	3	63.12	22
11.	Networking of computers on LAN, WAN etc.	52.92	11	56.66	8	54.79	11

MPS = Mean per cent score

category of high level of training needs about ICTs application in agriculture. Table also shows that 10 per cent of GO personnel and 12.50 per cent of NGOs personnel had low level of training needs regarding ICT application in agriculture.

On the basis of the above discussion it can be concluded that more than 85 per cent of extension personnel from both the categories had either in high or medium level of training needs towards ICT application in agriculture. It means that extension personnel were interested and enthusiastic about trainings of ICT application in agriculture. The present findings are in accordance with the findings of Mathews *et al.*(2007).

ICT tool wise training needs of extension personnel

Further it was planned to indentify the ICT tool wise training needs of extension personnel. For this purpose five ICT tools namely computer, internet, mobile phone, kisan call center, and information kiosks were considered. The MPS of the individual aspects was calculated and ranks were assigned accordingly. The results of the same have been presented in subsequent tables.

Training needs of extension personnel about computer application in agriculture

Table 3 indicated that the digital content development and retrieving was the most important training need of the extension personnel of GO and NGOs with score 80.42 and 68.75 MPS respectively, which was ranked first by both the categories of the respondents. Likewise file creation and conversion process was ranked second by the extension personnel of GO and third by respondents of NGOs.

The extent of training need about editing of the text image and audio-video files was 77.08 and 61.66 per cent among GO and NGOs respondents respectively. The GO respondents also perceived the importance of training needs regarding computer handling operation and burning and playing CD-ROMs and DVDs by using computer with the extent of 72.08 and 70.83 MPS and ranked fourth and fifth respectively. In case of NGOs respondents it was observed that use of multimedia softwares and assembling & disassembling of computer were important training areas and these were ranked third and fourth respectively.

From the above discussion it may be concluded that the extent of training needs of GO respondents was 52.92 to 80.42 per cent in all aspects of computer, while in case of NGOs respondents it was from 51.66 to 68.75 per cent. It means that GO respondents were more interested in computer training than NGOs respondents.

The present findings echo the findings of Mathews *et al.* (2007) who reported that extension manager received training in computer operation, computer appreciation, e-mail, knowledge of software and hardware. The training was received through workshop, short courses and personal development and these enhanced the level of utilization of ICTs among the extension managers.

Training needs of extension personnel about internet application in agriculture

It is apparent from the Table 4 that the training need about uploading and downloading of files from websites was perceived as top priority by the respondents of GO with 87.50 MPS and ranked first. This was followed by the aspect accessing the marketing information from AGMARKNET, which was also considered as most important training need area by the GO extension personnel with 76.25 MPS. Whereas, use of e-learning websites was preferred as first training need area by extension personnel of NGOs with 65.00 per cent. Computer enabled mass messaging through internet was considered the second important training need by the respondents with mean percent score 61.67.

Analysis of the table further shows that use of various internet browsers was also perceived as important training need area by GO and NGOs respondents with the extent of 72.08 and 53.75 per cent respectively and ranked fourth by GO personnel and fifth by NGOs personnel. Creating E-mail account was considered the least important training need perceived by the extension personnel of both the categories of organizations and given similar rank i.e. seventh. This may be due to the fact that most of the respondents had their e-mail accounts so this aspect was ranked last by the extension personnel.

On the basis of the above discussion it may be

Table 3. Training needs of respondents about internet application in agriculture

n=160

S.No.	Training needs	GO Personnel		NGOs Personnel		Total	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Uses of various internet browsers	72.08	4	53.75	5	62.91	4
2.	Computer conferencing through internet	58.33	6	57.50	3	57.91	6
3.	Computer enabled mass messaging through internet	75.42	3	61.67	2	68.54	2
4.	Uploading and downloading of files from websites through internet	87.50	1	53.33	6	70.41	1
5.	Accessing marketing information from AGMARKNAT	76.25	2	56.25	4	66.25	3
6.	Use of e-learning sites	60.00	5	65.00	1	62.50	5
7.	Creating e-mail account	53.33	7	46.66	7	49.99	7

MPS = Mean per cent score

concluded that the extent of training need among GO extension personnel was 53.33 to 87.50 per cent whereas, extent among NGOs personnel was reported to be 46.66 to 56.25 per cent about various aspects of internet, which indicates that GO extension personnel required more trainings on internet application than NGOs personnel. Similar findings have been reported by Mathew *et al.* (2007).

Training needs of extension personnel about mobile phone application in agriculture

The data presented in Table 5 show that training need about use of GPRS and 3-G services through mobile phone was expressed as most important training need area by the respondents of GO and NGOs and ranked first by both the categories of respondents with 86.25 and 66.25 per cent respectively. This was followed by the aspects namely mass messaging through mobile phone, composing and sending voice mail and mobile conferencing for transfer of technology, which were also perceived as important training need areas by the extension personnel of GO and NGOs. These aspects were ranked second, fourth, and third by GO respondents, and third, second and sixth by NGOs personnel.

Table 4. Training needs of respondents about use of mobile phone in agriculture

n=160

S.No.	Training needs	GO Personnel		NGOs Personnel		Total	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Operating different types of mobile phones	61.67	8	48.33	8	55.00	8
2.	Mobile conferencing for transfer of technology	78.75	3	58.75	6	68.75	4
3.	Bulk messaging through mobile phone	81.25	2	61.50	3	71.25	2
4.	Content capturing through mobile phone	67.50	7	55.42	7	61.46	7
5.	Use of multimedia mobile phone	68.75	6	60.00	5	64.37	6
6.	Application of GPRS and 3G services	86.25	1	66.25	1	76.25	1
7.	Composing and sending of voice mail through mobile phone	78.33	4	63.33	2	70.83	3
8.	Transfer of audio-video files through mobile phone.	75.83	5	61.25	4	68.54	5

MPS = Mean per cent score

Table further reveals that transfer of audio-video files through mobile phone was considered an important training need area by the extension personnel of GO and NGOs with MPS 75.83 and 61.25 MPS so that they can transfer data on their mobile phone. Likewise, training on uses of multimedia phone was shown in the interest of both the categories of respondents. While the training related to content capturing through mobile phone and operating of different types of mobile phone were given low priority by the respondents. These aspects were placed at seventh and eighth ranks respectively by the extension personnel of both the organisations.

From the above discussions it may be concluded that extent of training needs among the GO extension workers was 61.67 to 86.27 per cent whereas, in case of NGOs personnel it was reported to be 48.33 to 66.25 per cent which clearly indicates that GO personnel require more training about various aspects of mobile phone application in agriculture. The present findings are in line with the findings of Yadav (2011).

Training needs of extension personnel about kisan call center

Table 6 reveals that extension personnel of GO and NGOs considered it most desirable to acquire skill in diagnosis of farmer's problem, followed by retrieving computer loaded information to satisfy farmer's queries and human relation skill for effective interaction with callers. The training need related to communication skills for providing best advice as subject matter specialist on KCC was also perceived as felt need by the majority of GO and NGOs personnel with 55.83 and 57.92 per cent respectively.

Table also reveals that training need aspects namely skill in interpreting farmer's problem and solutions and services provided by kisan call center were given least preference by extension personnel of both GO and NGOs.

Thus, from the above discussion it can be concluded that extent of training need among GO personnel was 50.83 to 85.75 per cent whereas, in case of NGOs personnel it was found 46.66 to 76.25 per cent in all aspects of kisan call center. Therefore, it is clear that NGOs personnel needed more trainings than GO personnel about KCC.

Training needs of extension personnel about information kiosks

The data presented in Table 7 indicate that training need perception of GO and NGOs extension personnel with respect to the aspects of information kiosks was more or less similar. As visualized from the table, the services provided by the information kiosks was most needed training area for the respondents of GO and NGOs with 77.92 and 78.33 per cent respectively and ranked first in the hierarchy of training needs. The next important training need

Table 5. Training needs of respondents regarding use of kisan call center in agriculture

n=160

S.No.	Training needs	GO Personnel		NGOs Personnel		Total	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Human relation skills for effective interaction with callers	74.16	3	64.58	2	69.37	3
2.	Skill in diagnosis of farmer's problem	85.33	1	76.25	1	80.79	1
3.	Retrieving computer loaded information to satisfy farmer's queries	83.75	2	56.50	4	70.00	2
4.	Communication skill for providing best advices as an subject matter specialist on KCC	55.83	5	57.92	3	56.87	4
5.	Problem solving skill for unexpected situations	56.66	4	56.25	5	56.45	5
6.	Services provided by kisan call center	50.83	6	46.66	6	48.74	6

MPS = Mean per cent score

Table 6. Training needs of respondents regarding application of information kiosks for agriculture

n=160

S.No.	Training needs	GO Personnel		NGOs Personnel		Total	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Services provided by the information kiosks	78.75	1	77.92	1	78.33	1
2.	Handling and working with touch screen information kiosks	77.08	2	72.50	2	74.79	2
3.	Knowledge management through information kiosks	55.83	4	57.92	3	56.87	4
4.	Skill in getting printed literature from information kiosks	65.42	3	57.08	4	61.25	3

MPS = Mean per cent score

perceived by GO and NGOs personnel was handling and working with touch screen kiosks with mean percent score 77.08 and 72.50 respectively.

Further examination of the data included in the Table shows that extension personnel of GO and NGOs needed training on skills for getting printed literature from information kiosk with the extent of 65.42 and 57.08 per cent respectively. This was assigned third rank by GO respondents and fourth rank by NGOs respondents. Extension personnel were also interested to take training on knowledge management through information kiosks and this aspect was placed last in the ranking order by the respondents of the study area.

It can be concluded from the above discussion that extent of training needs among the GO respondents was 55.83 to 78.75 MPS while, in case of NGOs personnel it was observed 57.08 to 77.92 MPS in all aspects of information kiosk.

Similar findings have been reported by Senthilkumar and Chandra (2011) who found that all the knowledge workers of VIC needed refresher training programmme on livestock farming for updating their knowledge. In order to increase the effectiveness of VICs, awareness campaign and group discussion may be carried out in adjacent villages of VICs.

Overall training needs of extension personnel about ICT application in agriculture

To find out overall training needs of extension personnel about ICT application in agriculture, tool-wise MPS was calculated and results of the same have been presented in the table 8.

Table 7 reveals that information kiosk was considered as top priority for trainings by the respondents. This was ranked first by NGOs extension personnel and second by GO personnel. The mobile phone was considered as next important tool for training by the extension personnel of both the categories of organizations with overall MPS 67.05. Training needs about computer was prioritized at third place by the respondents with the extent of 64.61 per cent.

Further analysis of table clearly shows that internet was also considered important need area for training by majority of the extension personnel with overall MPS 62.64 and assigned fourth rank by the respondents. Kisan call center was considered least important for the training by extension personnel. Therefore, KCC was assigned last rank with 62.25 MPS.

Thus, it can be concluded that majority of GO and NGOs extension personnel needed training about all the selected ICT tools therefore, magnitude of training needs of extension personnel about various ICT tools was more or less same.

Comparison of GO and NGOs respondents on the basis of training needs about ICT application in agriculture

To compare the training needs of GO and NGOs extension personnel about ICT application in agriculture, 'Z' test was applied. The results have been presented in Table 8.

Table 8 shows that the calculated 'Z' value was found to be greater than its tabulated value at 1 per cent level of significance. Thus, the null hypothesis

Table 7. Overall training needs of extension personnel about selected ICT tools.

n=160

S.No.	Training needs	GO Personnel		NGOs Personnel		Total	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Computer	68.82	IV	60.41	II	64.61	III
2.	internet	68.98	III	56.30	V	62.64	IV
3.	Mobile phone	74.79	I	59.32	III	67.05	II
4.	Kisan call center	65.47	V	59.04	IV	62.25	V
5.	Information kiosk	69.27	II	66.35	I	67.81	I
	Overall	**69.46**		**60.28**		**64.87**	

MPS = Mean per cent score

Table 8. Comparison of GO and NGOs respondents on the basis of training needs about ICT application in agriculture

No.	Category of respondents	Mean	S.D.	'Z' Value
1.	GO Personnel	77.21	8.57	6.25**
2.	NGOs Personnel	66.36	12.95	

**Significant at 1 per cent level

(NH_{01}) was rejected and alternate hypothesis (RH_1) was accepted. It reveals that there was significant difference in training needs of GO and NGOs extension personnel about information and communication technology.

The mean value further indicates that GO personnel had more training needs than NGOs personnel about information and communication technology application in agriculture. This difference in the training need might be due to the reason that NGOs respondents have availability of and accessibility to ICT tools in their office as well as home and they use these ICT tools in daily life along with professional life so they expressed less training needs compared to GO extension personnel.

CONCLUSION

From the above discussion It can be concluded that more than two-third of the extension personnel have training needs about ICT application in agriculture either medium or higher level. Out of five commonly used ICT tools highest training need of GO personnel was recorded about mobile phone application whereas, NGOs personnel wanted maximum training about information kiosks. Trainings about use of GPRS and 3G services for mobile phone, services provided by the information kiosks, uploading and downloading of files from websites through internet, digital content development & retrieving and skill in diagnosis of farmer's problem were perceived as most needed training areas by GO & NGOs personnel.

REFERENCES

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

Senthilkumar, S. and Chandra, M. 2011. Effectiveness of ICT enabled village information centres among dairy farmers in Tamilnadu. *A text book on information and communication technology for agriculture and rural development* edited by R. Saravanan, C. Kathiresan and T. Indra Devi. PP. 307-320.

Yadav, C.B. 2011. Awareness and access to modern communication media among the farmers of Udaipur district of Rajasthan. M.Sc. (Ag.) thesis (Unpublished) submitted to Maharana Pratap University of Agriculture and Technology, Udaipur.

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HAZARDS FACED BY CEREAL GROWING FARMERS

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ABSTRACT

The objective of present investigation is to find out the existing clothing practices, protective measures used and physical problems faced by the farmers. For this purpose eighty respondents (40 each crop) were purposely selected and structured interview schedule was used for data collection. Majority of the respondents were wearing the Kurta- pajama, chappal and female wear ghagra and odhna. Farmers do not use any type of protective clothing. Physical problem faced by the respondents were eye irritation, cut in hands, itching in hands and other body parts and headache due to strong chemical inhalation. Hence the need arises to generate awareness among the farm workers for the use of personal protective clothing to save themselves by various physical problems. Findings suggest for designing hand gloves, mouth mask, headgear and apron.

INTRODUCTION

Wheat is the main cereal crop in India. Wheat is widely cultivated as a cash crop because it produces a good yield per unit area, grows well in a temperate climate even with a moderately short growing season, and yields a versatile, high-quality flour that is widely used in baking. Most breads are made with wheat flour, including many breads named for the other grains like rye and oat breads. The popularity of foods made from wheat flour creates a large demand for the grain, even in economies with significant food surpluses.

After wheat the main cereals grain is maize. Maize is a major source of starch. Cornstarch (maize flour) is a major ingredient in home cooking and in many industrialized food products. Maize is also a major source of cooking oil (corn oil) and of maize gluten. Maize starch can be hydrolyzed and enzymatic ally treated to produce syrups, particularly high-fructose corn syrup, a sweetener; and also fermented and distilled to produce grain alcohol.

India is an agriculture country. About seventy percent of our population depends on agriculture. One third of our national income comes from agriculture. The development of agriculture has much to do with the economic welfare. An Indian farmer is very hard worker. He is very busy throughout the year. For him there is no rest. He is engaged in tilling the soil, sowing the seeds, watering the fields, reaping and harvesting the crop and then taking it to the market to sell it ,during this time they face many health hazards like cut in hands and other body parts, itching in hands and eyes, respiratory diseases due to inhalation of fertilizers. The present study was carried out to study the occupational problems among the farm workers and study the existing clothing practices.

RESEARCH METHODOLOGY

The survey was carried out in Manpura Lakhawali and Nohra villages of Udaipur district. Totally 80 respondents (40 Maize &40 Wheat crop growers) were interviewed to elicit the information on health problems among farm workers. Structured questionnaire was used for electing information regarding demographics of respondents type of activity performed, health problems encountered during work and occupational dress pattern of farm workers information was collected by personal interview method.

RESULTS AND DISCUSSION

Table -1 clearly reveals that good percent of respondents belongs to the 50-60 year and 40-50 years of age. Only 15 % were in the age range of 30-40 year. The reason for less involvement of young respondents in farming is hard work. Data regarding education status of respondents is very disappointing as only (16.25%) were middle education 46.25 were primary educated .25% were illiterate. Nearly 85 percent of respondents belong to joint family and rest had nuclear family. Regarding land holding it was found that 47.5 percent had medium and equal percentage had small and large (18.75%) and rest had marginal land holding cultivation method

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adopted by 45 percent was on contract, 30 percent self and equal percent (12.5%) sharing and lease basis.

Table 1. Personal Profile of the respondents

n=80

No.	Aspects	Categories	Frequency(%)
1	Age	Below 20 years	12 (15%)
		30-40 years	08 (10%)
		40-50 years	22(27.5%)
		50-60 years	38 (47.5%)
2	Academic standard	Illiterate	20 (25%)
		Primary	37 (46.25%)
		Middle	13 (16.25%)
		Graduate	8 (10%)
		Post-graduate	1 (1.25%)
		Technical education	1(1.25%)
3	Family type	Nuclear	68 (85%)
		Joint	12(15%)
4	Land holding	Marginal	12(15%)
		Small	15 (18.l75%)
		Medium	38 (47.5%)
		Large	15 (18.75%)
5	Cultivation method practiced	Self cultivation	24 (30%)
		Contract	36 (45%)
		Sharing basis	10 (12.5%)
		Lease	10 (12.5%)

Types of activities performed It is observed in table 2 that cent percent of male workers engaged in maize and wheat crops performed farm activities like seed treatment, land preparation, sowing, harvesting and threshing. Whereas weeding, cleaning, drying, picking and storage activities performed by cent percent female workers.

Technique used for performing the farm activity The techniques used in maize field majority of farm activities like seed treatment, sowing, fertilizer application were performed manually. Kurpi, sickle, cleaning pan were used as the agricultural equipments for performing weeding, harvesting, cleaning (100%) respectively. In wheat field farm activities like seed treatment, sowing, fertilizer application, land preparation (75%) were performed manually. Kurpi and sickle, wooden beater were used.

Table 2. Types of activities performed

Activities	Male (n-40) Frequency (%)	Female (n-40) Frequency (%)
Seed treatment	40(100%)	-
Land preparation	40(100%)	-
Sowing	40(100%)	-
Transplantation	-	-
Weeding	-	40(100%)
Harvesting	40(100%)	-
Thrashing	40(100%)	-
Cleaning	-	40(100%)
Drying	-	40(100%)
Picking	-	40(100%)
Storage	-	40(100%)

Table 4 shows that general problem encountered during farming the major problem faced by the respondents were related to weeding an application of fertilizer. It was reported by the respondents that soiling of hand and feet was the major problem faced while land preparation, irrigation, weeding and application of fertilizer. Eye irritation and itching was the problem faced by 50 and 55% during weeding and 25% for each crop during application of fertilizer. None of the respondents encountered skin allergy during irrigation while (60% and 50%) during weeding time in maize and wheat fields respectively. It may be due to harmful nature of weed. during weeding and application of fertilizer time respondents suffered from headache (50% and 45%) and (12.5, 37.5%) due to strong chemicals present in fertilizer.

Specific problems encountered during field activity: Table 5 clearly shows that farm workers of cereal crop faced specific problems during sowing were skin allergy in hand and feet (100%), backache (75% and 85%) each and shoulder pain 67.5 and 70% due to bending and holding container respectively while harvesting, the workers had problems like cut in hand/ arms (50% and 100 % each) in maize and

Table 3. Technique used for performing the farm activity

n=80

Activity performed	Maize n-40		Wheat n-40	
	Manual Frequency (%)	Machine Frequency (%)	Manual Frequency (%)	Machine Frequency (%)
Seed treatment	40 (100%)	-	40 (100%)	
Land preparation	13 (32.5)	27 (66.5)	30 (75%)	10 (25%)
Sowing	40 (100%)		40 (100%)	-
Irrigation				
Drip	-	20 (50%)	-	18 (45%)
Tractor	-	10 (25%)	-	22 (55%)
Channels	-	10 (25%)	-	-
Fertilizer application	40 (100%)		40 (100%)	
Weeding	40 (100%)		40 (100%)	
Harvesting	40 (100%)			
Thrashing		40 (100%)		40 (100%)
Cleaning	40 (100%)			40 (100%)
Drying40 (100%)			40 (100%)	

General Problems encountered during farming

Table 4. General Problems encountered during farming

Problems encountered	Farming Activities							
	Land preparation Frequency (%)		Irrigation Frequency (%)		Weeding Frequency (%)		Fertilizer application Frequency (%)	
	Maize n-40	Wheat n-40	Maize n-40	Wheat n-40	Maize n-40	Wheat n-40	Maize n-40	Wheat n-40
Soiling of Hand	-	-	40 (100%)	40 (100%)	40 (100%)	40 (100%)	40 (100%)	40 (100%)
Soiling of Feet	40 (100%)	40 (100%)	40 (100%)	40 (100%)	40 (100%)	40 (100%)	40 (100%)	40 (100%)
Eye irritation and itching	-	-	-	-	20 (50%)	22 (55%)	10 (25%)	10 (25%)
Skin allergyHand	-	-	-	-	-	-	15 (37.5%)	12 (30%)
Skin allergyFeet	24 (60%)	20 (50%)	-	-	30 (75%)	25 (62.5%)	-	-
Headache	-	05 (12.5%)	-	15 (37.5%)	20 (50%)	18 (45%)	05 (12.5%)	15 (37.5%)
Sweating	-	15 (37.5)	-	-	22 (55%)	25 (62.5%)	05 (12.5%)	18 (45%)

Table 5. Specific problems encountered during farming

n=80

S.No.	Problem encountered		Maize n-40F(%)	Wheat n-40F(%)
1	Sowing	Skin Allergy Hand	40 (100%)	40 (100%)
		Skin Allergy Feet	40 (100%)	40 (100%)
		Back ache	30 (75%)	35 (87.5%)
		Shoulder ache	27 (67.5%)	28 (70%)
2	Harvesting	Cut in hands	20 (50%)	40(100%)
		Cut in body part	30(75%)	30(75%)
3	Threshing	Cuts in hand/ arm	30(75%)	40(100%)
		Eye irritation	39(97.5%)	39(97.5%)

wheat field respectively. During harvesting time crops are dry completely and become so hard. Further it is observed from table-5 that during threshing the cent percent of wheat growers faced health problems like cuts in hands/ arms. Maize and wheat workers (97.5%) each had eye irritation during thrashing time.

Occupational dress pattern of male

Data in table-6 shows that male workers did not wear any kind of protective clothes while performing field activities in cereal crops field. Mostly they used regular cloths (kurta - pyjama, saffa (67.5, 62.5%), Chappal (75%, 52.5%) respectively

Occupational dress pattern of female

Majority of female farm workers of maize and wheat fields did not wear any kind of functional clothes during field activities table-7. They wore blouse and Ordhna (100% each), lower garment Ghagra (100%each) and 90% workers wore Chappal for feet respectively.

CONCLUSION

The study concluded that mostly farmers have small land holding because of the many activities play manually like sowing, weeding, fertilizer application, harvesting, thrashing cleaning and storage. In all farm

Table 6. Occupational dress pattern of male

n - 80

S.No.	Dress Pattern		Maize	wheat
1	**Garments**	Kurta pyjama	25 (62.5%)	22(55%)
		Pant shirt	15 (37.5%)	18 (45%)
2	**Head**	Saffa	27 (67.5%)	25(62.5%)
		Cap	13 (32.5)	15 (37.5)
3	**Feet**	Chappal	30 (75%)	21 (52.5)
		Shoes	10 (25%)	19 (47.5%)

Table 7. Occupational dress pattern of female

n - 80

S.No.	Dress Pattern		Maize	wheat
1	Upper garment	Blouse and ordna	40 (100%)	40 (100%)
2	Lower garment	Ghaghra	40 (100%)	40 (100%)
3	Feet	Chappal	36(90%)	36(90%)
		Jutti	04 (10%)	04(10%)

activity farm workers faced many problems such as cut in hands and other body parts, itching, during harvesting and thrashing period, due to unawareness about the protective clothing.

REFERENCES

Mrunalini, A., Jyothi Bala, M., Uma Maheswari, C. and Chary, A.K. 1980. Correlates of Farm women's Drudgery in Household Work. *Rural India.*

Sita, S. and Kamalamma, N. 1999. Occupational Health Problems of Women Workers in Cashew Industry. *Social Welfare* **46** (1): 15-16.

Rajani, 1988. Health Hazards At Workplace, *Social Welfare*, May issue.

http://en.wikipedia.org/wiki/Cereal

https://www.integratedbreeding.net/wheat-facts-figures

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IMPACT OF TECHNOLOGICAL INTERVENTIONS ON SMALL RUMINANT REARING FARMERS IN TRIBAL BELT OF RAJASTHAN

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ABSTRACT

During the Integrated village development progrmme (IVDP) a field survey was conducted to study the socio-economic status and Impact of technological intervention i.e. organized animal health camps, and performance of progeny from distributed Sirohi buck to small ruminant rearing farmers in adopted village viz. Bhiluda, Selota, Kanpur and Divada. Majority of sheep and goat keepers had land-holding size 0.5-1.0 hectares. During the survey period data recorded to take the direct farmers overall adoption of vaccination, deworming ecto-parasite and mineral mixture feeding 4.35%, 12.56%, 5.31% and 0.0%, respectively. However, after the .given technological intervention i.e. organized animal health camp, the overall farmers adoption trends was higher in respect of vaccination, dewormin, ecto-parasite and mineral mixture feeding as 44.93%, 73.91%, 94.69 and 66.67%, respectively. Growth performance of progeny from distributed Sirohi buck is better performance as compared to conventional practices. It is concluded that the impact camps and distributed of Sirohi buck were satisfactory adoption by small ruminant tribal farmers. It is need to awareness the technological intervention of the tribal farmers.

INTRODUCTION

Animal husbandry plays a prominent role in the rural economy in supplementing the income of rural households, particularly the landless, small and marginal farmers. Animal husbandry output constitutes about 30 percent of the country's agricultural output. Small ruminant contribute animal protein, provide wool and skin for protection from adverse climate and add to soil fertility by providing valuable manure. Small ruminant are the backbone of rural economy in arid and semi-arid and hilly regions of our country. It's rearing and processing of wool and skin generate rural employments. The district Dungarpur is named after 'The town of hillocks' in which present high percentage of ST population. In this tribal belt are poor management, adverse climatic conditions and genetic material are major constraints faced by the tribal farmers. Improved management practices have been prescribed by various research and development organizations to improve the small ruminant production. But the farmers face many constraints in adoption of these practices (Sharma and Riyazuddin, 1989) very few studies have been carried out which have direct relevance to the intervention. Understanding these facts faced by the farmers help in formulation of proper strategies of intervention. The aim of the present study was to investigate the impact of technological intervention on small ruminant rearing farmers in Tribal belt of Rajasthan under IVDP.

RESEARCH METHODOLOGY

The data were collected from 414 small ruminant rearing families of adopted village in tribal belt of sagwara Teshsil of Dungarpur district viz. Bhiluda, Selota, Kanpur and Divada, under "Integrated Village Development Programme" (IVDP) implemented by KVK, Dungarpur. During this programme two animal health camp were organized in each adopted village for the year 2005-2008 intervention were proposed to assess, refine and improve the productivity in small ruminant health management, and fodder production. There is a major thrust to develop this tribal belt through dissemination of improved technologies related to small ruminant production. Realizing this, KVK Dungarpur has initiated transfer of technology through IVDP in the year 2005-2008. Adoption of health management practices as per Institute animal health calendar in adopted areas resulted in marked

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compared prior to their adoption. The data obtained was analyzed statistically.

RESULTS AND DISCUSSION

Socio-economic statuses of small ruminant rearers are presented in Table1. All scheduled tribes overall majority contribution of middle age group to the small ruminant keeping 55%. This finding was in agreement with the report of Pathodiya *et al* (2003). The participants of young and high age group in the small ruminant keeping were found 28.33% and 16.67%, respectively. The reasons behind this might be due to difficulties faced by old people in the rainy and cold climate, which hindered their involvment in small ruminant resource, was 60.83%, which resulted in poor adoption of sheep and goat rearing technology in the study area. Similar results were also observed by Samanta (2002) who reported in a feld study conducted on Black Bengal Goats, 75% small ruminant rearing farmers followed Agriculture and Animal Husbandry as the main occupation. Similar results were also reported by Pathodiya *et al* (2003). The family size of small ruminant rearing farmers 79.17% cases above five members and majority of sheep and goat rearers (98.33%) belonged to lower and medium income groups, which indicated mainly poor people kept sheep and goats. These results were in agreement with the findings of Rao and Patro (2002). Majority of the small ruminant rearers had less than 1.0 hectare of land of which ¾ land was rainted. In which a situation income from sheep and goat rearing play a major role for their subsistence. These findings are supported by the reports of Rai and Singh (2004). Majority sheep and goat rearers were landless and small landholders. This indication that the major small ruminant rearing activity was in the hands of the small and landless farmers. The land holding in general had a positive correction with small ruminant floke size, a finding in consonance with the results of Gokhle *et al* (2002).

Health Management

Table 2 shows that the results of pre and post organized animal health camp in the study area. The proportion of farmers who vaccinate their animal was higher in Selota (14.49%) and Divada (10.63%) as compared to Bhiluda and Selota. Ovarall 44.93% farmers adopted the vaccinate schedule. A total of 73.91% percent farmers in the study area followed the deworiming but due to money constraints they did not follow the deworming (26.09%). The problem of ecto-parasites was more in the study area but due to poor economic condition of the small ruminants farmers only 5.31 percent treat their animal against ecto-parasites regularly during pre animal health camp organized. Majority of 94.69 percent farmers adopted ecto-parasites treat their animals during organized animal health camps. No mineral mixture feeding of their animals in the study area during survey period. After technology intervention of mineral mixture health camp 66.67% farmers adopted.

Growth performance of progenies born out from distributed Sirohi Buck showed superiority trend over conventional use of local buck (Table 3). The increase in performance of progenies was under the same management adopted before starting the project. The body weight of progeny of distributed buck, were higher in all stages i.e. from birth to six months age of kids.

CONCLUSION

The overall improvement in shepherd's condition is possible through adoption of viable transferable technologies through integrated development program of the KVK, Dungarpur like use of improved Sirohi buck, adoption of health calendar supplementation of mineral mixture feeding and higher fodder production techniques.

REFERENCES

Sharma, N.K. and Riyazuddin, 1989. Survey report on constraints analysis in adoption of improved sheep production technologies of the sheep families in adopted and non-adopted village (unpublished), CSWRI, Avikanagar.

Pathodiya, O.P., Tailor, S.P. and Nagda, R.K. 2003. Annual Report (2002-2003) of AICRP on goat improvement (Sirohi Geld Unit) Livestock Research Station, Vallabh Nagar, Maharana Pratap University of Agriculture & Technology, Udaipur.

Singh, S., Rana, Z.S. and Dalal, D.S. 2002, Genetic and non-genetic factors affecting growth performance in goats. *Indian Journal of Animal Research* **36**:12-16.

Table 1. Socio-economic condition of small ruminant farmers

		Location				
		Bhiluda	**Selota**	**Kanpur**	**Divada**	**Total**
		(n=30)	**(n=30)**	**(n=30)**	**(n=30)**	**(N=30)**
1.	**Family Profile**	8 (26.67)	6(20.00)	11(36.67)	9(30.00)	34(28.33)
a.	Low(<25years)	17(56.67)	20 (66.67)	13 (43.33)	16(53.33)	66(55.00)
b.	Medium (26-50years)	5(16.66)	4(13.33)	6(20.00)	5(16.67)	20(16.67)
c.	High (>50years)					
2.	**Caste**					
a.	ST	30 (100)	30 (100)	30 (100)	30 (100)	120 (100)
3.	**Education**					
a.	Illiterate	12(40.00)	8(26.67)	14(46.67)	13(43.33)	47(39.17)
b.	Primary (<5th)	16(53.33)	20(66.67)	12(40.00)	16(53.33)	64(53.33)
c.	Middle and above (>5th)	2(6.67)	2(6.67)	4(13.33)	1(3.33)	9(7.50)
4.	**Main Occupation**					
a.	Service	0(0.00)	0(0.00)	1(3.33)	0(0.00)	1(0.83)
b.	Agri	5(16.67)	6(20.00)	4(13.33)	7(23.33)	22(18.33)
c.	AH	4(13.33)	0(0.00)	2(6.67)	1(3.33)	7(5.83)
d.	Agri +AH	21(70.00)	24(80.00)	23(76.67)	22(73.33)	90(75.00)
5.	**Family Size**					
a.	Up to 5 members	4(13.33)	8(26.67)	7(23.33)	6(20.00)	25(20.83)
b.	Above 5 members	26(86.67)	22(73.33)	23(76.67)	24(80.00)	95(79.17)
6.	**Annual Income**					
a.	Low (below Rs.15000)	26(86.67)	25(83.33)	27(90.00)	22(73.33)	100(83.33)
b.	Medium (Rs.15000-30,000)	4(13.33)	5(16.67)	2(6.67)	7(23.33)	18(15.00)
c.	High (above Rs.30,000)	0(0.00)	0(0.00)	1(3.33)	1(3.33)	2(1.67)
7.	**Land Holding**					
a.	Landless	2(6.67)	1(3.33)	1(3.33)	2(6.67)	6(5.00)
b.	Marginal (<0.5 hectare)	10(33.33)	7(23.33)	12(40.00)	8(26.67)	37(30.83)
c.	Small (<0.5-1.0 hectare)	14(46.67)	8(60.00)	13(43.33)	12(40.00)	57(47.50)
d.	Medium (1.0-1.5 hectare)	3(10.00)	2(6.67)	2(6.67)	2(6.67)	13(10.83)
e.	Big above (>1.5 hectare)	1(3.33)	2(6.67)	2(6.67)	2(6.67)	7(5.83)

*Figures in Parenthesis indicate Percentage.

Table 2. Health care practices followed before and after organized animal health camp (AHC) in the study area

Particulars	Villages									
	Bhiluda (121)		Selota (110)		Kanpur (90)		Divada (93)		Overall (414)	
	Before AHC	After AHC	Before AHC	After AHC	Before AHC	After AHC	Before AHC	After AHC	Before AHC	After AHC
Vaccination										
Yes	5(1.21)	42(10.14)	02(0.48)	60(14.49)	6(1.45)	40(9.66)	5(1.21)	44(10.63)	18(4.35)	186(44.93)
No	116(28.02)	79(19.08)	108(26.08)	50(12.08)	84(20.29)	50(12.08)	88(21.25)	49(11.84)	396(95.65)	228(55.07)
Deworming										
Yes	21(5.07)	101(24.39)	13(3.14)	69(16.67)	8(1.93)	54(13.04)	10(2.42)	82(19.81)	52(12.56)	306(73.91)
No	100(124.15)	20(4.83)	97(23.43)	41(9.90)	82(19.81)	36(8.70)	83(20.05)	11(2.66)	362(87.44)	108(26.09)
Ecto-Parasite										
Yes	12(2.90)	117(28.26)	2(0.48)	107(25.85)	4(0.97)	85(20.53)	4(0.97)	83(20.04)	22(5.31)	392(94.69)
No	109(26.33)	4(0.97)	108(26.08)	3(0.72)	86(20.77)	5(1.21)	89(21.50)	10(2.42)	392(94.69)	22(5.31)
Mineral Mixture										
Yes	0(0.00)	88(21.26)	0(0.00)	68(16.43)	0(0.00)	62(14.98)	0(0.00)	58(14.01)	0(0.00)	276(66.67)
No	121(29.22)	33(7.97)	110(26.57)	42(10.14)	90(21.72)	20(6.76)	93(22.46)	35(8.45)	414(100)	138(33.33)

*Figures in Parenthesis indicate Percentage.

Table 3. Growth performance of Progeny from distributed improved Sirohi Bucks as compared to base line formation in (Kg)

Traits	Birth weight of kids		3 Month weight of kids		6 Month weight of kids	
	Conventional Practices	Progeny of distributed Buck	Conventional Practices	Progeny of distributed Buck	Conventional Practice	Progeny of distributed Buck
Male	1.74 (60)	2.22 (38)	10.78 (46)	14.28 (31)	15.68 (36)	24.63 (22)
Female	1.59 (52)	2.99 (29)	9.92 (34)	13.59 (22)	14.20 (26)	21.45 (18)

*Figures in Parenthesis are the number of kids.

Samanta, A.K. 2002. Annual Report, AICRP on Goat Improvement (Black Bengal field Unit), Department of Animal Production and Management, West Bengal University of Animal and Fishery Sciences, Kolkata.

Rao, P.K. and Patro, B.N. 2002. Scientist Meet of AICRP on Goat Improvement (Ganjan field unit) Deptt. Animal breeding and genetics, College of Veterinary Science and Animal Husbandry, OUAT, Bhubanshwar.

Rai, B. and Singh, M.K. 2004, Rearing practices of Jakhrana Goat in farmers flock. *Indian Journal of small ruminants* **90**: 33-35.

Gokhle, S.B., Gokhle, R.B., Phadke, M.L. and Deseale R.J. 2002. Status of village goat management practices in Maharastra. *Indian Journal of Animal Science* **72**: 810-814.

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KNOWLEDGE LEVEL OF THE FIELD FUNCTIONARIES ABOUT NATIONAL AGRICULTURAL INSURANCE AND WEATHER BASED CROP INSURANCE SCHEMES FOR WHEAT IN SOUTHERN RAJASTHAN

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ABSTRACT

Crop insurance is an arrangement that aims at mitigating the financial losses suffered by the farmers due to damage and destruction of their crops as a result of various production risks. Rainfall insurance is a specific form of weather insurance programmes in Mexico, Japan, Australia, United States, Japan, and Brazil. Weather based crop insurance scheme (WBCIS) has been introduced in the country from Rabi 2007-08. WBCIS aims to mitigate hardships of insured farmers against likelihood of financial loss on account of anticipated crop loss resulting from incidence of adverse conditions of weather parameters like deficit or excess rainfall and also other parameters like temperature, frost, humidity and wind, etc.The present study was conducted in Udaipur district of Southern Rajasthan.Udaipur district comprises eleven tehsils viz; Jhadol, Lasadia, Girva, Gogunda, Kherwara, Kotda, Mawli, Sarada, Salumber and Vallabhnager, The NAIS and WBCIS had been operated in around 200 each in the villages of Salumber and Vallabhnager tehsils. Ten villages (5 from Salumber and 5 from Vallabhnager). It was planned to select 150 (75 from Salumber and 75 from Vallabhnager tehsils) insured loanee farmers from so selected villages.

INTRODUCTION

Crop insurance is a means for protecting the cultivators against financial loss on account ofanticipated crop-loss arising out of practically all natural factors beyond their control such asnatural fire, weather, floods, pests, diseases etc. It includes empirical evolutions of programmes in Mexico, Japan, Australia, United States, Japan, and Brazil. These experiences and those of other countries provide lessons, the design and management of agricultural insurance programmesabout the role of crop insurance as a public risk management policy. Countries such as the United States, Japan, Brazil, Sri Lanka, Mauritius, and Mexico have several decades of experiences with publicly supportedcrop insurance programmes.Thus, because of these drawbacks, the policymakers of the country havesought insurance of crops as a feasible measure to combat against the risks and hazardsand provide protection to the farmers. Hence, **Government of India started offering widespread crop insurance in 1985, with the Comprehensive Crop Insurance Scheme**This would encourage them to carry on with theirproductive efforts, which not only improves the wellbeing of the farmers but also ultimatelyhelps in stabilizing the agricultural output.The Government of India had temporarily suspended the operation of the comprehensive crop insurance scheme (CCIS) from April 1, 1988 but again started the scheme during *kharif*1988 (while in Karnataka, theState Government decided to continue the crop insurance scheme during 1989-90). TheComprehensive Crop Insurance Scheme (CCIS) was in operation till Rabi 1999.

The CCIS has been replaced by the National Agriculture Insurance Scheme (NAIS). The NAIS is considered to be an improvement over the CCIS, but it has simply replaced one flawed scheme with another slightly less flawed one. Government crop insurance has proved to be a failure worldwide, but India seems to have ignored both its own failure and the failure of other countries. The National Agricultural Insurance Scheme (NAIS) was introduced in the country from the Rabi season of 1999-2000. Agricultural Insurance Company of India Ltd (AIC) which was incorporated in December, 2002, and started operating from April, 2003 took over the implementation of NAIS. This scheme is available to both loanees and non-loanees. It covers all food

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grains, oilseeds and annual horticultural/commercial crops for which past yield data are available for an adequate number of years.Govt. of India on 28th Sept., 2010 came out with Modified National Agricultural Insurance Scheme (MNAIS) to be implemented in 50 selected districts of India on pilot basis in place of National Agricultural Insurance Scheme (NAIS), that means NAIS was to be withdrawn for both loanee and non loanee farmers from those area/crops where MNAIS was implemented.

Weather based crop insurance scheme (WBCIS) has been introduced in the country from Rabi 2007-08. WBCIS aims to mitigate hardships of insured farmers against likelihood of financial loss on account of anticipated crop loss resulting from incidence of adverse conditions of weather parameters like deficit or excess rainfall and also other parameters like temperature, frost, humidity and wind, etc.

RESEARCH METHODOLOGY

The present study was conducted in Udaipur district of Southern Rajasthan. Udaipur district comprises eleven tehsils *viz*. Jhadol, Lasadia, Girva, Gogunda, Kherwara, Kotda, Mawli, Sarada, Salumber and Vallabhnager, but highest area covered under crop insurance schemes was observed to be in Salumber tehsil followed by Vallabhnager during 2011-12. Therefore, Salumber and Vallabhnager tehsils were selected on the basis of highest insured loanee farmers (ILFs) under crop insurance schemes. The information regarding crop insurance also revealed that there were considerable number of insured loanee farmers covered under NAIS and WBCIS in both the tehsils. The NAIS and WBCIS had been operated in around 200 each in the villages of Salumber and Vallabhnager tehsils. Ten villages (5 from Salumber and 5 from Vallabhnager), which fell in the radius of 10 kms from the tehsil headquarters of Salumber and Vallabhnager were included for the investigation. A list of such villages was prepared; care was taken to select first five villages from each of the tehsils with higher number of insured loanee farmers (ILFs). Total, 40 field functionaries who were involved in the insurance schemes were selected as a sample of study.

RESULTS AND DISCUSSION

Level of knowledge of field functionaries about insurance schemes under study

Knowledge is a body of understood information possessed by an individual; it is one of the important components of action behaviour and, plays an important role in the adoption of an innovation. Bloom et *al.* (1955), considered in depth knowledge as "those behaviours and test situations which emphasize the remembering either by recognition or recall of ideas, material or phenomenon"."To measure the knowledge of field functionaries about insurance schemes." The level of knowledge possessed by the functionaries was discussed aspect wise under the crop insurance schemes.

Distribution of respondents according to their knowledge level about insurance schemes under study

To have overview of the field functionaries regarding their level of knowledge about insurance schemes, they were classified into three groups' *viz.*, high (22.22 to 40.74), moderate (40.74 to 59.26) and low (59.26 to 77.78) levels of knowledge. These groups were formed on the basis of calculated interval of scores of the knowledge scores obtained by them.

Table 1. Distribution of respondents according to their knowledge level of field functionaries about insurance schemes

n=40

No.	Knowledge level	Tehsil		Total
		Vallabh-nagar (n_1=27)	Salumber (n_2=13)	
1	Low (22.22-40.74)	6 (75.00) 22.22*	2(25.00) 15.38*	8(20.00)
2	Moderate (40.74-59.26)	10 (58.82) 37.04*	7 (41.76) 53.85*	17(42.50)
3	High (59.26-77.78)	11 (73.33) 40.74*	4 (26.67) 30.77*	15(37.50)
	Total	27(100)	13(100)	40(100)

n= Total number of respondents, n_1= Field functionaries of Vallabhnagar, n_2= Field functionaries of Salumber, *= Percentage to columns, Figures in the parentheses show percentage of rows

Data set in Table 1 revealed that of total, 17 (42.00 per cent) of field functionaries were found from moderate knowledge level, 15 (37.50 per cent) could be observed under high level of knowledge. Remaining 8 (20.00 per cent) of the field functionaries expressed low knowledge regarding NAIS and WBCIS. Table 1 further speaks that 11 (40.00 per cent) of Vallabhnagar field functionaries had high level of knowledge and 7 (53.85 per cent) of Salumber field functionaries had moderate level of knowledge. At the same time, 6 (22.00 per cent) of the Vallabhnagar and 2 (15.33 per cent) of Salumber farmers possessed low level of knowledge. However, Vallabhnagar 10 (37.04 per cent) fell under the category of moderate level knowledge than those of Salumber 4 (30.77 per cent) of high level of knowledge.

Thus, it could be concluded from the table that majority of functionaries had moderate to high level of knowledge about crop insurance schemes for wheat crop. Close look of the table reveal that the field functionaries of Salumber were found to be slightly ahead in terms of knowledge about both the schemes of crop insurance. It may be due to the fact that tehsil Salumber is nearer to Udaipur headquarters and field functionaries frequently visit this working area for wheat crop insurance.

These findings are in contradictory with the findings of these of Samota (2011) who reported that 74.34 per cent of the total respondents possessed high level of knowledge, while, 17.77 and 7.89 per cent wheat growers had medium and low level of knowledge about recommended high yielding varieties of wheat.

Data based recommendations are made that

Table 2. Knowledge level of field functionaries about insurance schemes

n=40

S. No	Aspects	Tehsil				Total	
		Vallabhnagar		Salumber			
		MPS	Rank	MPS	Rank	MPS	Rank
1	What is crop insurance?	90.00	1	82.85	1	86.43	1
2	When NAIS was started?	88.01	2	49.52	10	68.77	7
3	When NAIS was winded up?	77.27	6	45.34	12	61.31	10
4	Mention the objectives of NAIS	72.00	8	80.50	3	76.25	4
5	When WBCIS was started?	68.55	11	79.32	4	73.94	5
6	Crops covered under NAIS and WBCIS	85.67	3	81.07	2	83.37	2
7	Risks are covered	64.92	13	54.11	9	60.52	11
8	Aim of WBCIS	83.33	4	49.32	11	66.33	9
9	Who is covered under crop insurance	74.54	7	70.42	6	72.48	6
10	Name of crop insurance companies	69.60	10	66.33	7	67.97	8
11	What is a premium?	61.00	14	40.61	15	50.81	15
12	Premium rate in wheat crop	50.67	17	38.99	16	44.83	17
13	How many states are covered?	70.88	9	36.30	17	53.59	14
14	Premium subsidy for different farmers	54.01	15	44.73	13	49.37	16
15	Premium rate for different crops	51.00	16	65.00	8	58.00	12
16	Who gives subsidy and in what proportion?	48.91	18	31.81	18	40.36	18
17	At least two parameters for C.I.	81.53	5	77.41	5	79.47	3
18	The unit of insurance in NAIS and WBCIS	65.39	12	42.08	14	53.74	13

MPS = Mean per cent score, ** = Significant at 1 per cent level rs = 0.93**

knowledge of field functionaries of Vallabhnagar in relation to crop insurance schemes is required to be raised. This is possible if the field functionaries undergo adequate and proper training with regards to varies dimensions of crop insurance schemes.

Sub-aspect wise knowledge level of field functionaries about insurance schemes

Knowledge of the field functionaries was also assessed aspects of crop insurance. The results have been presented under the following heads:

Sub-aspects wise knowledge level of field functionaries about insurance schemes

Field functionaries are directly linked to the ILFs. Their intimate knowledge about the crop insurance is the ultimate success of the schemes and that is of great value to save the crop from any loss. With this view in mind the knowledge level of the field functionaries was estimated. The results are given in table2.

The data presented in the Table 2 indicate that field functionaries of Vallabhnagar and Salumber possessed maximum knowledge about "crop insurance", types crop are covered under NAIS and WBCIS" with MPS 90.00 and 87.37 per cent respectively. These aspects were ranked first and second by the functionaries of both the schemes.

Further, analysis of table shows that field functionaries of Vallabhnagar and Salumber had higher knowledge about "crop insurance", "When NAIS was started", "crops covered under NAIS and WBCIS", "Aim of WBCIS", "at least two parameters for C.I.", "when NAIS was winded up ?", how many states are covered", " name of crop insurance companies", "when WBCIS was started?", "the unit of insurance in NAIS and WBCIS", what risks are covered", what is a premium?", " premium subsidy for different farmers", "premium rate for different crops", "premium rate in wheat crop" and who given subsidy and in what proportion"?.

The mean per cent scores of these aspects were 90.00, 88.01, 85.67, 83.33, 81.53, 77.27, 74.54, 72.00, 70.88, 69.60, 68.55, 65.39, 64.92, 61.00, 54.01, 51.00, 50.67 and 48.91 respectively, among field functionaries of Vallabhnagar. While, in case of field functionaries of Salumber it was 82.85, 81.07, 80.50, 79.32, 77.41, 70.42, 66.33, 65.00, 54.11, 49.52, 49.32, 45.34, 44.73, 36.30 and 31.81 per cent respectively. It is interesting to see that there were listed altogether 18 aspects (common for both the schemes) for crop insurance schemes of them. Out of which aspects got comparatively higher score in Vallabhnagar, meaning Salumber tehsil was superior with regards to knowledge of field functionaries about crop insurance schemes.

CONCLUSION

Based on the results, it is concluded that as for as knowledge level was concerned, the ILFs of Vallabhnagar tehsil were slightly forward as compared to farmers of Salumber. Based on the findings, it is recommended that on the whole, the field functionaries working in Vallabhnagar are to be warned to upgrade their knowledge level with regards to wheat crop insurance schemes, so that they can implement the schemes in an efficient and effective way.

REFERENCES

Bloom, S.S., Engelhard, M., Furst, E., Hill W. and Krathwal, D.R. 1955. Taxonomy of Educational Objectives: *The Cognitive Domain Orient Longmans, New York.*

Roy, S.D. and Bhagat, R. 2012. Level of knowledge and extent of adoption of farmers on recommended wheat production practices. *Indian Journal of Extension Education* **48**(1&2): 78-80.

Samota, S.D. 2011. Evaluation of NAIP with special reference to interventions introduced in wheat cultivation in Banswara district of Rajasthan. M.Sc. (Ag.). Thesis, Maharana Pratap University of Agricultural and Technology, Udaipur, Rajasthan.

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EXTENSION PERSONNEL'S JOB SATISFACTION AND THEIR PREFERENCE TO MOTIVATIONAL CLIMATE IN THE EXTENSION ORGANIZATION FOR THE SUSTAINABILITY OF DRYLAND AGRICULTURE

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ABSTRACT

The study was conducted in Rajasthan state. To know the Extension personnel's Job satisfaction and their Preference to motivational climate in the extension organization and management three zones, 6 tehsils and 20 villages were selected randomly. And a sample of 55 extension personnel working in study area was selected randomly from the State Department of Agriculture. After that analyzing the data with statistical tests used. It was found that the aspect achievement, control and power were preferred as most essential aspect of motivational climate and the majority of the extension personnel were satisfied with job security and leave facilities

INTRODUCTION

The concept of sustainable agriculture involves the evolution of new types of agriculture rich in technology and information, with much less intensive energy use and market purchased inputs. Thus, sustainability is the successful management of resources to satisfy the changing human needs, while maintaining or enhancing the quality of environment and conserving natural resources. For this the whole agriculture system in the country will have to be reoriented to make it sustainable and to achieve sustainable growth.

The sustainability of agriculture has become increasingly important to policy makers, agricultural scientists, farmers and the public. More precisely the ways, the technology received is managed by the extension personnel and its dissemination to ultimate user-farmers, who in turn accept and manage the new techniques while managing their farming systems are the important elements of sustainable agriculture. There is an urgent need to reorient and manage the agricultural extension systems to meet these new challenges.

The present investigation was undertaken with the following specific objectives :

1. To assess the preference of extension personnel to motivational climate in the extension organization for the sustainability of dry land agriculture
2. To measure the extent of job satisfaction of extension personnel in the extension organization for the sustainability of dry land agriculture

RESEARCH METHODOLOGY

The study was conducted in Rajasthan state. Rajasthan state has been divided in to 10 agro-climatic zones in which, 3 agro-climatic zones, namely zone- IA, zone IC and zone IIIA were selected by simple random sampling technique. From these three zones, 6 tehsils namely Phalodi, Lunkaransar, Lalsot, Sambharlake, Chomu and Sarwar were selected with the help of probability proportional to size technique. Similarly a total of 20 villages were selected from these selected 6 tehsils with the help of probability proportional to size technique. From these selected tehsils a sample of 55 extension personnel working in study area was selected randomly from the State Department of Agriculture.

For studying the preference of extension personnel to motivational climate in the extension organization and the extent of job satisfaction of extension personnel in the extension organization for the sustainability of dryland agriculture from extension management point of view were analysed

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separately by means of a schedule specially constructed by the investigator in light of suggestions of the experts and the responses were recorded accordingly. The validity and reliability of the schedule was also ensured.

The personal interviews as well as mailed questionnaires were used for collecting the data from extension personnel included in the study. The data so collected were classified, tabulated and analysed. Inferences were drawn after subjecting the data to statistical analysis, which led to following findings.

RESULTS AND DISCUSSION

1. Preference of extension personnel to motivational climate in the extension organization for the sustainability of dryland agriculture

The data regarding preference of administrative and advisory extension personnel to different types of motivational climate in the extension organisation is presented in the Table 1

The data presented in Table 1 reveal that majority (65.45per cent) of the extension personnel (57.14 per cent administrative and 70.58 per cent advisory) preferred the 'Achievement' aspects of motivational climate in extension organization, followed by 63.64 per cent of extension personnel (71.42 per cent administrative and 58.82 per cent advisory) were preferred the 'Control' aspect of motivational climate in the organization for human resource development for the sustainability of dry land agriculture. Whereas, only 27.27 per cent of extension personnel (33.33 per cent administrative and 23.52 per cent advisory) preferred the 'Extension' aspect of motivational climate in the extension organization for human resource development for the sustainability of dry land agriculture.

Thus, it can be concluded that the achievement, control and power type of motivational climate was preferred by the majority of extension personnel while affiliation, dependency and extension types were less preferred by the majority of the extension personnel in the extension organisation.

2. Job satisfaction of extension personnel in the extension organization for the sustainability of dryland agriculture

The degree of satisfaction of extension personnel towards the job and the factors directly affecting the role performance in the organisation for the sustainability of dryland agriculture are presented in the Table 2.

The data in Table 2 reveal that all the administrative extension personnel were satisfied with the 'Job security' (3.00 M.S.), 'Opportunities for promotion'(3.00 M.S.) and 'Leave facilities' (3.00 M.S.) and were jointly ranked first followed by 'Status in the organisation' (2.86 M.S.) and 'Salary' (2.81 M.S.), which were ranked second and third, respectively. Whereas, the job factors like 'Participation in decision making' (1.38 M.S.)and 'Recognition of good work done' (1.38 M.S.) the majority of administrative extension personnel were

Table 1. Preference of extension personnel to different aspects of motivational climate in the extension organization for the sustainability of dryland agriculture

n = 55 (Multiple response)

S.No.	Aspects of Motivational climate	Administrative (n= 21)		Advisory (n= 34)		Total	
		f	%	f	%	F	%
1.	Achievement	12	(57.14)	24	(70.58)	36	(65.45)
2.	Affiliation	11	(52.38)	16	(47.05)	27	(49.09)
3.	Dependency	8	(38.09)	15	(44.11)	23	(41.82)
4.	Extension	7	(33.33)	8	(23.52)	15	(27.27)
5.	Control	15	(71.42)	20	(58.82)	35	(63.64)
6.	Power	12	(57.14)	18	(52.94)	30	(54.55)

Figures in parentheses indicate percentage

Table 2. Distribution of administrative and advisory extension personnel according to their extent of job satisfaction

n = 55 (Multiple response)

S.No.	Job factors	Administrative (n = 21)								Advisory (n = 34)								Overall	
		Satisfied		Neutral		Dissatisfied		M.S.	Rank	Satisfied		Neutral		Dissatisfied		M.S.	Rank	M.S.	Rank
		f	%	f	%	f	%			f	%	f	%	f	%				
1.	Job security	21	(100.00)	-		-		3.00	I	34	(100.00)	-		-		3.00	I	3.00	I
2.	Opportunities for promotion	21	(100.00)	-		-		3.00	I	15	(44.11)	10	(29.41)	9	(26.47)	2.18	III	2.59	III
3.	Opportunities for further education	10	(47.62)	7	(33.33)	4	(19.05)	2.29	VI	13	(38.43)	10	(29.41)	11	(32.35)	2.06	VI	2.18	VI
4.	Participation in decision making	4	(19.05)	-		17	(80.95)	1.38	X	-		6	(17.64)	26	(82.35)	1.24	IX	1.31	X
5.	Recognitions of good work done	4	(19.09)	-		17	(80.95)	1.38	X	-		8	(23.52)	26	(76.47)	1.24	IX	1.31	X
6.	Salary	17	(80.95)	4	(19.05)	-		2.81	III	30	(88.23)	4	(11.76)	-		2.88	II	2.85	II
7.	Congenial work atmosphere	8	(38.09)	7	(33.33)	6	(28.57)	2.10	VIII	12	(35.29)	10	(29.41)	12	(35.29)	2.00	VII	2.05	VIII
8.	Leave facilities	21	(100.00)	-		-		3.00	I	34	(100.00)	-		-		3.00	I	3.00	I
9.	Status in the organization	18	(85.71)	3	(14.29)	-		2.86	II	13	(38.23)	12	(35.29)	9	(26.47)	2.12	IV	2.49	IV
10.	Cooperation from colleagues	12	(57.14)	5	(23.80)	4	(19.04)	2.38	V	15	(44.11)	10	(29.41)	9	(26.44)	2.18	III	2.28	V
11.	Help/encouragement from superiors	10	(47.62)	6	(28.57)	5	(23.80)	2.24	VIII	13	(38.23)	11	(32.38)	10	(29.41)	2.09	V	2.17	VII
12.	Freedom to persue original ideas	7	(33.33)	5	(23.80)	9	(42.85)	1.90	IX	8	(23.52)	12	(35.29)	14	(41.76)	1.82	VIII	1.86	IX
13.	Nature of work	14	(66.66)	2	(9.52)	5	(23.80)	2.43	IV	15	(44.11)	8	(23.52)	11	(32.35)	2.12	IV	2.28	V

Figures in parentheses indicate percentage

dissatisfied and were jointly ranked last.

The data in Table 2 regarding job satisfaction of extension personnel also indicate that all the advisory extension personnel were satisfied with the 'Job security' (3.00 M.S.), and 'Leave facilities' (3.00 M.S.) and were jointly ranked first, whereas, their satisfaction regarding 'Salary' (2.88 M.S.) was ranked second. Majority of the advisory extension personnel dissatisfied with the 'Participation in decision making' (1.24 M.S.) and 'Recognition of good work done' (1.24 M.S.) and these were jointly ranked last.

Regarding overall job satisfaction of extension personnel the table 2 indicates that majority of the extension personnel were most satisfied with 'Job security' (3.00 M.S.), 'Leave facilities' (3.00 M.S.)' 'Salary' (2.85 M.S.) and 'Opportunities for promotion'(2.59 M.S.), respectively, whereas, majority of the extension personnel were least satisfied with the 'Participation in decision making' (1.31 M.S.) and 'Recognition of good work done' (1.31 M.S.) for human resource development for the sustainability of dry land agriculture..

CONCLUSION

The aspect "Achievement", "Control" and "Power" were preferred as most essential aspect of motivational climate whereas, the aspect like "Extension" preferred as least essential by the extension personnel for sustainability of extension organisation and extension management. Regarding job satisfaction, majority of the extension personnel were satisfied with "Job security" and "Leave facilities" where as they were dissatisfied with the "Recognition of good work done"

REFRENCES

Arora, S.K. and Samanta, R.K. 1997. Management of Agriculture extension in global perspective. D.K. Publishers, New Delhi.

Bhatnagar, O.P. and Desai, G.R. 1987. Management of agricultural extension : concepts and constraints. *Journal of Rural Development* **6** (1): 1-66.

Gill, S.S. and Kaur, R. 1998. Management of agricultural extension. *Ind. J. of Ext. Edu.* **34** (1&2): 80 - 82

Gupta, A.K. and Singh, R. 1991. Corporate investment in agricultural research : issues in sustainable development. working paper, No. 132. Indian Institute of Management, Ahmedabad. pp. 21.

Kalra, R.K. and Hansra, B.S. 1998. Management of extension strategies. *Ind. J. of Ext. Edu.* **34** (1&2): 87 – 89.

Ray, G.L. 1989. Studies in agriculture extension and management. Mittal Publications, Delhi.

Slade, R., Feder, G. and Chhikara, R. 1988. Reforming agricultural extension - The training and visit systems in India. *Journal of International Agriculture* **27**(3-4) : 228-246.

Verma, O.S. 1998. Management of extension system authority, responsibility and accountability. *Ind. J. of Ext. Edu.* **34** (1 & 2): 41-43.

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A STUDY ON TRIBAL FARMER'S KNOWLEDGE ABOUT SUGARCANE PRODUCTION TECHNOLOGY

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ABSTRACT

The present study was carried out at eight villages of Surguja & Surajpur district of Surguja division of Chhattisgarh state. Total 128 farmers were selected from the list of sugarcane growers as respondents and the data were collected through pretested interview scheduled and analyzed the data by using appropriate statistical tools & techniques. The finding of present study revealed that the socio- economic profile of respondents belonged to middle age group, middle school level of education, small size of family composition, small size of land holding, high level of farming experience, major source of income was agriculture with casual labour, maximum number of respondents belonged under low income group. Majority of respondents had no member of any organization, medium level of scientific orientation. The overall extent of knowledge of recommended production technology among respondent were found medium level (67.96%).

INTRODUCTION

Sugarcane is one of the oldest crops being cultivated in India. India occupies the first rank in production of sugarcane in the world. However, it ranks only 10th in world productivity .though enough viable and adoptive technologies of its cultivation have been developed, there enlists a wide adoption gap among the farmers. In consequence to this the production of sugarcane in the country 342.20 million tonnes in 2011 – 12. In Chhattisgarh, sugarcane production was 45.42 thousand tonnes during 2011-12.

1. To study the socio - economic attributes of tribal sugarcane growers,
2. To ascertain the level of knowledge of the tribal sugarcane growers about recommended sugarcane production technology.

RESEARCH METHODOLOGY

Surguja Division is the 2nd largest producer of nobal cane and the area (3.82 Thousand ha.) under cultivation is high in Chhattisgarh, therefore it was purposively selected for the present study. Out of 13 blocks of both districts, four blocks have been selected randomly for study, namely (Pratappur 1507.63 ha.), Surajpur (1077.79 ha.) from Surajpur district and Lundra (1634 ha.), Batauli (1634 ha.) from Surguja district during 2012-13 respectively (Deptt. of Agriculture). Two villages from each selected block have been selected randomly for study. Thus survey as per objective of study work made in 8 villages namely Batwahi and Mahora (Lundra block), Mangari and Sarmana (Batauli block), Haripur and Kalyanpur (Surajpur block), Kerta and Khadgawakala (Prtappur block). A list of tribal sugarcane growing farmers was prepared who were cultivating sugarcane from last three years, with the help of RAEOs of the eight villages. Sixteen tribal sugarcane growers have been selected randomly from each of the selected village. Thus the total 128 Sugarcane growers (16X8) =128 was considered as respondent for this study.

RESULTS AND DISCUSSION

Socio-economic condition: The data related to socio-economic condition have been presented in Table 1, revealed that maximum number respondents (66.42%) were found to be in middle age group (35 to 55 years). The maximum respondents were under middle school (25.78%) while 21.09 per cent respondents under primary school, 21.87 per cent under illiterate, 17.18 per cent under higher secondary school, 10.15 per cent under high school and only (3.93%) of the respondents had college and above education level. The maximum number of the respondents (42.18 %) had small size of land holding (1 to 2 ha.) followed by 41.40 % marginal (up to 1 ha).

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Table 1. Personal and socio economic characteristics of the respondents

n=128

S.No.	Particulars	Frequency	Per cent
Age			
1.	Young(<35)	30	23.43
2.	Middle (36 to 55 Year)	85	66.42
3.	Old (>55)	13	10.15
	Total	**128**	**100.00**
Education			
1.	Illiterate	28	21.87
2.	Primary	27	21.09
3.	Middle	33	25.78
4.	High school	13	10.15
5.	Higher secondary school	22	17.18
6.	College and above	5	3.93
	Total	**128**	**100.00**
Land holding			
1.	Marginal (up to1 ha..)	53	41.40
2.	Small (1 to 2 ha.)	54	42.18
3.	Medium (2 to 4 ha.)	14	10.96
4.	Big (>4 ha.)	7	5.46
	Total	**128**	**100.00**
Farming experience			
1	Low (up to 5 year)	35	s
2	Medium (5 to 10 year)	41	32.03
3	High (>10 year)	52	40.62
	Total	**128**	**100.00**
Annual income			
1.	Low (Up to Rs. 1 lakh)	65	50.78
2.	Medium (1.1 lakh to 2 lakh)	45	35.15
3.	High (>2 lakh)	18	14.07
	Total	**128**	**100.00**
Social participation			
1	No membership	95	74.21
2	Membership in one organization	21	16.45
3	Membership in more than one organization	5	3.90
4	Executive/ office bearer	7	5.47
	Total	**128**	**100.00**
Scientific-orientation			
1.	Low	17	13.28
2.	Medium	87	67.98
3.	High	24	18.75
	Total	**128**	**100.00**

The majority of tribal sugarcane growers (40.62%) have more than 10 year of farming experience followed by 32.03 per cent with medium farming experience. The majority of respondents (50.78 %) belong to low annual income (upto Rs. 1 lakh), followed by 35.15 per cent of respondents under medium annual income (Rs. 1 lakh to 2 lakh) and only 14.07 per cent of respondents under high annual income (more than Rs. 2 lakh). Regarding social participation, maximum number of respondents (74.21%) had no membership in any organization followed by 16.45 per cent of respondents who were having membership in one organization. Only 5.47 per cent respondents who belonged to executive/ office bearer category while only 3.90 per cent had membership in more than one organization. The majority of the respondents (67.98%) had medium level of Scientific–orientation, followed by 18.75 per cent had high level of scientific–

Table2: Distribution of respondents according to their practices-wise level of knowledge regarding recommended sugarcane production technology

n=128

S.No.	Sugarcane cultivation practices	Level of knowledge		
		Low	Medium	High
		f (%)	f (%)	f (%)
1	Selection of land	3 (2.34)	50 (39.06)	75 (58.59)
2	Preparation of land	0 (0.00)	2 (1.56)	126 (98.46)
3	Seed selection	0 (0.00)	4 (3.12)	124 (96.88)
4	Seed treatment	97 (75.78)	3 (2.34)	28 (21.88)
5	Seed rate	0 (0.00)	7 (5.46)	121 (94.53)
6	Improved variety	38 (29.69)	62 (48.43)	28 (21.87)
7	Fertilizer use	1 (0.78)	99 (77.34)	28 (21.87)
8	Time of irrigation	0 (0.00)	6 (4.68)	122 (95.32)
9	Weed management	2 (1.56)	53 (41.41)	73 (57.03)
10	Insect pest management	110 (85.93)	18 (14.06)	0 (0.00)
11	Disease management	128 (100.00)	0 (0.00)	0 (0.00)
12	Earthing up	0 (0.00)	16 (12.5)	112 (87.5)
13	Tying	109 (85.16)	1 (0.78)	18 (14.06)
14	Harvesting	0 (0.00)	14 (10.93)	114 (89.06)
15	Marketing	0 (0.00)	0 (0.00)	128 (100.00)
16	Ratoon management	2 (1.56)	6 (4.68)	120 (93.75)

orientation.

Sugarcane production technology knowledge

The data presented in the (Table 2) revealed that majority of the respondent had low level of knowledge regarding selected 16 practices of sugarcane production technology *i.e*. disease management (100.00%), insect-pest management (85.93%), tying of sugarcane (85.16%), seed treatment (75.78%) and improved variety (29.69%). Whereas, the majority of the respondents were having medium level of knowledge regarding sugarcane production technology *i.e*. fertilizer use (77.34%), improved variety (62.43%), weed management (41.41%), selection of land (39.06%), insect-pest management (14.06%), earthing up (12.05%), harvesting time (10.93%) and seed rate (5.46%). While respondents had high level of knowledge group for selected practices is like marketing facility (100.00%), preparation of land (98.46%), seed selection (96.88%), time of irrigation (95.32%), seed rate (94.53%), ratoon management (93.75%), harvesting (89.06%), earthing up (87.05%), selection of land (58.59%), weed management (57.03%), seed treatment (21.88%), improved variety and fertilizer use (21.87%) and tying of sugarcane (14.06%), of respondent were having high level of knowledge respectively.

CONCLUSION

The findings of the study indicated that most of the sugarcane growers were in middle range categories in respect to their extent of adoption regarding recommended sugarcane production technology. Thus, there is an urgent need to increase the extent of adoption of sugarcane growers about recommended sugarcane production technology, through proper utilization of source of information, extension contact, exhibition, kisan mela and training programme in different aspect should be conducted by the concerned agencies.

REFERENCES

Anonymous, 2012-13. Report of Directorate of Economics and statistics, Department of agriculture and cooperation, Govt. of India.

Dhruw, K.S. 2008. A study on adoption of recommended maize production technology among the farmers of Kanker district of Chhattisgarh state. M. Sc. (Ag.) Thesis, IGKV, Raipur.

Itawdiya, K.K. and Singh, D.K. 2011. A study on technological gap in sugarcane production of Sehore block of Sehore district of Madhya Pradesh M.Sc. (Agri.) Thesis, JNKVV.

Kanavi, V.P. 2000. A study on the knowledge and adoption behaviour of sugarcane growers in Belgaum district of Karnataka. M.Sc. (Agri.) thesis, JNKVV, Jabalpur.

Nagaraj, M.V. 2002. A study on knowledge of improved cultivation practices of sugarcane and their extent of adoption by farmers in Bhadra Command area in Davangere district, Karnataka. Ph.D Thesis, Univ. of Agril. Sci., Dharwad (India).

Naik, R.D. 2005.A study on knowledge and adoption pattern on improved sugarcane practices in Bidar district of Karnataka state, *M.Sc.(Ag.) Thesis*, Univ.. of Agril. Sci., Dharwad (India).

Ramsingh and Singh, S.B.1994. Input management in sugarcane cultivation. *An Advances in Agril. Res. in India*. **1** : 28-29.

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KNOWLEDGE OF IMPROVED SUGARCANE (*SACCHARUM OFFICINARUM* L.) PRODUCTION TECHNOLOGY BY THE FARMERS OF CHITTORGARH DISTRICT OF RAJASTHAN

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ABSTRACT

The present study was conducted in Chittorgarh district of Rajasthan. There are total ten tehsils in Chittorgarh district, out of which two tehsils namely, Chittorgarh and Gangrar were selected purposely. Four villages from each identified tehsil were selected on the basis of maximum area under sugarcane cultivation. For selection of respondents, 120 sugarcane growers (40 marginal, 40 small, and 40 large farmers) were randomly selected from identified villages for data collection.

The study revealed that 36.67 per cent of the total respondents possessed in medium level of knowledge while, 35.83 and 27.50 per cent sugarcane growers had low and high level of knowledge about improved sugarcane production technology. In overall farmers had more knowledge about soil and field preparation and time of sowing, whereas, less knowledge regarding soil treatment and plant protection measure.

INTRODUCATION

Sugarcane is becoming an important cash crop for farmers because there is a great potential for sugar production and by products of sugarcane in domestic market. Therefore the expansion of sugarcane industry in india would greatly benefit the economy by foreign exchange saving, generation of employment and income, development of rural area and living standard of rural people. India is considered as homeland of sugarcane, In India 35 million farmers are engaged in sugarcane cultivation on 4.09 million hectares of land. Though sugarcane occupies only two per cent of the total cultivated area, it contributes to seven percent of the total value of agricultural output.

Geographically, Rajasthan is well suited for growing sugarcane. In Rajasthan sugarcane is mainly growing in Shriganganagar, Chittorgarh, Bundi, Rajasmand, Udaipur, Bharatpur, Tonk, Dholpur, and Banswara districts. In the Southern Rajasthan, Chittorgarh district ranked first in highest area in sugarcane crop under MPUAT service area. It is generally assumed that if an individual has more knowledge about different aspects of technologies, he is likely to adopt the innovations with higher speeds. Keeping this in mind the present study was carried out with the specific objective "To assess the knowledge level of sugarcane about improved sugarcane production technology".

RESEARCH METHODOLOGY

The present investigation was conducted in Chittorgarh district of Rajasthan because of the selected district has the highest area and great potential of increasing production and productivity under sugarcane crop. The selected district consists of ten tehsils, out of which two tehsil namely Chittorgarh and Gangrar with maximum area under sugarcane crop were selected for the study purpose. Four villages from each tehsil were identified on the basis of maximum area under sugarcane crop. Thus, in all eight villages were selected for the present investigation. To select the respondents, a comprehensive list of all sugarcane growers was prepared separately for all selected villages of identified tehsils. Then after the farmers were categorized in to three categories i.e. large, small and marginal farmers. The respondents were selected randomly from each category of the farmers.

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Following the procedure laid down above a sample of total 15 respondents from each category of sugarcane grower from each selected village was taken. Thus the study sample for the present investigation was comprised of 120 respondents. (*i.e.* 40 marginal, 40 small, and 40 large farmers). 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.

RESULTS AND DISCUSSION

Knowledge of farmers about improved sugarcane production technology

It was tried to find out the level of knowledge of farmers about improved sugarcane production technology. Knowledge as a body of understood information possessed by an individual is one of the important components of behavior and plays an important role in adoption of an innovation. Keeping this view in mind, the level of knowledge of farmers about improved sugarcane production technology was assessed. The results are presented in subsequent tables.

Distribution of respondents according to their knowledge about improved sugarcane production technology

To get an overview of the knowledge level, the respondents were grouped into (i) low (< 60.28), (ii) medium (60.28 to 67.18) and (iii) high (> 67.18) knowledge level on the basis of calculated mean and standard deviation of the obtained knowledge scores. The distribution of respondents in each category is given in Table 1.

The data in Table 1 reveal that out of 120 respondents, majority of respondents 36.67 per cent fell in medium level knowledge group whereas, 35.83 per cent sugarcane growers were observed in the low level knowledge group and remaining 27.50 per cent respondents possessed high level of knowledge about improved sugarcane cultivation technology.

Further analysis of data in Table indicates that 60.00 per cent marginal farmers, 35.00 per cent small farmers and 12.50 per cent large farmers had low level of knowledge about improved sugarcane cultivation technology. Whereas, 30.00, 40.00 and 40.0 per cent marginal, small and large farmers possessed medium level of knowledge about improved sugarcane cultivation technology respectively. On the other hand, 10.00 per cent marginal farmers, 25.00 per cent small farmers and 47.50 per cent large farmers were kept in the high level of knowledge group about improved sugarcane cultivation technology.

Aspect-wise knowledge of respondents about improved sugarcane production technology

To get a clear picture of knowledge possessed by sugarcane growers, aspect-wise knowledge of sugarcane growers was worked out. For this mean per cent scores for each practice was calculated and ranks were accorded. The results of the same have been presented in Table 2.

The data presented in Table 2 shows that large farmers of the study area possessed 81.79 per cent of knowledge about use of high yielding varieties aspect of sugarcane production technology whereas, knowledge of marginal and small farmers about this practice was comparatively less with 63.57 per cent

Table 1. Distribution of respondents on the basis of level of knowledge about improved sugarcane production technology

n =120

S. No.	Knowledge level	Marginal farmers		Small farmers		Large farmers		Total	
		F	%	F	%	f	%	f	%
1	Low (<60.28)	24	60.00	14	35.00	5	12.50	43	35.83
2	Medium (60.28 to 67.18)	12	30.00	16	40.00	16	40.00	44	36.67
3	High (>67.18)	4	10.00	10	25.00	19	47.50	33	27.50
	Total	**40**	**100.00**	**40**	**100.0**	**40**	**100.0**	**120**	**100.0**

f = Frequency, % = per cent

Table 2. Extent of knowledge of farmers about improved sugarcane cultivation practices

n=120

S.No.	Aspect/ Practices	Marginal farmers		Small farmers		Large farmers		Total	
		MPS	Rank	MPS	Rank	MPS	Rank	MPS	Rank
1.	Use of high yielding varieties	63.57	8	69.29	8	81.79	6	71.55	7
2.	Soil and field preparation	89.00	1	98.00	1	97.00	1	94.67	1
3.	Soil treatment	55.83	10	35.00	11	39.17	11	43.33	11
4.	Seed treatment	48.33	11	60.83	10	69.17	9	59.44	10
5.	Time of sowing	77.92	3	95.42	2	96.67	2	90.00	2
6.	Seed rate & recommended method of sowing	70.83	5	85.00	3	89.17	3	81.67	4
7.	Fertilizer application	83.00	2	82.00	4	84.67	4	83.22	3
8.	Irrigation management	65.00	7	69.58	7	74.17	8	69.58	8
9.	Weed management	74.88	4	75.21	6	84.58	5	78.06	5
10.	Plant protection measures	61.62	9	63.97	9	65.59	10	63.73	9
11.	Harvesting	67.50	6	76.67	5	75.00	7	73.06	6

MPS = Mean per cent score,

and 69.29 per cent. It was observed that majority of the farmers had knowledge about the name of varieties of sugarcane namely CO-419, CO-449, CO-997, CO-1007and CO-527 and they were fully acquainted with duration and average yield of these recommended varieties of sugarcane in the study area.

The knowledge about soil and field preparation it was noted that marginal, small and large had knowledge 89.0, 98.0 and 97.0 per cent respectively. Further, analysis of table shows the marginal, small and large farmers had extent of knowledge about soil treatment was 55.83, 35.00 and 39.17 MPS respectively. Majority of the respondents were not aware of chemicals used for the soil treatment for killing termites in their fields in small group of farmers.

Regarding knowledge about plant protection measures, it was found that marginal, small and large farmers had knowledge 61.62, 63.97 and 65.59 per cent respectively. Table clearly shows that all the category of farmers had high knowledge about plant protection measures and this aspect ranked ninth by marginal and small farmers, tenth by large farmers. It means that sugarcane growers were acquainted with plant protection measures; they have fair knowledge about insect-pest of sugarcane in comparison with chemicals quantity used to control them. At last the knowledge about harvesting, it was found that 67.50, 76.67 and 75.00 per cent was recorded in marginal, small and large farmers respectively. The knowledge about this aspect at sixth ranked by the marginal, fifth by small farmers, seventh rank by large farmers respectively.

In overall, it has found that first rank is given to soil and field preparation with MPS 94.67, followed by time of sowing with MPS 90.00, fertilizer application with MPS 83.22, seed rate and recommended method of sowing with MPS 81.67 and were ranked second, third and fourth respectively. It indicate that sugarcane growers knew very well about soil and field preparation, time of sowing fertilizer application and seed rate and recommended method of sowing. Whereas less knowledge regarding soil treatment with MPS 43.33, seed treatment with MPS 59.44 and plant protection measure with MPS 63.73.It was observed

Table 3. Comparison of knowledge among marginal, small and large farmers about sugarcane production practices

n=120

Source of variation	d.f.	SS	MSS	'f' Value
Between the categories of farmers	2	1355.617	677.808	28.39**
Error	117	2793.05	23.872	
Total	119	4148.667		

**Significant at 1 per cent level of significance.

Mean value Table

S. No. Categories of farmers	Mean value	SEm±	CD
1. Marginal farmers	63.18	0.12	0.45
2. Small farmers	66.98		
3. Large farmers	71.40		

that most of the respondents were not aware about chemical used for seed treatment and soil treatment.

Comparison of knowledge among marginal, small and large farmers about improved sugarcane production technology

To find out the significance of difference among the marginal, small and large farmers with respect to knowledge about improved sugarcane production technology, analysis of variance test (f test) was applied. The results are presented in table 3.

The data recorded in table 3 shows that calculated 'f' value 28.39 is higher than tabulated value at 1 per cent level of significance. It infers that there was a significant difference in knowledge among marginal, small and large farmers about sugarcane production technology.

By comparing the mean value with critical difference (C.D.) value, it was found that there was a difference between large and small, and marginal, large and marginal farmers about knowledge of improved sugarcane production technology. This reveals that large farmers possessed more knowledge than marginal and small farmers about sugarcane production technology. Higher knowledge of large farmers about improved practices of sugarcane cultivation was not unexpected.

CONCLUSION

It was concluded from the study that 36.67 per cent of the total respondents possessed in medium level of knowledge while, 35.83 and 27.50 per cent sugarcane growers had low and high level of knowledge about improved sugarcane production technology. In overall farmers had more knowledge about soil and field preparation and time of sowing, whereas, less knowledge regarding soil treatment and plant protection measure.

REFERENCES

Balamurugan, V. Vetriselvan, M. 2010. Extent of adoption of recommended sugarcane technologies by the different categories of sugarcane growers. *Agriculture Update* **5**(3&4): 292-295.

Chouhan Sandeep, S.R.K., Singh, A.K., Pande and U.S. Gautam 2013. Adoption dynamics of improved sugarcane cultivation in Madhya Pradesh. *Indian Research Journal of Extension Education* **13** (2): 26-30.

Malik, S.K. 2000. Extent and Magnitude of the adoption of new sugarcane production technology in West U.P. Indian Sugar. **50** (9): 621-624.

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UTILIZATION OF E-MITRA SERVICES BY RURAL YOUTH

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ABSTRACT

The present study was undertaken with the objectives to find out extent of utilization of e-Mitra services by the rural youth. The study was conducted in five gram panchayat of Mavli panchayat samiti of Udaipur district of Rajasthan state. A total sample of 100 rural youth (50 girls and 50 boys) was selected for the present investigation. A questionnaire was developed by the investigator and was used for getting information from the respondents. Findings revealed that majority of the respondents (65%) were in low level category of utilization..

INTRODUCTION

Information and Communication technologies have become a significant factor in development having a profound impact on the political, economic and social sector of the countries. Information and Communication Technology enable real time communication amongst people to allow them immediate access to new information.

The Information and Communication Technologies are being increasingly used by the government to deliver its services at different locations in the rural and urban areas convenient to the citizens. Several Government to Citizen (G2C) e-Government pilot projects have attempted to adopt these technologies to improve the reach, enhance the base, minimize the processing costs, increase transparency, and reduce the cycle times. A large number of rural e-Governance applications developed as pilot projects were aimed at offering easy access to citizen services and improved processing of government to citizen transactions.

e-Mitra is an ambitious e-Governance initiative of Government of Rajasthan, which is implemented in all districts of the state using Public-Private Partnership (PPP) model for convenience and transparency to citizens in availing various services of the Government and private sectors under a single roof at their doorsteps using an e-platform.

e services are delivered separately in rural areas and urban areas via Common Service Center, e-Mitra kiosk and online (via www.emitra.gov.in). These counters are providing services of various departments in an integrated and easily accessible manner to people residing in rural as well as in urban areas without running around in the government offices. Payment of utility bills, submission of application forms, private sector and public grievance service are the services of e-Mitra project.

e-Mitra project is initiated in the Udaipur district from February 2006 and providing various welfare services to the citizens. But the effectiveness of these services depends upon how they are being utilized by the people. In this context the present study entitled **"Utilization of e-Mitra Services by Rural Youth"**

RESEARCH METHODOLOGY

In Rajasthan state e-Mitra project is running in both rural and urban areas of all 33 districts. Udaipur district was selected purposely as the researcher belongs to the same district and is well acquainted with the area. For the selection of the panchayat samiti and gram panchayats a list of e-Mitra centers with detailed information including name and address of kiosk, code number, phone number, mail ID, activated date and name & address of local service provider was procured from the office of e-governance Udaipur. From the list five gram panchayats i.e. Mavli, Thamla, Sindhu, Boyna and Khemli of Mavli panchayat samiti were selected for the study purpose. Ten girls and ten boys from each gram panchayat were selected randomly to form a total sample of 100 rural youth. Questionnaire was prepared for data collection and data were collected by questionnaire technique. Frequency, percentage and Mean Percent Scores were calculated for data analysis.

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RESULTS AND DISCUSSION

Payment of Utility Bill

Data presented in Table depict that 30-42 per cent respondents reported that they always deposited water and electricity bills at e-Mitra center, whereas 17- 20 per cent respondents used these facilities frequently or sometimes with 50-60.33 MPS. For the payment of BSNL mobile and landline phone bills it is apparent from the table that majority (58-76 %) of respondents never visited e-Mitra center for these purpose. In depth study of the table reveal that the utilization of these services were higher as compare to the girls as indicted by its MPS ranging from 24-68.67 (boys) and 7.33- 56 (girls).

Submission of Application Form

The data in the table indicate that majority of the respondents used e-Mitra center for submission of application form for bachelor's and master's degree programme as indicated by its MPS (53.33 to 73.0.) Further it is also indicated that majority of the respondents were not utilizing e-Mitra center for application of Rajasthan Board of Secondary Education Examination and re-evaluation. The reason might be that generally application forms for RBSE are filled at the school level. With regard to submission of application form for competitive examination more than 50 per cent respondents reported that they submit their application form through e-Mitra center for examination of Rajasthan Administration Service, Rajasthan Police Service, Rajasthan Sub-ordinate Service and for lecturer etc. conducted by the Rajasthan Public Service Commission. Further for the submission of application form for Lower division Clerk, CAPFs, District Educational Officer, Combined Graducate Level, conducetd by Staff Selection Commission and Union Public Service Commission were never utilized by more than 50 per cent respondents. However very few respondents (15-17 %) utilized these services sometimes or frequently. Further for the submission of application forms and issue of digital bonafide, caste, marriage, birth, death, solvency and tribal sub plan (TSP) certificates by e-Mitra center, data in the table clearly depict that very few respondents submit application forms for issue of these certificates and get it issued by the kiosk 6.67-18.33 MPS. However one third respondents used this service by issue of digital bonafide certificate, caste certificate and birth certificates from the centre. A critical view of the table indicated that boys utilized this service more as compare to girls and none of the respondents utilized this facility always. With regard to application for making adhar card, bhamashah card, driving license and passport data reveal that majority of the respondents never applied for driving license, PAN card and passport through e-Mitra center with MPS 0-15. Further the data also indicate that 30-50 per cent respondents submit their application forms for adhar card and bhamashah card frequently and sometime at e-Mitra center.

Private sector service

e-Mitra center also facilitied the public for some of the services of private sector i.e. recharging, ticketing etc. Perusal of Table indicate that majority of the respondents were not utilizing e-Mitra center for booking of roadways bus ticket and recharging of dish television and data card as indicated by its MPS ranging from 6.67-18.33. Further it is also apparent from the table that utilization of e-Mitra center for recharging of mobile phone and booking of train ticket were higher (10-25 %) in case of boys as compare to the girls (5-20 %).

Public grievance service

It is an opportunity to the public for registration of any redressal against various government department Table shows that it was discouraging to note that none of the respondents used these facilities always/frequently/sometime/never as indicated by their MPS 0. The reason might be that the respondents were not aware about these facilities of e-Mitra kiosk.

Component-wise utilization of services of e-Mitra by the respondents

With regard to component-wise utilization of e-Mitra services, data presented in the table highlighted that respondents were medium level utilized payment of utility bills service with 36.08 MPS. However their utilization was found to be low in components of submission of application forms (24.81 MPS), services of private sector (24.61 MPS) and public grievance services (0 MPS).

Table 1. Component-wise utilization of services of e-Mitra by the respondents

No.	Components	MPS		Total MPS
		Girls	Boys	
1.	Utility bill payment	28.5	43.67	36.08
2.	Submission of application form	21.05	28.56	24.81
3.	Private sector service	16.92	32.30	24.61
4.	Public Grievance Service	0	0	0

Overall Mean Per Cent utilization score - 26.42683

Overall Knowledge

It is apparent from the Table that the utilization of e-Mitra services by the respondent was found to be poor as depicted by overall Mean Per Cent utilization scores i.e. 26.43. Majority of the respondents (65%) were in the category of low level of utilization whereas 35 per cent respondents were in medium level category and none of the respondent was found in the high utilization category.

The findings are in conformity with the findings of Pandey (2013) conducted a study on "Assessment of Functioning of Agricultural Technology Information Centre (ATIC) and its Utilization by the Farm Families" who reported that majority of respondents (65.26%) were in the category of low level, 34.73 per cent respondents were in medium level and none of them were in the high category of utilization of ATIC facilities.

Table 2. Distribution of the respondents by their overall utilization of e-Mitra centre services

n=100

S.No.	Categories	f/%
1	Low (>33.33)	65
2	Medium (33.34-66.66)	35
3	High(<66.67)	0

CONCLUSION

On the basis of findings of the study it can be concluded that the respondents had low level utilization of e-Mitra services a reflected by the overall mean per cent score 26.42**.** Hence, efforts need to be made aware rural youth about e-Mitra project through publicity and training programmes to enhance their knowledge and to make them comfortable in use of ICTs and e-Mitra services.

REFERENCES

Pandey, M. 2013. Assessment of Functioning of Agriculture Technology Information Centre (ATIC) and its Utilization by the Farm Families.M.Sc thesis submitted to Maharana Pratap University of Agriculture and Technology, Udaipur, Rajasthan.

Singhal, N. 2008. Impact of e-Choupal on Information Empowerment of Rural Youth of Sri Ganganagar District. An Unpublished M. Sc. Thesis, College of Home Science, MPUAT, Udaipur.

Singhal, R. 2013. An Assessment of Benefits Delivered to Citizens Through e-Governance from e-Mitra in Jaipur. *International Journal of Computational Science, Engineering and Technology* **1**: 43-51.

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KNOWLEDGE AND UTILIZATION OF KISAN SEVA KENDRA AMONG FARM WOMEN OF UDAIPUR DISTRICT

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ABSTRACT

The present investigation was conducted to assess the knowledge of farm women about Kisan Seva Kendra of State Department of Agriculture, Rajasthan. The study was conducted in four villages viz.,Gadoli, Nandwel, Mavli and Thamla of randomly selected Mavli panchayat samiti of Udaipur district of Rajasthan. A sample of 100 farm women was selected for the present study. Personal interview method was used for data collection. Frequency, percentage and mean percent score were used for analysis of the data.Majority of respondents (64%) had good knowledge about KSK and its services while 36 per cent of the respondents had poor knowledge about KSK.Majority of the respondents (74%) had visited Kisan Seva Kendra. About 37 per cent of the respondents were associated with the Kisan Seva Kendra from 1-3 years.

INTRODUCTION

Agriculture is the principal source of livelihood for more than 58 per cent of the population on this country. Agriculture provides the bulk of wage goods required by non-agriculture sectors and most of the raw materials for the industries (Ministry of Agriculture, 2012). The development of agriculture in developing countries mostly depends on the transfer of latest technical information to the farming community whenever needed. Technical information is transferred by means of several extension services. KisanSeva Kendra is one of the important extension services of State Department of Agriculture, Rajasthan.

Kisan Seva Kendra (KSK) function as a grass root centre in the village from where farming community avails various services of the State Department of Agriculture and Agriculture Supervisor is In charge of this centre. Weekly meetings of farm families are organized at the centre. In these meeting latest information regarding scientific agriculture, land protection, dairy, animal rearing and horticulture is provided to farm families; and their problems related to above field are solved on the spot by the experts. If problem is not solved on the spot by KSK experts, then it is registered and sent to higher officials for getting solution and the solution is provided to the farmer in the next meeting. Further, agricultural related content is displayed for farm families. Besides this, centre also make available various kind of agricultural inputs, farm literature, soil and water testing facility and farm newspaper (Kheti Ri Batan) to the farm families. Present study was conducted to assess knowledge and utilization of KSK service among farm women.

RESEARCH METHODOLOGY

The study was conducted in randomly selected Mavli Panchayat Samiti of Udaipur district (Rajasthan).Total four villages namely *Mavli, Nandwel, Gadoli* and *Thamla* were selected to have representative sample of the panchayat samiti. From each village 25 farm women who were willing to participate and cooperate in the study were selected purposively, thereby making a total sample of 100 respondents. Data were collected with the help of personal interview schedule. Frequency, percentage and mean percent score were used for analysing the data statistically.

RESULTS AND DISCUSSION

Knowledge of the respondents about KSK

Data presented in Table 1 regarding knowledge of the respondents about Kisan Seva Kendra denotes that majority of the respondents (74%) were aware about the name of the Kisan Seva Kendra and the functionary working at Kisan Seva Kendra. Table data further reveal that majority of respondents were aware about the purpose of Kisan Seva Kendra viz. to provide technical information (72%) and to solve

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farmer's problems (73%). Different services available at Kisan Seva Kendra like supply of inputs, technical information, advisory service, visit of agriculture supervisor at Kisan Seva Kendra on Thursday and soil testing were known to 74 per cent of the respondents whereas 30 per cent of the respondents knew about the availability of farm literature and water testing facility.

Table 1: Knowledge of the respondents regarding Kisan Seva Kendra

n=100

No.	Items	f/%
1.	Name	74
2.	KSK functionary (Agriculture Supervisor)	74
3.	Purpose of KSK	
i.	Provide technical information	72
ii.	Solution of farmers problem	73
4.	Services available at KSK	
i.	Supply of inputs like- seeds, fertilizers, insecticide, pesticides, tools, equipments.	74
ii.	Technical information related to new methods of crop production, information on marketing of agricultural produce, weather, dairy, livestock, land protection, horticulture etc.	74
iii.	Advisory services (Provide solution to farmer's problem)	74
iv.	Printed literature availability: leaflet, newspaper, magazines	30
v.	Visit by Agricultural Supervisor on every Thursday	74
vi.	Soil testing	74
vii.	Water testing	30

Utilization of KSK service by the respondents

It is quite apparent from Table 2 that majority of the respondents (74%) had visited Kisan Seva Kendra. About 37 per cent of the respondents were associated with the Kisan Seva Kendra from 1-3 years followed with 21 and 16 per cent of the respondents who were associated from more than three years and less than one year, respectively. Regarding frequency of visiting Kisan Seva Kendra, 44 per cent of the respondents visited KSK whenever needed whereas 13 and 11 per cent respondents visit it fortnightly and monthly respectively. Only 6 per cent of the respondents visited KSK weekly.

Table 2: Utilization of Kisan Seva Kendra service by the respondents

n=100

No.	Items	f/%
1	Visited KSK	74
2	Duration of association with KSK	
i.	Less than 1 year	16
ii.	1-3 years	37
iii.	More than 3 years	21
3	Frequency of visit	
i.	Daily	0
ii.	Weekly	6
iii.	Fortnightly	13
iv.	Monthly	11
v.	As per the need	44
4	Purpose of visit	
i.	To avail agri-clinic services (soil, water, seed quality testing etc.)	69
ii.	To get technical information related to agriculture and allied activities	65
iii.	Supply of inputs like -seeds, fertilizers, insecticide, pesticides, tools, equipments	72
iv.	To avail other services of the department	43
v.	Printed literature: leaflet, newspaper, magazines	19
5	Utilized KSK information	65

Data in the table further depict that majority of respondents (72%)used KSK to receive supply of inputs like- seeds and fertilizers. Majority of farm women had taken advantage of agri-clinic services viz. soil and water testing (69%) and availed technical information related to agriculture and allied activities

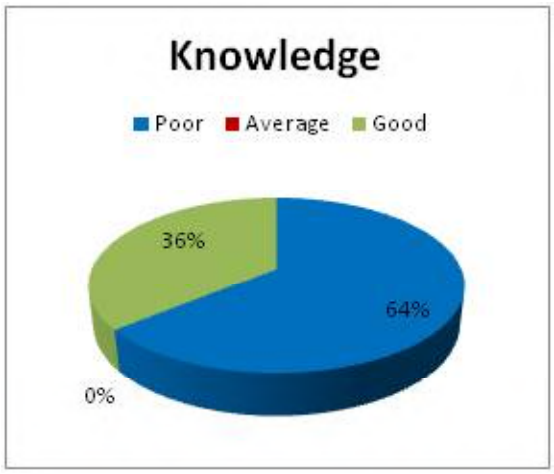

Figure 1: Categorization of respondents on the basis of their knowledge about KSK

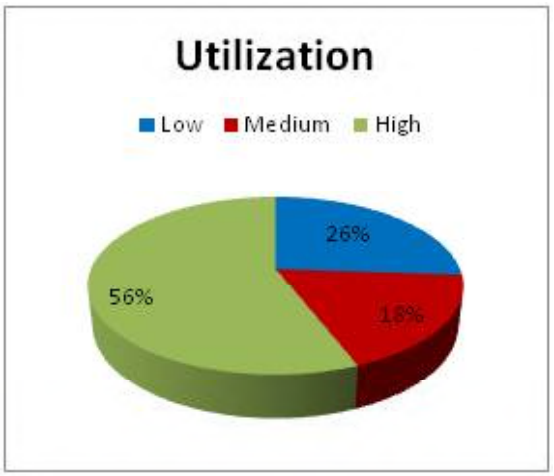

Figure 2: Categorization of respondents on the basis of their utilization of KSK

(65%). Other services of the department like training, demonstration and mini kit were utilized by 43 per cent of the farm women by means of KSK. Only 19 per cent of the respondents had visited KSK to avail printed farm literature viz. leaflet, newspaper and magazines.

Study conducted by Sharma (2007) on functioning of Kisan Seva Kendra (KSK) in Udaipur district of Rajasthan revealed that more than half of the farmers (58.33%) visited KSK once in a week.

Overall knowledge and utilization of KSK service

It is clear from figure 1 that majority of respondents (64%) had good knowledge about KSK and its services while 36 per cent of the respondents had poor knowledge about KSK. good knowledge among Farm womenabout KSK may be due to the reason that it was situated in their village and Agriculture Supervisor was in touch with farm families.

It is quite apparent from Figure 2 that more than half of the respondent (56%) had high extent of utilization of Kisan Seva Kendra followed by 18 per cent respondents with medium utilization. More than one fourth of the respondents (26%) had poor utilization of KSK service.

CONCLUSION

It can be inferred from the results that majority of the farm women (74%) had knowledge about KSK service of State Department of Agriculture, Rajasthan and more than half of the respondents (56%) had utilized KSK service to high extent. Further there was a need to publicise more about KSK among farm women. There was a need to appoint one Agriculture Supervisor in each village so that problems of farm womencan be tackled more efficiently and timely.

REFERENCES

Sharma, S. 2007. A Study on Functioning of Kisan Seva Kendras in Udaipur District of Rajasthan. An unpublished M.Sc. (Agri.) thesis submitted to University of Agricultural Sciences (UAS), Dharwad (Karnataka).

Pandey, S. 2015. Knowledge and Utilization of Selected services of State Department of Agriculture among Farm women. An unpublished M.Sc. (Home Science Extension and Communication Management) thesis submitted to Maharana Pratap University of Agriculture and Technology, Udaipur (Rajasthan).

Department of Agriculture and Cooperation, Ministry of Agriculture. 2012. Annual Report 2011-12. Retrieved from http://agricoop.nic.in/imagedefault/ARE2012.pdf.Dated 10/09/2014.

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IMPACT OF FRONT LINE DEMONSTRATIONS ON PRODUCTIVITY OF CARROT IN DHOLPUR DISTRICT OF EASTERN RAJASTHAN

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ABSTRACT

The Present study was carried out at Dholpur district of Eastern Rajasthan during 2012-13. Carrot is one of the most important vegetable crops of the country. The development of the Agriculture is primarily depends on the application of the scientific technologies by making the best use of available resources. One of the major constraints of traditional carrot farming is low productivity because of non-adoption of advanced technologies. To increase the production, productivity and quality of agricultural produce, Front Line Demonstrations are being conducted at various farmer's field. All the recommended Practices were provided to the selected farmers. The data related to the cost of cultivation, production, productivity, gross return & net return were collected as per schedule and analyzed. Result of the present study revealed that the high yielding variety of carrot Pusa Rudhira recorded the higher yield (275.71 q/ha) as compared to local check (232.14 q/ha) traditionally grown by the farmers. The percentage increase in the yield over local check 18.74 was recorded.The technology gap in terms of productivity(43.57q/ha.) were computed. The technology index values 16.45% was recorded.The result of the study indicated the gap existed in the potential yield and demonstration yield is due to soil fertility and weather conditions. By conducting front line demonstration (FLDs) of proven technologies, yield potential of carrot can be increased upto great extent. This will substantially increase the income as well as the livelihood of the farming community.

INTRODUCTION

Carrot (*Daucus carota* L) is one of the most important cool weather root crop is growen all over the world. In India, the important carrot growing states are Uttar Pradesh, Assam, Karnataka, Andhra Pradesh, Punjab and Haryana. It is the second and third most important vegetable in England and Australia, respectively (Dhaliwal,2014). It can be grown also in mild climate of the tropics. Carrot had 0.064 million ha. area with the production of 1.145 million tonnes during 2012-13 (Anonymous 2014). Being a rich source of beta carotene, a precursor of vitamin A. It also possess anti-oxidant properties, fix up harmful free radicles and prevent heart diseases. It is generally consumed as a vegetable after cooking but also consumed fresh in salad, juice and served as an ingredient in soups and sauces. Tender roots are processed to make pickles, jam, candy and jellies. It is also used as an additive in poultry feed to intensify skin and egg yolk colour (Dhaliwal,2014).

The carrot variety Pusa Rudhira suits to this region. A field trial was carried out at the seven farmer's field at Dholpur District of Rajasthan comes in Agro-climatic Zone of Rajasthan III B flood prone Eastern Plane. Here generally in winters minimum temp. goes to 2-3^{o} and in summer maximum temp. reaches to 48^{o}C. annual rainfall is 600-650 mm per year. Due to Chambal and Parvati rivers quality of irrigation water is good. Due to nearness to the Agra & Gwalior the demand of vegetables is more. There is lot of scope of carrot growing in winter season under assured irrigation facility.

The main objective of Front line Demonstration (FLD) to introduce suitable Agriculture Practices like high yielding varieties, seed treatment, Spacing nutrient management, pest and disease management etc. among the farmers accompanied with organizing extension programmes (field day) for horizontal dissemination of the technologies. FLD is playing a very important role for transfer of technologies and changing scientific treatment of the farmers by seeing and believing principle.

In order to have better impact of the demonstrated technologies for farmers and field level extension functionaries, Front line Demonstrations was conducted in a cluster of one hectare land.

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Generally, the agricultural technology is not accepted by the farmers as such in all respects. There is always gap between the recommended technology by the scientist and its modified form at the farmer's level which is major absentee in the efforts of increasing agricultural production in the country. It is need of the hour to reduce this technological gap between the agricultural technology recommended by the scientists or researchers and its acceptance by the farmers on their field. In view of the above facts, front-line demonstrations were undertaken in a systematic manner on farmer's field to show the worth of a new technology and convince the farmers to adopt in their farming system.

RESEARCH METHODOLOGY

The present study was conducted in Dholpur district of eastern Rajasthan during 2012-13. The genuine seed of carrot cv.Pusa Rudhira was procured and distributed to Seven selected farmers. All the participating farmers were trained on various aspects of carrot production technologies. The field was prepared by deep ploughing and harrowing after kharif crops. The seeds were sown in well prepared field during first week of November. All the recommended practices i.e. seed treatment by fungicide, spacing, recommended dose of manure and fertilizers, weed management, insect pest management were provided to the farmers in both treatments (local check and Pusa Rudhira). The data related to cost of cultivation, production, productivity, total return and net return were collected in both treatments as per schedule from all selected farmers. An average of cost of cultivation, yield, net returns of different farmers was analyzed by the formula.

Average = [F_1 + F_2+F_3.....Fn]/N

F_1 = Farmer

N = No. of Farmers (4)

In the present study, technology index was operationally defined as the technical feasibility obtained due to implementation of Front line Demonstrations in Carrot. To estimate the technology gap, extension gap and technology index following formula used by samui et. at (2000) have been used.

Technology Gap = Pi (Potential Yield) – Di (Demonstration Yield)

Extension Gap = Di (Demonstration Yield) – Fi (Farmers yield)

Technology index – [(Potential Yield – Demonstration yield) × 100]/ Potential yield

RESULTS AND DISCUSSION

Performance of FLD

A comparison of productivity levels between demonstrated variety and local check is shown in Table 1. During the period of Study, it was recorded that front line demonstrations, the improved carrot variety Pusa Rudhira recorded the higher yield (275.71q/ha) than local check (232.14 q/ha).

The Percentage increase in the yield (18.74) over local check was recorded. Similarly, yield enhancement in different crops in front line demonstration had apply been documented by Hiremath *et al.* (2007), Mishra *et al.* (2009), Kumar *et al.* (2010), Surywaanshi and Prakash (1993) and Dhaka *et al.* (2010). From these results it is evident that the performance of improved variety was found to be better than the local check under same environment conditions.. The farmers were motivated by seeing the results in term of producitivity and they are adopting the technologies. The yield of the front line demonstrations and potential yield of the crop was compared to estimate the yield gaps which were further categorized into technology index.

Technology gap

The technology gap shows the difference

Table 1. Yield, technology gap and technology index of demonstration

Variables	Yield (q/ha)	Increase (%) over local check	Technology gap (q/ha)	Technology index (%)
Local Check	232.14	-	-	-
Demonstration Pusa Rudhira	275.71	18.74	43.57	16.45

between potential yields over demonstration yield of the technology. The potential yield of the technology (variety Pusa Rudhira) is 330 q/ha(Gorakh Singh, 2013). The Technology gap 43.57 q/ha was recorded. The front line demonstration was laid down under the supervision of KVK Specialist at the farmers field, there exist a gap between the potential yield and demonstration yield. This may be due to the soil fertitlity and weather condition. Hence location specific recommendations are necessary to bridge the gap. These findings are similiar to the finding of Sharma and Sharma (2004) in oil seeds at Baran District of Rajasthan.

Technology Index

Technology index shows the feasibility of the variety at the farmer's field. The lower the value of technology index, more is the feasibility of the particular technology. The result of study depicted in Table-1 revealed that the technology index value was 16.45. It means the technology carrot cv. Pusa Rudhira is suitable for the Dholpur district of Eastern Rajasthan. The result of the present study are in consonance with the findings of Singh *et al*. (2007) and Hiremath and Nagaraju (2009) in onion.

Economics of frontline demonstrations

Economics of carrot production under front line demonstrations was recorded and the results of the study have been presented in Table 2. The results of economic analysis of carrot production revealed that front line demonstration recorded higher gross return (165426 q/ha) and net return (133426 Rs.) with higher benefit cost ratio (5.16) as compared to local check. These results are in accordanc with findings of Hiremath *et al*. (2007) and Hiremath and Nagaraju (2009), further, additional cost of Rs. 2000 per ha. in demonstration has increased additional net return Rs 26142 per ha.with incremental benefit cost ratio 13.07 suggesting its higher profitability and economic viability of the demonstration. More and less similiar results were also reported by Hiremath and Nagaraju (2009) and Dhaka *et al* (2010).

REFERENCES

Anonymous 2014. Handbook on Horticulture Statistics.Government of India,Ministry of Agriculture and Cooperation, New Delhi.

Dhaka, B.L., Meena, B.S. and Suwalka R.L. 2010. Popularization of Improved Maize Production Technology through Front Line Demonstrations in South Eastern. *Rajasthan. J. agri. Sci.* **1**(1):39-42.

Hiremath, S.M., Nagaraju, M.V. 2009. Evaluation of frontline demonstrations on onion in Haveri district of Karnataka. *Karnataka J. Agric. Sci.* **22**(5): 1092-1093.

Hiremath, S.M., Nagaraju, M.V. and Shasidhar, K.K. 2007. Impact of frontline demonstration on onion productivity in farmers field. Paper presented In: *National Seminar on Appropriate Extension Strat manag Rural Resource, Univ. Agric. Sci.*, Dharwad, December 18-20, p.100.

Kumar, A., Kumar, R., Yadav, V.P.S. and Kumar, R. 2010. Impact Assessment of Frontline Demonstrations of Bajara in Haryana State. *Indian Res. J. Ext. Edu.* **10** (1) : 105-108.

Mishra, D.K., Paliwal, D.K., Tailor, R.S. and Deshwal, A.K. 2009. Impact of Front line Demonstrations on yield enhancement of potato. *Indian Res. J. Ext. Edu.* **9**(3)26-28.

Dhaliwal, M.S. 2014. Handbook of vegetables crops, Kalyani Publishers pp. 213-214.

Samui, S.K. Maitra, S., Roy, D.K. Mondal, A.K. and

Table 2. Economics of front line demonstrations

Variables	Cost of Cultivation (Rs/ha.)	Gross return (Rs/ha.)	Net return (Rs/ha.)	Benefit : cost ratio
Local Check	30000	139284	107284	4.64
Demonstration	32000	165426	133426	5.16
Additional in demonstration	2000	26142	26142	13.07*

*incremental benefit :cost ratio.

Saha, D. 2000. Evaluation on front line demonstration on groundnut (*Arachis hypogeal* L). *J. Indian Soc. Coastal Agric. Res.* **18**:180-183.

Sharma, R.N. and Sharma, K.C. 2004. Evaluation of Front Line Demonstration trials on oilseeds in Baran district of Rajasthan. *Madhya Journal of extension Education* **7**: 72-75.

Singh, Gorakh, 2013. Sabjiyon ki vyavsayik Kismo ki suchi(Hindi). Govt.of India, Ministry of Agriculture, Department of Agriculture and Cooprative pp-17.

Suryawanshi, S.D. and Prakash, M. 1993. Impact of viable technology of promoting oil seeds. *Maharastra Indian Journal of Agricultural Economics* **48**: 420.

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KNOWLEDGE OF TRIBAL ABOUT RKVY IN BANSWARA DISTRICT OF RAJASTHAN

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ABSTRACT

The present investigation was conducted in Banswara district of southern Rajasthan. Banswara and Ghatol tehsils were selected for the present study on the basis of maximum number of tribal population. It was found that majority of the respondents had medium level of knowledge about various aspects of RKVY, while 33.00 and 26.00 per cent respondents possessed high and poor knowledge level, respectively. It was also observed that the extent of knowledge of beneficiaries about RKVY and its different aspects was significantly higher than non-beneficiaries.

INTRODUCTION

India is a country of villages and agriculture is the main stay of the economy. According to the census of India, the total population of the country is about 1.21 billion marks on 2011. Out of total, poorer are 32.04 crores, which constitutes for 35.97 per cent poverty. At present 3 /4th of the Indian population is living in rural areas and two-third of this population directly or indirectly depends on agriculture sector for their livelihood. Moreover, 67 per cent of population is reported as under-employed and unemployed. Concerned by the slow growth in the agriculture and allied sectors, the National Development Council (NDC), in its meeting held on 29th May, 2007, resolved that a special additional central assistance scheme namely Rastriya Krishi Vikas Yojana (RKVY) be launched. The RKVY aims at achieving 5.5 % annual growth in the agriculture sector during 12th plan period by ensuring a holistic development of agriculture and allied sectors. The scheme is essentially a State Plan Scheme that seeks to provide the States and Territories of India with the autonomy to draw up plans for increased public investment in agriculture by incorporating information on local requirements, geographical/ climatic conditions, available natural resources/ technology and cropping patterns in their districts so as to significantly increase the productivity of agriculture and its allied sectors and eventually maximize the returns of farmers in agriculture and its allied sectors.

RESE$ARCH METHODOLOGY

The present investigation was conducted in Banswara district of Southern Rajasthan. Banswara and Ghatol tehsil were selected due to maximum number of tribal population resides in these tehsils. Ten villages were included for the investigation based on maximum number of tribal population. One hundred tribal respondents (50 beneficiaries and 50 non-beneficiaries) were selected from all selected villages (5 beneficiaries and 5 non-beneficiaries from each village) through random sampling technique.

RESULTS AND DISCUSSION

Knowledge, as a body of understood information possessed by an individual is one of the important components of his behavioral aspects and plays an important role in effective implementation of any rural development programme. To get maximum benefit from such programmes, it is necessary that rural people must be aware about objectives, activities, funds and works of the programmes being operated in their area. On this ground, it is imperative to examine the extent of knowledge of beneficiaries about various aspects of Rastriya Krishi Vikas Yojana and to compare it with the knowledge of non-beneficiaries, so as to draw a picture about impact of the RKVY programme. The present investigation was carried out with one of its objectives as to assess the knowledge of tribal beneficiaries about Rastriya Krishi Vikas Yojana.

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1. Distribution of respondents according to their knowledge about Rastriya Krishi Vikas Yojana

To get an overview of the knowledge level, the respondents were categories into low, medium and high knowledge level groups on the basis of calculated mean score and standard deviation of the knowledge score obtained by the respondents.

The data presented in Table 1 reveals that 26.00 percent respondents had low level of knowledge, while 41.00 per cent of the respondents possessed medium level of knowledge about various aspects of RKVY. A considerable number of respondents i.e. 33.00 per cent were observed in high level knowledge group and only 26.00 per cent respondents possessed poor knowledge about RKVY. Further observation of data makes it clear that maximum number of tribal beneficiaries (52.00 %) had high level of knowledge, followed by 44.00 per cent with medium level of knowledge about various aspects of RKVY. Since majority of the beneficiaries of RKVY fall under high level knowledge group and majority of non-beneficiaries fell under low level knowledge group, it implies that tribal farmers who were associated with RKVY as beneficiaries defiantly had a good exposure of various aspects of the programme and hence, scored higher in knowledge test as compared to non-beneficiaries. This result promotes the fact that more number of non-beneficiaries must be associated with RKVY programme for better knowledge and higher avenues of livelihood generation.

2. Aspect wise extent of knowledge of tribal respondents

Individual aspect wise knowledge of tribal beneficiaries and non-beneficiaries was worked out for drawing a comparison of knowledge of both the categories. For this, mean per cent score were calculated. The findings about the same have been presented in Table 2.

For working out the knowledge of respondents (both beneficiaries and non-beneficiaries) toward different aspects of Rastriya Krishi Vikas Yojana, in all 21 statements related to knowledge of RKVY were considered. The per cent mean score (M.P.S.) was calculated for each statement and rank was assigned accordingly. The results have been present in Table 2.

From the data incorporated in Table 2, it is clearly evident that most of the tribal beneficiaries strongly agreed with the fact that "Have you heard about RKVY" with MPS 100 and was ranked first, whereas non-beneficiaries had knowledge of "What are the main objectives of RKVY" with MPS 71.20 and was ranked first. Further analysis of table clearly indicates that statement "Do you know what RKVY stands for" was positively considered by tribal beneficiaries with MPS 99.26 and was ranked second. The tribal non-beneficiaries considered the statement "Have you heard about RKVY" with MPS 66.66 and ranked second.

Regarding knowledge about "How much subsidy per cent", it was noted that tribal beneficiaries and non-beneficiaries had 95.90 and 12.80 per cent extent of knowledge with ninth and nineteen rank, respectively. In case of the statement "Who started RKVY in your area", tribal beneficiaries and non-beneficiaries respondents had 95.40 and 26.33 per

Table 1. Distribution of respondents on the basis of their level of knowledge about RKVY

n=100

S.No.	Category	Beneficiaries		Non-beneficiaries		Total	
		F	%	f	%	f	%
1.	Low (< 18)	2	4.00	24	48.00	26	26.00
2.	Medium (18 to 45)	22	44.00	19	38.00	41	41.00
3	High (> 45)	26	52.00	7	14.00	33	33.00
	Total	50	100.00	50	100.00	100	100.00

f = frequency, % = percentage, $n=n_1 + n_2$, n_1=Size of sample for beneficiary respondent, n_2= Size of sample for non-beneficiary respondent, n= total size of sample.

Table 2. Aspects wise knowledge of tribal respondents

S.No.	Aspects	Beneficiaries		Non-beneficiaries	
		MPS	Rank	MPS	Rank
1.	Have you heard about RKVY?	100	I	66.66	II
2.	Do you know what RKVY stands for?	99.26	II	58.24	IV
3.	Who are the beneficiaries under RKVY?	98.33	III	45.33	VIII
4.	In which year the programme was started?	97.80	IV	54.40	V
5.	Who started RKVY in your area?	95.40	X	26.33	XIII
6.	What are the main objectives of RKVY?	85.30	XVII	71.20	I
7.	What are the areas focused in RKVY?	89.20	XIV	62.73	III
8.	How many sub-schemes of the RKVY are presently running?	96.50	VII	37.30	X
9.	Name of sub-scheme of RKVY presently running.	93.30	XII	42.60	IX
10.	How much fund was provided to RKVY by central Govt. in 2012-13 budgets?	94.00	XI	34.00	XI
11.	What annual growth rate, the RKVY aims to achieve in agriculture sector during 12th plan period?	96.00	VIII	16.33	XVIII
12.	What is the basis for preparation of agriculture plans for district and state is used?	88.00	XVI	48.30	VI
13.	Is there a subsidy provision of the central Govt. under RKVY?	97.30	V	24.70	XIV
14.	How much subsidy per cent?	95.90	IX	12.80	XIX
15.	What will be the benefits of RKVY?	92.60	XIII	45.50	VII
16.	Is there any training provision under RKVY?	96.80	VI	10.00	XX
17.	Which areas are covered under RKVY training?	83.30	XVIII	18.36	XVI
18.	What type of training is generally provided under RKVY?	88.23	XV	8.60	XXI
19.	Is there a soil sample analysis?	75.66	XX	24.50	XV
20	Which depth the soil sample should be taken?	63.33	XXI	16.66	XVII
21.	What is the purpose of soil sample analysis?	78.66	XIX	28.33	XII
	Average	85.51		35.85	

MPS = Mean per cent score

cent knowledge and was ranked tenth by tribal beneficiaries and thirteenth by non-beneficiary respondents. This was followed by "How much fund was provided to RKVY by central Government in 2012-13 budgets" with MPS 94.00 and 34.00 for tribal beneficiaries and non-beneficiaries, respectively and was assigned eleventh rank by both the categories of respondents.

The statement "Name the sub-scheme of RKVY presently running" was placed at twelfth rank by tribal beneficiaries and at ninth rank by tribal non-beneficiary respondents with MPS 93.30 and 42.60, respectively.

Similarly, the statement "Which area covered under RKVY training" was conceived by tribal beneficiaries and non-beneficiaries respondents with MPS 83.30 and 18.36 and ranked eighteenth and sixteenth, respectively. The knowledge about "What is purpose of soil sample analysis" was known by tribal beneficiaries and non-beneficiaries respondents with 78.66 and 28.33 MPS and ranked nineteenth and twelfth, respectively.

Table 2 further shows that tribal beneficiary respondents possessed thorough knowledge regarding "Is there a soil sample analysis" and "Which depth of soil sample should be taken" with MPS 75.66 and 63.33 and assigned rank twentieth and twenty one rank, respectively.

3. Comparison of knowledge between beneficiary and non- beneficiary respondents about different aspects of RKVY

To find out the variance or similarity in the knowledge of the respondents 'Z' test was applied. The results are presented in Table 3.

Table 3. Comparison of knowledge between beneficiary and non-beneficiary respondents about different aspects of RKVY

No.	Category	Mean score	Standard deviation	"Z" value
1.	Beneficiaries	1.585	0.897	2.636
2.	Non-beneficiaries	1.033	1.292	

** Significant at 1.0 per cent level of significance.

Further, in order to find out the impact of RKVY, the knowledge level of tribal beneficiaries was compared with that of tribal non-beneficiaries and Z test (Standard Normal Deviation Test) was applied to find out whether there was any significant difference in the knowledge of both the categories about different aspects of RKVY.

The null hypothesis was rejected and alternative hypothesis was accepted, which leads to the conclusion that there was significant difference in knowledge between beneficiaries and non-beneficiaries regarding major aspects of RKVY.

CONCLUSION

It was found that majority of respondents of the total sample possessed medium level of knowledge about various aspects of RKVY, while a considerable no. of respondents possessed high level of knowledge. Only a small group of respondents possessed poor knowledge about RKVY aspects. It was remarked that the extent of knowledge of tribal beneficiary respondents about various aspects was high with overall MPS of 85.51. Whereas, in case of tribal non-beneficiaries respondents, the extent of knowledge was very poor with MPS of 35.85 in same aspects. From the value of 'Z' test, it was concluded that there was a significant difference in knowledge between beneficiaries and non-beneficiaries regarding major aspects of RKVY because the mean per cent score of beneficiary respondents in all 21 aspects of RKVY was more than that of non-beneficiary respondents, which clearly indicates that beneficiary respondents possessed more knowledge than non-beneficiary respondents about different aspects of RKVY.

REFERENCES

Arya, S., Singh, D.K. and Singh, S. 2012. Extent of Knowledge of change agents and correlation analysis of variables with their communication skill. *Indian Research Journal of Extension Education* **12** (2): 147-151.

Kadam, J.R., Patil, V.G. and Hardikar, D.P. 2001. Knowledge and adoption of soil and water conservation practices in watershed development project. *Maharashtra Journal of Extension Education* **20**: 138-140.

Ramachandra, K.V., Madhuprasad, V.L. and Shivanandam, V.N. 2008. Knowledge level of vegetable growers on nutrient management practices in cabbage-potato cropping system in Kolar district. *International Journal of Agricultural Sciences* **4**: 421-424.

Roy, S.D. and Bhagat, R. 2012. Level of knowledge and extent of adoption of farmers on recommended tuberose production practices. *Indian Journal of Extension Education* **48** (1&2): 78-80.

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APPRAISAL OF DESIGNED AND DEVELOPED FUNCTIONAL CLOTHING FOR SPICE MILL WORKERS

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ABSTRACT

In this study protective clothing for spice mill workers were designed and developed to mitigate the occupational hazards during spice grinding. The protective clothing developed were scarf mask, pleated mask, beak mask, hood mask and triangular mask, and apron with hood and apron without hood and gloves. Designed and developed protective clothing were given to respondents for wear trial. The study results revealed that designed and developed protective clothing and mask were found highly suitable by the spice mill workers.

INTRODUCTION

Spices are vegetable products used specially in powder form for giving a taste to foods. Spices are essential ingredients adding taste and flavour in food preparations. India is the largest producer and consumer of spices with a production of around 36.68 lakh tones. India is also the largest producer of chilli in world contributing 25 per cent of the total world production.

Brigitte Roberge (2012), Spices and aromatic herbs contain organic substances that can cause irritation or that have an allergenic potential for the respiratory system or the skin. The literature relating to the spice and aromatic herb sector reports cases of skin allergy, occupational asthma and other respiratory problems. Operators working in the grinding, mixing and packaging of seasonings and spices are exposed mainly due to concentrations of dusts.

Van der Walt A. *et al.* (2013) reported in a review that work-related allergic respiratory disease and asthma in spice mill workers is associated with inhalant chili pepper and garlic dust. Exposure to inhalable spice dust at work, particularly that containing garlic and chili pepper allergens, increases the risk of allergic-respiratory disease and asthma. Dust particulate mass rates were highest at work areas where spices are blended, and spice-dust-related asthma-like symptoms were common. Asthma was more strongly associated with -chili pepper than with garlic sensitization.

It was observed through various studies that spice mill workers face so many problems related to breathing and sensory organs in their daily work routine at work place. Babel and Rajvanshi (2013) reported that Spice grinding is associated with dust and noise problems. During the process of grinding large amount of dust is produced and inhale by the workers. Fine particles of *masala* in air and its aroma caused irritation and burning sensation in eyes, throat, hands, other body parts and face. Problems related to respiratory system were sneezing/running nose, coughing, breathlessness and allergic bronchitis and nausea. Other problems observed were sweating and hearing problems. Considering the problems and their causes researcher emphasized the need to develop and try masks to overcome the problems related to respiratory system. Further suggested that use of gloves and aprons will prevent irritation or burning sensation on skin. Yet a very few researches has been done in this field. Therefore the present investigation is to design and develops function clothing and head gear and mask to mitigate the occupational problems of spice grinders. And to assess the suitability of designed and developed functional clothing by wear trials by spice mill workers.

RESEARCH METHODOLOGY

Development of Functional Clothing apron (with hood and without hood) and masks (scarf mask, hood mask, beak mask, pleated mask and triangular mask) were developed in the laboratory of All India Coordinated Research project on Clothing and Textiles (AICRP-CT). Designed and developed functional garments were given to person working in spice mill for wear trial of seven days. Spice mill workers response about functional and comfort features were recorded on three point rating scale

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ranging from highly suitable to somewhat suitable and score 1, 2, & 3 were allotted according to response. Weighted mean scores (WMS) were calculated.

Designed and developed functional clothing

a- Apron without hood, head gear and gloves.

b- Apron without hood, hood mask and gloves.

c- Apron with hood, Pleated mask and gloves.

d - Apron with hood, triangular mask and gloves.

e -Apron without hood, beak mask and gloves.

RESULTS AND DISCUSSION

A. Suitability Assessment of Designed Apron

I. Assessment of functional features of designed apron Two types of apron were designed i.e. apron with hood and apron without hood. For the development of both the apron same fabric was used. Suitability assessment was carried out after a wear trial of seven days for its comfort and functional features. Data regarding the functional features like length, size, pocket and its placement, size of sleeve and cuff and fasteners used in apron shows that nearly similar WMS for both the type of designed and developed apron. During the informal discussion it was unveiled that few respondent wanted zipper instead of button and buttonhole. Both the apron was appreciated as these provided proper protections.

II. Assessments of Comfort features of designed apron: It is elicited from the data that designed and developed aprons were found highly comfortable for donning and doffing off and allows easy movements. It was surprising to note that nearly similar responses were obtained for the comfort features for both the apron. Fabric properties like texture, thickness, softness, breathability and absorbency were found highly suitable by the respondents. Majority of the respondents were of the opinion that it can be worn for more than four hours.

Table 1. Suitability assessment of functional features of designed apron

No.	Functional features of design	Apron without hood	Apron with hood
a.	Overall Appearance	**2.8**	3.0
b.	Length of the garment	2.4	2.6
c.	Size and shape of collar	2.8	2.8
d.	Size of sleeves	2.4	2.4
e.	Size of cuffs	2.8	2.8
f.	Size and placement of Pockets	2.2	2.2
g.	Placket opening of the garment	2.6	2.6
h.	Fasteners of the garment	2.4	2.4
	Aggregate WMS	**2.5**	**2.6**

Highly suitable-2.34-3.00, suitable- 1.67-2.33, somewhat suitable- 1.00-1.66

Table 2. Suitability assessments of Comfort features of designed apron

No.	Comfort features of design	Apron without hood	Apron with hood
a.	Easy to wear	2.6	2.6
b.	Easy to remove	2.6	2.6
c.	Allows easy movement	2.8	2.8
d.	**Fabric**		
	Texture	2.4	2.4
	Thickness	2.6	2.4
	Softness/Stiffness	2.6	2.6
	Breathable	2.4	2.4
	Absorbency of perspiration	2.6	2.4
E	How long can be worn		
	More than 3hrs	3.0	2.4

Highly suitable-2.34-3.00, suitable- 1.67-2.33, somewhat suitable- 1.00-1.66

B. Suitability assessment of designed Head gear and mask

I. **Functional features of designed head gear and mask** Data in table clearly reveals that hood mask was found most suitable followed by triangular and head gear. Beak mask was found somewhat suitable due to its protruding shape. Results related to draping quality showed that hood mask drapes excellently followed by pleated and triangular mask.

II. **Comfort features of designed head gear and mask:** Data related to comfort features shows that all developed head gear and mask falls under the category of highly suitable except beak mask which is in suitable category. Over all WMS of fabric related data shows that fabric used was also found highly suitable. Critical review of fabric related data shows stiffness or softness of beak mask was found somewhat suitable it may be due to its design and less coverage over the face and the buckram used to give the shape of beak imparts stiffness.

Looking into all the attributes of the head gear and masks it was observed that hood mask followed by head gear was most acceptable as these provided protection to head and face. Over all suitability (comfort and functional features) weighted mean scores shows that hood mask got first preference followed by head gear, pleated and triangular mask (Fig.-2).

Table 3. Suitability assessment of Functional features of designed Head gear and mask

S No.	Functional features	Head gear	Hood mask	Beak mask	Pleated mask	Triangular mask
a.	Overall Appearance	2.6	2.8	1.6	2.6	2.6
b.	Drapes well when used	2.6	3.0	1.6	2.8	2.8
c.	Covers entire face	3.0	3.0	1.4	2.6	2.8
	Aggregate WMS	**2.8**	**2.95**	**1.58**	**2.7**	**2.7**

Highly suitable-2.34-3.00, suitable- 1.67-2.33, somewhat suitable- 1.00-1.66

Table 4. Suitability assessment of Comfort features of designed Head gear and mask

S No.	Comfort features	Head Gear	Hood mask	Beak mask	Pleated mask	Triangular mask
a.	Easy to wear	2.6	3.0	2.4	2.6	2.6
b.	Easy to remove	2.4	3.0	2.4	2.8	2.4
c.	Breathable during working	2.6	3.0	1.8	2.6	2.8
	Aggregate WMS	**2.5**	**3.0**	**2.2**	**2.7**	**2.6**
e.	**Fabric**					
	Texture	2.8	2.8	2.4	2.8	2.4
	Thickness	2.6	2.6	2.4	2.6	2.4
	Softness/Stiffness	2.6	2.6	1.8	2.6	2.2
	Breathable	2.8	2.6	2.6	2.6	2.4
	Protects face from external matters	3.0	2.8	2.6	2.8	2.4
	Absorbency of perspiration	2.8	2.8	2.6	2.8	2.6
	Aggregate WMS	**2.7**	**2.8**	**2.4**	**2.7**	**2.4**

Highly suitable-2.34-3.00, suitable- 1.67-2.33, somewhat suitable- 1.00-1.66

Table 5. Suitability assessment of features of gloves

Functional features		Comfort features			
Design	**WMS**	**Features**	**WMS**	**Fabric**	**WMS**
Overall look	3.0	Donning on	2.8	Texture	3.0
Size assortment		Doffing off	2.8	Thickness	3.0
Length of gloves	2.4	Grip while working	2.6	Softness/Stiffness	3.0
Width of gloves	2.6			Breathable	3.0
				Protects palm/hand	3.0
				Absorbency of perspiration	3.0

Highly suitable - 2.34-3.00, suitable - 1.67-2.33, somewhat suitable - 1.00-1.66

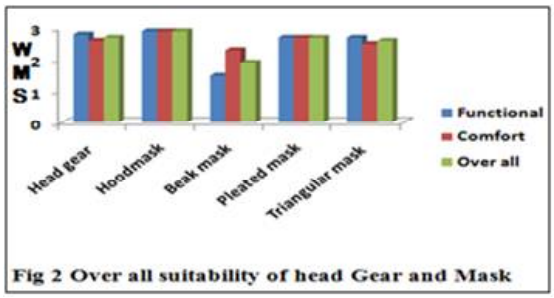

Fig 2 Over all suitability of head Gear and Mask

C. Suitability assessment of Functional features of gloves:

Knitted fabric was used to develop gloves. Suitability of functional features of gloves was studied in terms of design and comfort features. Data reveals that overall appearance and fabric properties were found highly suitable and scored highest weighted mean scores. All the parameters were in category of highly suitable. Informal discussions with the spice mill workers revealed that work efficiency is affected by wearing the gloves but it protects the palm and lessen the burning sensation at hands. It was also reported that by wearing the gloves their comfort level increases.

CONCLUSION

On the basis of the results of wear trial it can be concluded that the designed and developed apron, head gear and mask were found highly suitable in terms of functional and comfort features by spice grinders. Hood mask and head gear was more preferred and beak mask was less preferred.

REFERENCES

Baatjies R. and van der Walt A. et al. (2013). Work-related allergic respiratory disease & asthma in spice mill workers associated with inhalant chili pepper and garlic exposures : a review. School of public health and family medicine, university of cape town, South Africa

Babel, S. & Rajvanshi, R. 2013. Occupational hazards faced by spice grinding workers. *Asian Journal of Home Science* **8**(2): 518-521

DOL 1977. Dictionary of occupational titles. 4th ed. Washington, DC: U.S. Department of Labor: Employment and Training Administration.

Singh, T. 2014. Determinants of Occupational Allergy to Spices in a Spice Mill. National institute for occupational health *NIOH*, collaborating with the University of Cape Town.

Susan Ashdown, 2007. National Research Network on Multifunctional Protective Clothing. University of California, Auburn University, Auburn, AL 36849

Walt Anita van der, 2010. Work-related allergy and asthma to inhaled spices : a review. School of public health and family medicine, University of cape town, South Africa.

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CONSTRAINTS FACED BY THE RESPONDENTS IN USE OF NEEM AND ITS PRODUCTS

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ABSTRACT

Ayurveda, have mentioned wide range of uses of Neem for treating wide range of diseases and symptoms. The present study was conducted in Udaipur district of Rajasthan. There are nine tehsils in Udaipur district , out of which Girwa tehsil has been selected on the basis of maximum area under Neem tree. Ten villages from this tehsil were selected on the basis of maximum area under Neem tree. For selection of respondents, 100 respondents were randomly selected from identified villages for data collection. The finding indicated that 63.00 per cent respondents were in the medium constraints group and 15.00 per cent respondents were in high constraints group and 22 per cent respondents were observed in the low constraints group. It was also observed that the extent of constraint level in farmers was 66.00 to 92.33 per cent in all aspects regarding Neem (Azadirachta spp.)use.

INTRODUCTION

The Neem are (*Azadirachta indica* A. Juss. Formerly known as ... *azadirachta*) belonging to the family *Meliaceae* is known for thousands of years in the Indian sub-continent by different names such as Indian lilac or Margosa tree. Ayurveda, have mentioned wide range of uses of Neem for treating wide range of diseases and symptoms. The leaves are known to be effective against seasonal fever, dermatological diseases and worms. They are burnt to repel the mosquitoes. The twigs are used as toothbrush (*Daatun*). Oil has spermicidal effect and can prove as a good contraceptive. It is also used for the treatment of head louse. When the oil is applied to the chronic wounds and ulcers on the body, it quickens the cure. Neem is also used in toothpaste, cosmetics and aromatic preparations. Thus, every part of this tree is found useful.

Moreover, Neem is used in various ways in agriculture also. Plantation of Neem trees on field bunds can prove as an effective windbreak. The leaves are used as good fertilizer. Apart from leaves, seed cake is also a very good fertilizer. In addition, it helps in controlling the nematode problem. It also enriches the soil health, improves soil fertility, changes the soil structure and makes the land live for long period to produce good amount of produce. Thus, it is used as organic manure for soil. Looking to the above fact, the present study of "Constraints faced by the respondents in use of Neem and its products" was carried out in Udaipur district of Rajasthan.

RESEARCH METHODOLOGY

The present study was conducted in Udaipur district of Rajasthan. There are nine tehsils in Udaipur district , out of which Girwa tehsil has been selected on the basis of maximum area under Neem tree. Ten villages from this tehsil were selected on the basis of maximum area under Neem tree. For selection of respondents, 100 respondents were randomly selected from identified villages for data collection. Data were collected with the help of interview schedule developed for the study purpose through face to face interview method. Different statistical test like mean, mean per cent score, rank and standard deviation were used in the analysis of data.

RESULTS AND DISCUSSION

The constraints under present investigation were considered as major impediments that restrict the farmers to adopt the various uses of Neem and their products at their fields. The obtained response in this regard is present in subsequent table.

Distribution of respondents on the basis of their level of constraints

In this section an attempt has been made to know the level of constraints, the respondents was

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grouped into (i) low (< 21.44), (ii) medium (21.44 – 24.87) and (iii) high (> 24.87) constraints level on the basis of calculated mean and S.D of the obtained constraints scores. The distribution of respondents is given in table 1.

Table 1. Distribution of respondents on the basis of their level of constraints faced by the respondents in process of using Neem and their products

n = 100

No.	Constraint level	F	%
1.	Low (<21.44)	22	22
2.	Medium (21.44 - 24.87)	63	63
3.	High (>24.87)	15	15

Mean= 23.16, F = Frequency, SD = 1.71496, %=Per cent

Table 1 depicts that 63 per cent respondents were in medium constraints group, whereas, 15 per cent respondents were perceived high level of constraints in adoption of various uses of Neem and their products and 22 per cent respondents were observed in the group of low constraints in the study area. This finding was in conformity with the finding of Bhagat (2005) and Singh & Waris (2002).

An effort has been also made to find out the reason of non adoption in uses of Neem and their products. For this, mean per cent score for each constraint was calculated and ranked accordingly. The result has been presented in table 2.

The data presented in table 2 reveal that "insufficient knowledge" was expressed as one of the most important constraints and ranked first by the respondents with MPS 92.33 and "Less exposure of skill training" was ranked second by all the respondents. Likewise, the constraint related to "less coverage of such information" was also realized as major constraint in adoption of uses of Neem and their products by the respondents with 86.33 MPS and ranked third in the priority of constraints.

The table further shows that "large quantities requirement per unit area", "lack of faith among consumers" and "unavailability of sufficient literature" were also considered as important constraints by the respondents in adoption of Neem uses and their products. The overall mean per cent score of there constraints was 77.00, 76.00 and 74.00 respectively and ranked fourth, fifth and sixth in the priority of constraints. "Unavailability in required quantity" was an important constraint faced by the respondents with overall MPS 72.00 and ranked seventh by respondents.

Table 2. Constraints faced by the farmers for various uses of Neem and their products

n = 100

No.	Constraint level	MPS	Rank
1.	Less exposure of skill training	89.33	2
2.	Unavailability of sufficient literature	74.00	6
3.	Less coverage of such information	86.33	3
4.	In sufficient knowledge	92.33	1
5.	Unavailability of Neem products	70.33	8
6.	Unavailability in required quantity	72.00	7
7.	Delayed response of Neem formulations	68.00	9
8.	Short shelf life of Neem formulations	66.00	10
9.	Large quantities requirement per unit area	77.00	4
10.	Lack of faith among consumers	76.00	5

MPS = Mean Per cent Score

Further analysis of the table reveals that "unavailability of Neem products", "delayed response of Neem formulations" and "short shelf life of Neem formulations" were considered as least important constraints by the respondents in adoption of Neem uses and their products. The overall mean percent score of these constraints was 70.33, 68.00 and 66.00, respectively and ranked eight, ninth and tenth in the priority of constraints.

From the above conclusion it could be concluded that "in sufficient knowledge", "less exposure of skill training", "less coverage of such information", "large quantities requirement per unit area" and "lack of faith among consumers" were major constraints realized by respondents in adoption of Neem uses and their products.

CONCLUSION

The study indicated that in sufficient knowledge, less exposure of skill training, less coverage of such information, large quantities requirement per unit area, lack of faith among consumers, unavailability of sufficient literature and unavailability in required quantity were expressed as most important constraints by the respondents.There are many advantageous uses of Neem in agriculture, health, industries and other purposes. It was observed that farmers were unaware about them. At the same time it was also observed that many known areas of Neem were not properly utilized by the farmers. Therefore, they should be encouraged to use them.

REFERENCES

Singh, B. and Waris, A. 2002. Farmers knowledge and adoption of improved practices of Til production in arid areas of Rajasthan. *Rajasthan Journal of Extension Education* **10**: 104-107

Bhagat Prajakta R. 2005. Indigenous and scientific knowledge of the farmers about various uses of neem in Anand Taluka of Gujarat. M.Sc. (Agri.) thesis submitted to AAU, Anand.

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PROBLEMS PERCEIVED BY THE FARMERS IN COTTON CULTIVATION

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ABSTRACT

The present study was conducted in Kurnool district of Andhra Pradesh during the year 2014-15 to identify the problems as perceived by the farmers and their suggestions to overcome the problems. A sample of 120 respondents was selected for present study. Non availability of labour, high cost of labour, lack of machinery for different cotton cultivation operations, lack low market price, poor quality seeds, low yields, lack of adequate trainings on improved cotton practices, more incidence of pests and diseases, adverse weather conditions, poor extension-farmer linkages were the major problems expressed by the cotton farmers. On the other side, majority of the cotton farmers suggested requirement of machinery for different cotton cultivation operations, adequate market price, converging MNREGS works to cotton operations where labour requirement is more, provision of good quality seed, strengthening of training, research facilities to update knowledge and skills of farmers, organization of exposure visits to successful cotton farms, increasing the number of visits by extension personnel to farmers fields, controlling the fluctuation of market price, credit with low interest rate and assured & continued power supply are the major suggestions given by the cotton farmers.

INTRODUCTION

Cotton crop is the most cultivated commercial crop in Andhra Pradesh and ranks third in terms of area and production in India. The area under cotton production in Andhra Pradesh is 22.69 lakh hectares with 78 lakh bales of production and productivity of 571 kgs/ha in 2013-14 (Cotton Advisory Board dated 13th Oct 2014). Kurnool district ranks first in area and production in Rayalaseema region. Being cotton the most important commercial crop, the cotton cultivation is the most challenging and requires intensive and dynamic efforts by farmers. Tremendous efforts had been made by the scientists, extension officers and private sector agencies towards development of new varieties, hybrids, latest production technologies and disseminating them to the farmers. The untiring efforts of the farmers towards implementation and adoption of all such technologies brought a significant growth in production and productivity in cotton. Being highly commercial crop, the cotton farmers are facing several problems in cotton cultivation which reflects on productivity and net income from a unit area of cotton crop. Hence it is imperative to unearth the problems of cotton farmers and also identify their suggestions to overcome the problems. Hence the present study was taken up with the twin objectives of

1) identification of problems as perceived by the farmers in cotton cultivation and
2) Suggestions as perceived by the farmers to overcome the problems.

RESEARCH METHODOLOGY

The present study was conducted during the year 2014-15 by following Ex-Post-Facto research design. Kurnool district of Andhra Pradesh was purposely selected as it stands first in area and production of cotton. Out of 54 mandals of the district, three mandals namely Kosigi, Adoni and Mantalayam were purposely selected based on highest area and production of cotton. From each of the selected mandals, four villages were selected by following simple random sampling procedure. Thus, a total of twelve villages were selected for the study. A total sample of 120 cotton farmers were selected by selecting 10 farmers from each village through simple random sampling procedure. A list of ten major problems and ten major suggestions were identified based on the farmers perception and these problems and suggestions were mesasured by using frequency and percentages and ranks were given to them based their percentages.

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RESULTS AND DISCUSSION

It is evident from Table 1 that, non availability of labour (66.67%), high cost of labour (61.67%), lack of machinery for different cotton cultivation operations (60.00%), low market price (54.17%), poor quality seeds (46.67%), low yields (40.00%), lack of adequate trainings on improved cotton practices (34.67%), more incidence of pests and diseases (25.00%), adverse weather conditions (19.66%), poor extension-farmer linkages (15.00%) were the major problems expressed by the cotton farmers.

Table 1. Problems perceived by respondents in cotton cultivation

n= 120

No.	Problems	Respondents		
		F	%	Rank
1.	Non-availability of labour	80	66.67	I
2.	High cost of labour	74	61.67	II
3.	Lack of machinery for different cotton cultivation operations	72	60.00	III
4.	Low market price	65	54.17	IV
5.	Poor quality seed	56	46.67	V
6.	Low yields	48	40.00	VI
7.	Lack of adequate trainings on Improved cotton practices	41	34.67	VII
8.	More incidence of pests and diseases	30	25.00	VIII
9.	Adverse weather conditions	23	19.66	IX
10.	Poor Extension -farmer linkage	18	15.00	X

In the present scenario, the agricultural labour is becoming more limiting factor due to migration, assumed high returns per unit of work, increased cost of living and other socio economic factors. Due to the above reasons, the cotton farmers might haveperceived the non availability and high cost of labour as the major problems. They also might have felt the necessity of farm machinery in cotton, as the farming operations in cotton were more laborious and time consuming. The cotton farmers might not be satisfied with the existing market price for their produce especially immediately after harvesting of the crop. On the other side poor seed quality, severe incidence of pests and diseases and adverse weather problems might be contributing for low yields in cotton. They might have attributed all these technological problems to lack of proper extension support for the cotton farmers.These findings are in conformity with the results of Nithyashree and Angadi (2001) Damalas and Hashemi (2010) Giri (2010)

Suggestions given by the farmers to overcome the problems

It is evident from the Table 2 that, majority (91.67%) of the cotton farmers suggested requirement of machinery for different cotton cultivation operations, adequate market price (79.67%), Converging MGNREGS works to cotton operations where labour requirement is more (62.50%), provision of good quality seed (60.00%), strengthening of training, research facilities to update knowledge and skills of farmers (56.67%), organization of exposure visits to successful cotton farms (52.50%), Increased number of visits by extension personnel to farmers fields (45.83%), controlling fluctuation of market price (44.16%), credit with low interest rate (41.66%), assured and continued power supply (37.50%).

To meet the present technological needs of cotton farmers, the cotton farmer might have felt the necessity of farm machinery to take up different operations in cotton. They might be in the opinion that, different farm mechinary for different operations will reduce the dependence labour as well as quick & quality execution of farm operations. The technological interventions in designing new machinary and policy interventions in reaching the cotton farmers were the chunk areas of their perception on cotton mechanization. As an alternative for partial mechanization and the means of effective utilization of MGNREGS, the farmers might have suggested the way out by converting the activities of MGNREGS labour work for cotton operations. On the other side, the farmers suggested the need for quality seed and other critical inputs for strenghthening cotton cultivation. To realize the assured income from cotton, farmers also felt the need for stabilized & relatively high market rate for cotton coupled with predetermined credit facility. They also suggested the prioritization of technological support to the cotton farmers through enhanced extension linkages in cotton cultivation. These findings are in

conformity with the results of Sangeetha (2004) Damalas and Hashemi (2010), Giri (2010) and Reddy (2013).

Table 2. Suggestions given by respondents to overcome the problems in cotton cultivation

n=120

No.	Suggestions	Respondents		
		F	%	Rank
1.	Requirement of Machinery for harvesting	110	91.67	I
2.	Adequate market price	95	79.17	II
3.	Converging MGNREGS works to cotton operations where labour requirement is more	75	62.50	III
4.	Provision of Good quality seed	72	60.00	IV
5.	Strengthening of training, research facilities to update knowledge and skills of farmers	68	56.67	V
6.	Organization of exposure visits to successful cotton farms	63	52.50	VI
7.	Increasing the number of visits by extension personnel to farmers fields	55	45.83	VII
8.	controlling fluctuation of market price	53	44.16	VIII
9.	Credit with low interest rate	50	41.66	IX
10.	Assured and continued power supply	45	37.50	X

CONCLUSION

The major problems pertaining to labour Vs mechanization, market rate for cotton, seed quality, low yields due to incidenence of pests&diseases and issues of extension support needs to be focussed for strengthening cotton cultivation. On the other side, the suggestions like farm machnary for diierent farm operations, Converging MGNREGS works to cotton operations, organization of training programmes, exposure visits to successful cotton farms, strengthening extension contacts, controlling fluctuation of market price, arranging credit with low interest rate and assured and continued power supply needs to be prioritized.

REFERENCES

Damalas, C.A and Hashemi, S.M. 2010. Pesticide risk perception and use of personal protective equipment among young and old cotton growers in Northern Greece. *Agrociencia* 44: 363-371.

Giri, N. 2010. Pesticide use and food safety in Kathmandu valley of Nepal. *M.Sc. (Ag.) Thesis.* Institute of Soil Research University of Natural Resources and Life Sciences. Vienna.

Nithyashree, D.A and Angadi, J.G. 2001. A study on the knowledge and adoption of IPM practices among cotton growers of Raichur district. *Karnataka Journal of Agricultural sciences.* 14(4): 992-995.

Reddy, N.P.2013.Knowledge of cotton farmers on health hazards of pesticides in Kurnool district. *M.Sc. (Ag.). Thesis,* Acharya N. G. Ranga Agricultural University, Hyderabad, India.

Sangeetha, V. 2004. Training needs of cotton growers of Madurai district of Tamilnadu. *M.Sc. (Ag.) Thesis,* Acharya N.G. Ranga Agricultural University, Hyderabad, India.

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PRESENT STATUS OF THE VEGETABLE PRODUCTION TECHNOLOGY

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ABSTRACT

Present study was conducted in Kullu district of Himachal Pradesh to know the status of adoption of the vegetable production technology by the vegetable producers and to find out the constraints faced by respondents in adoption of improved vegetable production technology. From the comprehensive list of farmers of 20 villages, 30 farmers (Small, Medium and Large) from each village were selected randomly. Thus, 600 farmers were included in this study. Most of the vegetable growers (72.17%) belonged to low level of adoption of vegetable production technology. However, 23.67 per cent vegetable growers had medium level of adoption. A mere (4.17%) vegetable growers fall under high adoption level group. Regarding constraints majority (92.50%) of vegetable growers expressed the constraints of non-availability of labours as required followed by high cost of seed (87.50%), high cost of fertilizers (85.00%) and lack of knowledge about vegetable production technology (78.33%). The vegetable growers had faced fewer constraints as lack of training as per requirement and lack of extension services.

INTRODUCTION

The vegetables are the most important to the human diet for better health, because they possess high nutritive value and are rich source of carbohydrates, proteins, vitamins and minerals. The selection of research area in Kullu Valley of Himachal Pradesh was due to the very good conditions for temperate vegetable production of the same. Hence the area was suitable for both that the vegetable production and their breeding for most of the temperate types of vegetables. The summer being mild was suitable for many sub-tropical important vegetables. Still in this area the vegetable production is low, because the rate of adoption of improved vegetable production technology is not fully adopted by the farmers at their own field (Suman, 2008). Even if they produce, the marketing problems are faced by them.

Therefore, this research programme is aimed to find out the adoption behavior of the farmers about the vegetable production technology.

RESEARCH METHODOLOGY

The present study was conducted in Kullu district of H.P. Out of 12 districts of Himachal Pradesh, Kullu district was selected purposely. It covers five Community Development Blocks (Manali, Kullu, Banjar, Ani and Nirmand), two blocks were selected for this study. Out of these two blocks, ten villages were selected randomly in each block with the help of random number table, so the total villages for study were 20. From the comprehensive list of farmers of 20 villages, 30 farmers (Small, Medium and Large) from each village were selected randomly. Thus, 600 farmers were included in this study.

RESULTS AND DISCUSSION

The findings of the present study have been presented as under:

Overall adoption level

It was indicated from the Table 1 that the most of the vegetable growers (72.17%) belonged to low level of adoption of vegetable production technology. However, 23.67 per cent vegetable growers had medium level of adoption. A mere (4.17%) vegetable growers fall under high adoption level group.

Table 1. Distribution of vegetable growers according to their level of adoption (n = 600)

No.	Category	Frequency	Per cent
1.	Low level adoption	433	72.17
2.	Medium level adoption	142	23.67
3.	High level adoption	25	4.17

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Constraints faced by the farmers in adoption of vegetable production technology

It is shown in Table 2 that majority (92.50%) of vegetable growers expressed the constraints of non-availability of labours at the time of requirement followed by high cost of vegetables seed (87.50%), high cost of fertilizers (85.00%) and lack of knowledge about vegetable production technology (78.33%). Some of the vegetable producers expressed medium type of constraints i.e. Non-availability of Farm Yard Manure (71.33%), High cost of pesticides (68.17%), Lack of irrigation water (65.67%) and Lack of money to purchase of costly seed (64.67%). The vegetable growers had faced fewer constraints as lack of training as per requirement (56.67%) and lack of extension services (62.50%).

Table 2. Constraints faced by farmers in adoption of vegetable production technology (n = 600)

No.	Category	Frequency	Per cent
1.	Non-availability of labours at the time of requirement	555	92.50
2.	High cost of vegetables seed	525	87.50
3.	High cost of fertilizers	510	85.00
4.	Lack of knowledge about vegetable production technology	470	78.33
5.	Non-availability of Farm Yard Manure	428	71.33
6.	High cost of pesticides	409	68.17
7.	Lack of irrigation water	394	65.67
8.	Lack of money to purchase of costly seed	388	64.67
9.	Lack of extension services	375	62.50
10.	Lack of training as per requirement	340	56.67

CONCLUSION

Most of the vegetable growers (72.17%) belonged to low level of adoption of vegetable production technology. However, 23.67 per cent vegetable growers had medium level of adoption. A mere (4.17%) vegetable growers fall under high adoption level group. Regarding constraints majority (92.50%) of vegetable growers expressed the constraints of non-availability of labours as required followed by high cost of seed (87.50%), high cost of fertilizers (85.00%) and lack of knowledge about vegetable production technology (78.33%). The vegetable growers had faced fewer constraints as lack of training as per requirement and lack of extension services.

REFERENCES

Borker, R.D. 2000. Adoption behaviour of farmers in respect of bio-fertiliozer. M.Sc. (Ag.) Thesis. Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (M.S.).

Bodke, H.D. 2003. Awareness and adoption of bio-fertilizer by farmers. M.Sc. (Ag.) Thesis, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (M.S.).

Chander Parkash, T.S. Verma and Kumar, P.R. 2003. Genetic analysis of cabbage (*Brassica oleracea* var. *capitata*) using self-incompatible lines. *Indian Journal of Agricultural Sciences* 73(7):412-413.

Chander P. 2005. Performance of exotic collections of cabbage in the northwestern mid hill conditions of India. *Indian Journal of Plant Genetic Resources* **18**(1): 88-90.

Kadam, Prakash and Suryawanshi, S.D. 2010. Adoption behaviour of farmers in soyabean production technology. *Agriculture Update* **5**(3 & 4): 296-299.

Mishra, D.K. 2005. Study on knowledge and adoption extent of farmers on pigeon pea based cropping system in Dhata block of Fatehpur district (U.P.) Unpub. M.Sc. (Ag.) Thesis submitted to N.D.U.A.T., Kumarganj, Faizabad.

Suman, R.S. 2014. Knowledge and adoption of cabbage management practices by farmers. *Journal of Agricultural Extension and Rural Development* **6**(3): 115-117.

Suman, R.S. 2014. Attitude of farmers towards sustainability of vegetable cultivation. *Journal of AgriSearch*. **1**(1) : 1-3.

Vaidya, V.R. and Koshti, N.R. 2005. Knowledge and adoption of low cost and no cost crop cultivation and soil conservation technologies in cotton based cropping systems. R.R.C. Report, Deptt. of Extn. Edu., Dr. Punjabrao Deshmukh Krishi Vidyapeeth, Akola (M.S.), pp 18-37.

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ECONOMIC FEASIBILITY AND IDENTIFICATION OF SUITABLE CROPS (CAPSICUM AND TOMATO) FOR PROTECTED CULTIVATION UNDER POLYHOUSE WITH INSECT NET VENTS IN UDAIPUR DISTRICT OF RAJASTHAN- A CASE STUDY

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ABSTRACT

Average yield for capsicum for two years pooled data for polyhouse with insect net vents from 0.10 ha area was exhibited 6157 kg while, it was recorded 11925 kg of tomato under the same. Average gross income was calculated for 0.10 ha area for capsicum crop from two years pooled data for insect house and it was found Rs. 2,77,065.00 while, it was obtained Rs. 1,78,875.00 for tomato crop. Average net income from 1 sqm area for capsicum crop under polyhouse with insect net vents was calculated Rs. 208.47 while, it was found Rs. 113.65 for tomato crop. The pooled input- output ratio or per rupee returns from 0.10 ha. area for capsicum crop based on two years pooled data for polyhouse with insect net vents was found Rs. 4.04 while, it was obtained Rs. 2.74 for tomato crop under insect net house. Hence, it was concluded that growing of capsicum is more profitable as compared to tomato crop for protected cultivation under polyhouse with insect-net vents in Udaipur district of Rajasthan.

INTRODUCTION

Horticultural crops are more prone to the biotic and abiotic stresses, otherwise it have immense potential to produce qualitative and quantitative yields. Protected structure is one of the ways to overcome the harmful effects of the biotic and abiotic stresses. Further, protected structure also provides strong base for organic farming or minimum use of pesticides. But, high initial investment for construction of structures and impact of different covering materials on the internal climate on growing plants inside are the limiting factors hence, this study is proposed to standardize and evaluate the material used for construction and covering of structure and also for the identification of suitable horticultural crop based on economic analysis for cultivation in the protected structure under this region.

Construction of poly house with insect-net vents house through locally available materials to study the economic feasibility of crops like capsicum and tomato under climatic condition of Udaipur district of Rajasthan. Evaluation study mainly of the economic aspects viz. gross returns, net returns and per rupee returns has been carried out.

RESEARCH METHODOLOGY

One small sized green house structure of sized 64 sq. m (16 m x 4 m) of GI pipe frame have been constructed at local level and was covered with UV stabilize(50 % absorbance ability) poly house with insect-net vents. Objective of the study is to determine the impact of covering material on the growth and yield of the capsicum and tomato and identification of suitable crop based upon their economic analysis. Height of vertical post was kept 2.7 m and the top curved arch was made in such a way that the 6 m long GI pipe was having 4 m width between its both the ends. The capsicum cv. "Indira" and tomato cv. "Dev" was taken for cultivation during the year 2012 and 2013. The total growing area of the small structure is 16 m X 4 m i.e. 64 sqm. There are four replications on four raised beds each with two rows of capsicum planted with using spacing of 50 x 50 cm and for tomato crop spacing of 50 x 30 cm was adopted.

All agronomical practices were followed according to the suggested package of practices from Department of Horticulture, GOR. Udaipur. The data were recorded from the randomly selected ten tagged

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plants under each replication. Lay out of experiments of each crops were done according to the plan and regular observation, data collection with respect to the economic aspects has been carried out for both the crops under poly-house with insect-net vents.

The field experiment for growing of capsicum and tomato has been conducted in the year 2012 and 2013 to study the economic feasibility of both the crops under poly house with insect-net vents for calculating cost of cultivation, yield, gross income and net income (profit). The statistical analysis was made on the pooled data of two years.

RESULTS AND DISCUSSION

Fixed Cost (pooled value) for cultivation of capsicum and tomato crops under poly-house with insect-net vents during the year 2012 and 2013 has been shown in the Table 1. The fixed costs for polyhouse with insect net vents were found to be Rs. 53,400.00 for the period of six months for both the crops. The fixed costs for cultivation of capsicum and tomato crops under poly-house with insect-net vents was found to be same.

The pooled value of variable and total cost for cultivation of capsicum and tomato crops under poly-house with insect-net vents for the year 2012 and 2013 has been given in the Table 2.

The pooled value of the total variable cost (B) was found to be same for capsicum crop under polyhouse with insect net vents was Rs. 15,190.10 while, for tomato it was found to be i.e. Rs. 11,822.80. Further, the pooled value of the total cost of cultivation (A+B) i.e. fixed plus variable costs were calculated Rs. 68,590.10 under poly-house with insect net vents for the capsicum crop was whereas, it was found to be Rs. 65,223.80 for tomato crop. Cost of cultivation per sq. mt. area was found to be Rs. 68.59 under polyhouse with insect net vents for the capsicum while, it was observed Rs. 65.22 for tomato crop. Thus, it can be said that for growing of capsicum, more variable cost was observed as compared to tomato growing due to variation in cost of seeds, working capital, use of fertilizers and insecticides and pesticides.

The pooled yield and income of capsicum and tomato crops for 0.10 ha sized polyhouse with insect net vents has been presented in the table-3. Average pooled yield of capsicum from both the year 2012 and 2013 for polyhouse with insect net vents was found to be 6157 kg while, it was recorded 11925 kg

Table 1. Pooled data of fixed Cost for cultivation of capsicum and tomato crops under poly-house with insect- net vents for the years 2012 and 2013

(in Rupees)

No.	Particulars	Polyhouse with insect net vents	
		Capsicum	**Tomato**
A.	**Fixed Cost(FC)**		
1.	Rental value of land (0.10 ha. area)	1000.00	1000.00
2.	Depreciation @10% of the value of farm buildings, drip irrigation system, crop training system & fixed assets like small greenhouse structure i.e. on Rs.8,73,000.00 per ha)	21825.00	21825.00
3.	Interest on fixed capital (i.e. on Rs.873000.00 per ha @ 12%) Half amt. for 1 crop of 6 months	26190.00	26190.00
4.	Maintenance cost of structure @ 2% value of the structure with drip irrigation system in 0.10 ha @ 873 per sqm (half amount of total charges per crop) i.e. on Rs.8,73,000.00 per ha)	4365.00	4365.00
5.	Rent paid for land	20.00	20.00
	Total Fixed Costs (A)	53,400.00	53,400.00

Table 2. Pooled data of variable and total cost for cultivation of capsicum and tomato crop under poly-house with insect- net vents (1000 sqm area) for the year 2012 and 2013

(in Rupees)

No.	Particulars		Polyhouse with insect net vents	
			Capsicum	**Tomato**
B.	Variable Costs			
1.	Depreciation on covering material @ 33% of the value of the material		291.00	291.00
2.	Interest on working capital @ 12%		106.00	106.00
3.	Maintenance Charges @ 2% of the value of the material		17.80	17.80
4.	Field preparation @ Rs.800 per hr. for 1 hr.		800.00	800.00
5	Seeds-	Capsicum @ 50gm @ Rs.75,000 per kg Tomato @12.5gm @ Rs.49000 per kg	3750.00	652.50
6.	FYM @ 250 qt per ha @ Rs.1.0 per kg (for 0.10 ha)		2500.00	2500.00
7.	Fertilizers-			
	(i)	Nitrogen-Urea @ Rs.5.5 per kg	220.00	210.00
	(ii)	Phosphorus-DAP @ Rs.12 per kg	240.00	230.00
	(iii)	Potash-MoP @ Rs.6 per kg	180.00	175.00
	(iv)	Micronutrients- Agromine and Calcium Nitrate	160.00	160.00
8.	Pesticides	-Fumigant	300.00	300.00
	Insecticide	-Chloropyrophos	40.00	30.00
		-Prophanophos	40.00	30.00
		-Cypermethrin	40.00	30.00
		-Imedachloprid	40.00	30.00
		-MP Dust	40.00	30.00
9.	Electricity and Irrigation Charges		200.00	200.00
10.	Casual labour Charges @2 Labour per day per hectare @Rs.147 per day (half amount of total charge per crop)		5365.50	5365.50
11.	Half amount per crop of interest on working capital @ 12% per annum.		859.80	665.00
	Total Variable Cost (B)		15,190.10	11,822.80
	Cost of cultivation (A+B)		68,590.10	65,223.80
	Cost of cultivation per sq. mt. area		68.59	65.22

of tomato crop under the same structure. The pooled yield per square meter area was also calculated by dividing the data by its factor. The average gross income of capsicum crop from 0.10 ha area during the year 2012 and 2013 for polyhouse with insect net vents was found to be Rs. 2,77,065.00. While, for tomato crop the gross income was obtained Rs. 1,78,875.00 under the polyhouse with insect net vents. The pooled net income from 0.10 ha area for capsicum during the year 2012 and 2013 for polyhouse with insect net vents was found to be Rs. 2,08,474.90 whereas, it was observed Rs. 1,13,651.20 for tomato crop under the same structure. The variation in gross income and net income of both the crops was mainly due to high market price of capsicum as compared to tomato. Thus, it can be said that market demand of capsicum is greater than tomato and there is low production as compared to tomato crop.

The pooled net income from per sq. mt. area for capsicum from both the year 2012 and 2013 for polyhouse with insect net vents was recorded Rs. 208.47 while, it was obtained Rs. 113.65 for tomato crop under poly-house with insect-net vents.

The pooled input out-put ratio or per rupee returns from 0.10 ha area for capsicum crop from polyhouse with insect net vents was obtained Rs. 4.04 while, it

Table 3. Pooled data of yield and income of capsicum and tomato crops under poly-house with insect - net vents (1000 sqm area) for the year 2012 and 2013

(in Rupees)

No.	Particulars	Polyhouse with insect net vents	
		Capsicum	**Tomato**
1.	Yield in 1 sqm area (kg)	6.157	11.925
2.	Yield in 1000 sqm area (kg)	6157	11925
3.	Gross Income per structure (Price of capsicum @ Rs.45.00 per kg and for tomato @ Rs.15.00 per kg)	2,77,065.00	1,78,875.00
4.	Gross income per sqm area (Rs.)	277.07	178.88
5.	Net income per structure (Rs)	2,08,474.90	1,13,651.20
6.	Net income from 1.0 sqm area (Rs)	208.47	113.65
7.	Input-output ratio	4.04	2.74

was found Rs. 2.74 for tomato crop under the same structure. Thus, it can be concluded that capsicum growing is more profitable as compared to tomato crop for protected cultivation under poly-house with insect-net vents in Udaipur district of Rajasthan.

CONCLUSION

After considering all the aspects like fixed cost, variable cost, yield, income & input output ratio it may be concluded that growing of capsicum is more profitable than tomato for protected cultivation under poly house with insect-mol-vents.

REFERENCES

Asha, Joseph and Muthuchamy, I. 2000. Productivity, Quality and Economics of Tomato (*Lycopersicon esculentum* Mill.) Cultivation in Aggregate Hydroponics – A Case Study from Coimbatore Region of Tamil Nadu Department of Soil and Water Conservation Engineering, Agricultural Engineering College and Research Institute, Tamil Nadu Agricultural University, Coimbatore–641003, Tamil Nadu, India; ashanelppura@rediffmail.com.

Chanra, P., Sirohi, P.S., Behera, T.K. and Singh, A.K. 2000. Cultivating vegetable in polyhouse. *Indian Horticulture* **45**(3): 17–32.

Singh, A.K., Singh A.K., Gupta, M.J. and Shrivastav, R. 2003. Effect of polyhouse on insect pest incidence, fruit quality and production of vegetable and fruit crops (in) Proceeding of the *National Symposium on Frontier areas of Entomological Research*, 94 pp. IARI, New Delhi.

Singh, A.K., Chandra, P. and Shrivastav, P. 2005a. Effect of nutrient and varieties on yield and economic of capsicum under protected condition in Indian Plains (in) Proceeding of the *International Symposium on Plasticulture*, 94 pp. New Delhi.

Singh, A.K., Shrivastav, R., Gupta, M.J. and Chandra, P. 2005b. Effect of protected and unprotected condition on biotic stresses, yield and economics of spring summer vegetables. *Indian Journal of Agricultural Sciences* **75**(8): 485–487.

Singh, B., Singh, A.K. and Tomar, B. 2010. In peri-urban areas protected cultivation Technology to bring prosperity. *Indian Horticulture* **55**(4): 31–33.

Tognoni, F., Pardossi, A., and Serra, G. 2001. Strategies to match greenhouses to crop production. *Acta Hort*. **481**: 451–461.

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CONSTRAINTS PERCEIVED BY FARM WOMEN IN GETTING TECHNICAL INFORMATION

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ABSTRACT

The present investigation was carried out to study various constraints faced by the farm women in getting the technical information regarding different cash and fodder crops. The Haryana state was divided into eight agro ecological zones - at least one district from each zone and one block from each district and two villages from each block were selected purposely for the present study. Thus, twenty villages from ten districts were selected purposely on the basis of crops grown in area. A proportionate purposive sample was drawn for each village which is comprised of 800 rural women. The data were collected with the help of structured interview schedule. The collected data were processed, tabulated and analyzed by using frequency, percentage, mean weight score, ranks, etc. It is therefore concluded that among the total sample most serious constraints perceived by the farm women were social, physical, time and economic constraints. In Yamunanagar, most serious constraints were time and social constraints perceived by the respondents in technical information. Whereas, in Karnal and Kurukshetra districts lack of technical expertise, physical and time constraints were carrying. In Jind and Kaithal districts physical and time constraints were perceived most serious constraints by the farm women in getting technical information about wheat cultivation. Whereas, in Rewari district, social, physical and time constraints were perceived most serious. Most serious constraints such as physical, social and language were faced by the respondents of Sirsa and Fatehabad districts and same trend was followed in Bhiwani and Mahendergarh districts in which most serious constraint was social followed by time constraints by the farm women of bajra growing area.

INTRODUCTION

An overwhelming majority of women in rural India is associated directly or indirectly with agricultural production, processing and distribution. Farm women are socially at low level in availing and using of technological information and mostly very few service of information are provided to them. They face numbers of constraints in this regard.

Various grain and cash crops have major contribution in meeting the requirements of human being. Sugarcane and cotton (cash crops), and wheat, chickpea and pearl millet (grain crops) are important crops raised in Haryana state. Various researchers have also emphasized stated that for increasing the production and productivity of these crops. Therefore, it is necessary to increase the rate of adoption level of different latest agricultural technologies and know-how for raising these crops and also by eliminating the various constraints faced by farm women in the process of transfer of technology. Farm women are socially at low level in availing and using of technological information and mostly the lip service of these information are provided to the them. They face numbers of constraints in this regard (Iniobong *et.al* 2012, Luqman *et al.*, 2014). Keeping in view, the present study was designed with a specific objective of identifying the constraints faced by the farm women in utilizing the technical information regarding different cash and fodder crops.

RESEARCH METHODOLOGY

The present study was conducted in Haryana state. The Haryana state was divided into eight agro ecological zones – at least one district from each zone and one block from each district and two villages from each block were selected purposively for the present study. Thus, twenty villages from ten districts were selected purposively on the basis of crops grown in area. A proportionate sample was drawn for each villages which is comprising of 800 rural women. Major crops grown in Haryana state were wheat, rice, bajra, gram, cotton, sugarcane as cash crop, sorghum and Barseem as fodder crop were included in the study. Constraint faced by the farm

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women were assessed for each of the crop. The structured interview schedule was developed and was pre-tested on non sampled respondents. The interview was conducted personally by the investigator with the women farmers individually. The collected data were processed, tabulated and analyzed by using frequency, percentage, mean weight score, ranks, etc.

RESULTS AND DISCUSSION

Constraints faced by the respondents in technical information for different crop cultivation

Table 1 incorporates the constraints perceived by the farm women in getting technical information such as time constraint, lack of competency of the resource person, lack of technical expertise, lack of confidence in the use of technology received, physical, social, economic constraints and language problem etc. An attempt was made in the present investigation to assess the constraints perceived by the farm women in the use of different information sources of information for selected crop cultivation.

The data presented in Table 1 on the basis of weighted mean clearly indicate that out of the total sample the major constraint faced by respondents in use of technical information source were social (I, MS 2.79), physical (II, MS 2.75), time (III, MS 2.56) and economic (IV, MS 2.43) and these were perceived as most serious, respectively. Whereas the other serious constraint reported by them was language problem (V, MS 1.92). On the other hand, lack of technical expertise (VI, MS 1.61), lack of competency of the resource person (VII, MS 1.59) and lack of confidence were also perceived not so serious constraints by the respondents of Haryana state.

The data districts wise also reported in Table 1. In case of Yamunanagar district most serious constraints perceived by the respondents were time (V, MS 2.63) and social constraints (II, MS 2.39). Constraints experienced seriously by the farm women were physical constraint (III, MS 2.15), economic constraints (IV, MS 1.85), language problem (V, MS 1.79),lack of technical expertise (VI, MS 1.77), gaining technical information, whereas lack of competency of the resource person (VII, MS 1.58), lack of confidence (VIII, MS 1.48), respectively were the not so serious constraints perceived by the farm women of Yamunanagar districts which is mainly selected for sugarcane crop (zone I and II).

But in Karnal and Kurukshetra districts lack of technical expertise (I, MS 2.82), physical constraints (II, MS 2.57), time constraints (III, MS 2.52) were perceived most serious by the farm women in getting technical information from various information sources for rice cultivation. Whereas, constraints which were not so serious perceived by farm women were lack of confidence (IV, MS 1.64), social constraints (V, MS 1.59), economic constraints (VI, MS 1.48), language problem (VII, MS 1.40) and lack of competency of the resource person (VIII, MS 1.33) regarding rice cultivation. The data of wheat cultivation area in Table 1 point to the fact hat most serious constraints experienced by the farm women were physical (I, MS 2.58) and time constraints (II, MS 2.55) in getting technical information. Serious constraint perceived were social constraints (III, MS 1.90), lack of technical expertise (IV, MS 1.68) by the respondents whereas lack of competency of the resource person (V, MS 1.52), language problem (VI, MS 1.47), economic constraints (VII, MS 1.44), (VIII, MS 1.35) were perceived as not so serious constraints by the farm women of Jind and Kaithal districts in gaining technical information.

In case of Rewari district social (I, MS 2.72), physical (II, MS 2.66) and time constraints (III, MS 2.52) were perceived most serious by the respondents in getting technical information for gram cultivation. On the other hand, the respondents perceived serious constraints were lack of confidence (IV, MS 2.17), language problem (V, MS 2.07), economic constraints (VI, MS 1.97), lack of technical expertise (VII, MS 1.89) and lack of competency of the resource person in getting technical information from various technological information sources in Rewari districts (zone VI).

The results related to Sirsa and Fatehabad districts also reported in Table 1 indicate that most serious constraints perceived by the farm women were physical (I, MS 2.63), social constraints (II, MS 2.61), language problem (III, MS 2.53) and time constraints (IV, MS 2.50) experienced in getting technical information and lack of technical expertise (V, MS 1.80), lack of competency of the resource person (VI, MS 1.73), economic constraints (VII, MS

Table 1. Constraints faced by the respondents in getting technical information for different crop cultivation

No.	Zone	I & II		III & IV		V		VI		VII		VI & VIII			
	Constraints	**Yamuna Nagar (n=80)**		**Karnal & Kuruk-shetra (n=170)**		**Jind & Kaithal (n=165)**		**Rewari (n=65)**		**Sirsa & Fatehabad (n=150)**		**Bhiwani & M.garh (n=170)**		**Pooled sample (N=800)**	
		Sugarcane		**Rice**		**Wheat**		**Gram**		**Cotton**		**Bajra**			
		WM	**Rank**	**WM**	**Rank**	**WM**	**Rank**	**WM**	**Rank**	**WM**	**Rank**	**WM**	**Rank**	**WM**	**Rank**
1.	Time constraints	2.63	I	2.52	III	2.55	II	2.52	III	2.50	IV	2.58	II	2.56	III
2.	Lack of competency of the reso-urce person	1.58	VII	1.33	VIII	1.52	V	1.80	VIII	1.73	VI	1.60	VII	1.59	VII
3.	Lack of tech-nical expertise	1.77	VI	2.82	I	1.68	IV	1.89	VII	1.80	V	1.63	V	1.61	VI
4.	Lack of confidence	1.48	VIII	1.64	IV	1.35	VIII	2.17	IV	1.55	VIII	1.48	VIII	1.44	VIII
5.	Physical constraints	2.15	III	2.57	II	2.58	I	2.66	II	2.63	I	1.95	III	2.75	II
6.	Social constraints	2.39	II	1.59	V	1.90	III	2.72	I	2.61	II	2.76	I	2.79	I
7.	Economic constraints	1.85	IV	1.48	VI	1.44	VII	1.97	VI	1.72	VII	1.81	IV	2.43	IV
8.	Language problem	1.79	V	1.40	VII	1.47	VI	2.07	V	2.53	III	1.62	VI	1.92	V

*Maximum score is 3

Not so serious (low) 1 – 1.66
Serious (medium) 1.67 – 2.32
Most serious (high) 2.33 – 3.00

1.72) were perceived serious constraint by the farm women in getting technical information. Only one constraints i.e. lack of confidence (VIII, MS 1.55) was perceived not so serious constraint by the respondents in getting technical information regarding cotton cultivation of Sirsa and Fatehabad districts (zone VII). In case of Bhiwani and Mahendergarh districts results report that most serious constraints perceived by the respondents were social constraints (I, MS 2.76), time constraints (II, MS 2.58), in technical information and physical constraints (III, MS 1.95), economic constraints (IV, MS 1.81) were perceived serious constraints by the farm women in attaining information related to their farm technology. On the other hand, the problem which was perceived not so serious were lack of technical expertise (V, MS 1.63), language problem (VI, MS 1.62), lack of competency of the resource person (VII, MS 1.60) and lack of confidence (VIII, MS 1.48) by the farm women experienced in technical information from various communication sources for bajra cultivation in Bhiwani and Mahendergarh districts of Haryana state (zone VI and VIII).

It can be concluded that among the total sample most serious constraints were social, physical, time

and economic constraints, in Yamunanagar districts most serious constraints were time and social perceived by the respondents in technical information. Whereas, in Karnal and Kurukshetra districts lack of technical expertise, physical and time constraints. But in Jind and Kaithal districts, physical constraints, time constraints were perceived most serious constraints by the respondents in getting technical information from various technical information sources.

On contrary to this in Rewari district, social, physical and time constraints were perceived most serious constraints whereas in Sirsa and Fatehabad districts most serious constraints perceived by farm women were physical, social and language constraints respectively in order of preference. and almost same trend was followed in Bhiwani and Mahendergarh districts in which most serious constraints was social constraints followed by time constraints perceived by the farm women of bajra growing area. Similar conclusions were arrived at by Devi and Sabharwal (2014), Tantray and Dar (1996) and Trivedi & Patel (1996).

CONCLUSION

It is concluded that among the total sample most serious constraints perceived by the farm women were social, physical, time and economic constraints. In Yamunanagar, most serious constraints were time and social constraints perceived by the respondents. Whereas, in Karnal and Kurukshetra districts lack of technical expertise, physical and time constraints were carrying. In Jind and Kaithal districts physical and time constraints were perceived most serious constraints by the farm women in getting technical information about wheat cultivation and in Rewari district, social, physical and time constraint was perceived most serious. Most serious constraints such as physical, social and language were faced by the respondents of Sirsa and Fatehabad districts and same trend was followed in Bhiwani and Mahendergarh districts in which most serious constraint was social followed by time constraints by the farm women of bajra growing area. It is essential to plan and execute the location specific, need based and cost effective training programmes for farm women and their needs should be identified in consultation not only with trainers but also participants themselves. Rapid change in recommendations of modern scientific farming requires to update the latest technical know-how and skill of its end users for result-oriented and remunerative farming.

REFERENCES

Devi, U. and Sabharwal, K. 2014. Communication source utilization pattern and constraints faced by farm women in getting technical information about chickpea cultivation. *J. Krishi Vigyan* **2**(2): 14-18.

Iniobong A. Akpabio, Nsikak-Abasi A. Etim and Sunday Okon, 2012. Perceptions of Constraints Affecting Adoption of Women in Agriculture Programme Technologies in the Niger Delta, Nigeria. *International J. Agril Mgt & Devel.* : 215-222.

Luqman, M., Shahbaz, B., Ali, S., Butt, T.M. and Ashra, S. 2014. Rural Women's Involvement and Their Constraints in Accessing Livestock Extension Services in District Faisalabad-Pakistan. *Global Veterinaria* **12**(4): 550-556.

Tantray Abdul Majid and Dar Khasir Mohd. 1996. Technological gap in cultivation of sarson. *Ind. J. Ext. Edu.* **32** (1-4) : 75-76.

Trivedi, J. C. and Patel, H. N. 1996. Constraints in transfer of technology. *Indian J. Ext. Edu.* **32**(1-4) : 67-69.

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USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES BY SUBJECT MATTER SPECIALISTS OF KRISHI VIGYAN KENDRAS

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ABSTRACT

Information and communications technology (ICT) has become a very important feature in the agricultural sector in contemporary times. Even though it is still a new concept, an increasing number of professionals are appreciating its use for development work. Subject matter specialists are important stakeholders in the development of agriculture. It is therefore pertinent that they should be abreast with modern information and communication technologies so as to discharge their duties more effectively. This study examines extent of use of information communication technologies by subject matter specialists. Data was obtained from subject matter specialists of Kvks of MPUAT Udaipur, with the help of questionnaire. Information collected showed that subject matter specialists were frequently used ICT tool. Majority of respondents (100%) used computer / mobile phone , Internet and e-mail (80%), still video camera and CD/VCD (50-60%), Once in a week, once in fortnight, once in month or on occasion.

INTRODUCTION

The world is changing at a very fast pace. The changes can be seen in every aspect of life, be it politics, society or economy. One of the most important factors of change is *technology*. For the development of technology, information is essential. *Information* is the collection of facts gathered through various means of communication (for example, people, newspaper and television) and plays a vital role in fast growing generation. At the same time, technology makes information gathering fast and easy. ICT, as described by Food and Agriculture Organization (FAO, 1993), refers to technologies that allow for Collecting ,processing, storing, retrieving, disseminating and implementing data and information, using micro electronics, optics, telecommunication and computers. The Krishi Vigyan Kendra is one of the leading institute denoted to upliftment of rural. Krishi Vigyan Kendras (KVKs) all over the country as an institutional innovation for application of agricultural science and technology on the farmer's field with the help of multidisciplinary team i.e. Subject matter spacialists (SMS). These subject matter specialists gives skill or knowledge oriented training to farmers in multidisciplinary areas like crop. protection horticulture, animal Sciences, and fisheries, home Science and agricultural extension

RESEARCH METHODOLOGY

The present study was conducted in all the eleven Krishi Vigyan Kendras of Maharana Pratap University of Agriculture and technology Udaipur, namely, Kota, Bundi, Baran, Sirohi, Rajsamand, Jhalawar, Pratapgarh, Chittorgarh, Dungarpur, Banswara & Bhilwara. Programme co-ordinators and subject matter specialists were selected for the study and sample comprises of 50 respondents : Mailed questionnaire technique was selected as the most suitable technique for data collection. The questionnaire consisted of background information of the respondents and extent of use of information communication technologies by subject matter specialists of krishi vigyan kendras viz., computer, internet, E-mail, mobile/telephones, still/video camera CD/VCD for different types of activities and information . Frequency and percentage were used to analyze data regarding general information, extent of use information communication technologies by subject matter specialists.

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RESULTS AND DISCUSSION

1. Profile of the respondents

Age : Table 1 indicated that 42 percent respondents belonged to middle age group (41-50 years) while 40 percent respondents were in young age group (30-40 years) remaining 18 percent were in old age group (51-60 years).

Designation : Table further shows that majority of the respondents (66%) were Assistant Professor, while 28 percent were Associate Professor where as only 6 percent were professor.

Educational Qualification : Regarding educational status, data reveal that a vast majority of the respondents (90%) were Ph.D., (Agri./H.Sc.) while 10 percent were post graduates.

Table 1. Background information of the respondents

No.	Variables	f	%
1.	Age		
	• 30 to 40 years (young)	20	40
	• 41 to 50 years (middle)	21	42
	• 51 to 60 years (old)	9	18
2.	Designation		
	• Professor	3	6
	• Associate Professor	14	28
	• Assistant Professor	33	66
3.	Educational Qualification		
	• Post graduate (M.Sc.)	5	10
	• Doctorate	45	90
4.	Working Experience		
	• Less than 10 year	17	34
	• 10 to 20 years	20	40
	• 20 to 30 years	12	24
	• 30 or more years	1	2

Working Experience

Regarding the working experience, 40 percent respondents were having 10 to 20 years experience and 34 percent respondents had less than 10 years experience. While 24 percent had to 20 to 30 years experience. Only 2 percent respondents had more than 30 years experience.

Training received by respondents

Regarding areas of training the data indicated that majority of the respondents (84%) received orientation training, followed by refresher trainings 80 percent ,training related to agriculture 74 percent, ICTs 60 percent, further data show that 20-24 percent respondents received trainings on animal husbandry & extension methods & approaches. Very few respondents 10-14 percent received trainings on entrepreneurship development, research & development and general training related to job, only 3 respondents received trainings on fisheries.

2. Extent of use of information communication technologies

Computer :. Table 3 reveals that all (100%) respondents used computer . On the frequency of use majority of respondents (80%)used computer everyday, 12 percent said that they used it twice in a week and 8percent said that they used it once in a week It shows the importance of computers in day to day life. Computer is the most important tool in today's scenario. It can make our work reassured and faster. It can hold huge amount of information with in all fields. It can improve with a very high accuracy. without computer we can't imagine the world.

Internet : With reference to internet majority of the respondents(80%) said that they used It. Out of this number, most of respondents (70%) reported that they used it daily, Whilest a few(4%) said they used it once in a week and 6 percent said they used it twice in week. Remaining 20 percent did not used internet might be because of the reason that they don't have internet connection, they don't know how to use internet, network problem, lack of power supply. This result agrees with the results reported by Oladosu (2008) in his study on "extension workers information technology use characteristic and training needs of Nigeria" revealed that majority of the extension agents (80%) has access to the internet..

E-mail : Regarding E-mail majority (80%) said they used it and had their own E-mail IDs. Out of which 60 percent were used E-mail regularly and daily, 12 percent used it twice in a week and 8 percent used it

Table 2. Distribution of respondents common areas related to training

n=50

Common areas of training		Frequency area %		Frequency duration		
		f	%	up to 7 day	7-14 days	14-21 days
1.	Orientation training	42	84	-	3	39
2.	Refresher training	40	80	18	22	-
3.	Agriculture	37	74	8	9	20
4.	Animal husbandry	10	20	3	5	2
5.	ICT	30	60	6	19	5
6.	Entrepreneurship development training	5	10	1	4	-
7.	Extension methods and approaches	12	24	3	6	3
8.	Research and development	5	10	1	4	-
9.	General training related to job	7	14	-	3	4
10.	Fisheries	3	6	-	2	1

Table 3. Extent of Use of Information and Communication Technology

n=50

Extent of use	Computer		Internet		Email		Mobile/ telephone		Still/Video Camera		CD/VCD	
	f	%	f	%	f	%	f	%	f	%	f	%
Every Day	40	80	35	70	30	60	50	100	-	-	-	-
Once in a week	4	8	2	4	4	8	-	-	14	28	-	-
Twice in a week	6	12	3	6	6	12	-	-	-	-	-	-
Once in fortnight			-	-	-	-	-	-	11	22	6	12
Once in month	-	-	-	-	-	-			5	10	4	8
On occasion	-	-	-	-	-	-					15	30
Total	50	100	40	80	40	80	50	100	30	60	25	50

once in a week.It shows that E-mail is most frequently used in kvks.

Mobile Phone / telephone :. Table further reveals that mobile /telephone was used everyday by all the hundered present respondents .The reason behind this might be its value added services such as internet , Video, MP3, Bluetooth,easy to operate, time saving .The results are also in line with the result reported by Abdel Rahman who found that telephones allowed farmers to be better informed about agricultural information and solving their problems related to agriculture

Aboh (2008) also reported in his study on "Assessment of the frequency of ICT tools usage by Agricultural Extension agents in IMO state Nigeria" revealed that mobile phone and computer were frequently used by respondents

Still / Digital Video Camera : More than half of the respondents (60%) used Still/Video camera. Out of which 28 percent respondents used it once in a week, 22 percent used it once in fortnight and 10 percent used it once in a month..

CD/VCD : Fifty percent respondents reported that they used CD/VCD .Out of which 30 percent

respondents used it on occasions, 12 percent used it once in fortnight and few(8%) said that they used it once in a month.

CONCLUSION

According to the study, the most frequently used ICT tools were computer, internet, e-mail, mobile/ telephone obviously because of there ease of use and wide coverage. Through these means administrators and information personnel are provided with rapid and reliable communication. This shows that all the KVKs are well equipped with modern ICT tools.

REFERENCES

Adel Rahman, A.M. and Elhado, M.A. 2005. The influence of Some Agricultural Extension Television Elements on Diffusion of Agricultural Information, Rural Knowledge and New Technologies to Tenants in the Gezira Province. *Gezira Journal of Agricultural Science* **3**(1): 109-114

Oladosu, I.O. 2005. Extension workers'Information and Communication Technology Use Characteristics and Training Needs for Sustainability of rural Development and Extension Training in Nigeria. Proceeding of 10th annual Conference of the Agricultural Extension Society of Nigeria. P. 29 – 36.

Aboh, C.L. 2008. Assessment of the frequency of ICT tools usage by Agricultural Extension agents in IMO state, Nigeria, *J. Agri. Soc. Res. (JASR*). **8**(2): 40-42

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YIELD GAP ANALYSIS OF MUSTARD DEMONSTRATION IN DAUSA DISTRICT OF RAJASTHAN

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ABSTRACT

Yield of front line demonstration trials and potential yield of the respective variety and year were compared to estimate the yield gap which were further categorized into technology and extension gaps. Technology gaps (505 kg/ha) was highest in case of Pusa Jaikishan (Bio-902) at village Gurjar gothadi in 2009-10 and lowest (126 kg/ha) of Pusa Jaikishan (Bio-902) at village Ralawas in the year 2005-06. Average technology gap were 263.3 kg/ha. Extension gap was highest in variety Laxmi (512) at village Jeetpur in year 2007-08, and lowest (220) at village Gurjar Gothadi in variety Pusa Jaikishan (Bio-902) in year 2009-10. The average extension gap was 338.1 kg/ha. Technology index was highest in 33.77 per cent at village Gurjar Gothadi in the year 2009-10, and lowest 6.72 per cent at village Ralawas in 2005-06. The average technology index was found 15.54 per cent. The highest mustard yield of FLD were found 2088 kg/ha and lowest yield were found 1561 kg/ha. Average yield of front line demonstration was found 1804 kg/ha and in local check/ farmers practice it was 1466 kg/ha.

INTRODUCTION

Mustard is the most important oilseed crop grown in rabi season in Dausa district of Rajasthan. Mustard crop occupy the first rank in oilseed crops grown in Dausa district. It account for 71186 hectare area and 117599 metric ton production with 1652 kg/ha productivity (Anon, 2010-11). The hike in production in recent years has been possible due to improvement in productivity and strategies adopted by the government by launching Technology Mission on Oilseeds 1986. In view of this, a project on front line demonstration on oilseed was started in the year 1988-89 in order to demonstrate the production potential and latest advancement in package of practices among the farmers with the view to reduce the time lag between technology generated and its adoption. This also enable field functionaries to elucidate the production constraints and limitation in the adoption of technology for onward transmission to scientists to reorient their research accordingly, in order to improve the productivity all the latest and unfolded technologies were carried out in front line demonstrations plots under the direct supervision of the scientist by supplying the critical inputs.

Keeping in view the importance of front line demonstration in Dausa district of Rajasthan in productivity enhancement and increase the monetary returns, the present study was carried out.

RESEARCH METHODOLOGY

The present study was conducted at the farmers fields of Dausa district of Rajasthan during the rabi season of consecutive four years from 2005-06 to 2009-10 except the year 2008-09. A total of 98 demonstrations and 44 ha area having similar number of traditional practices or local check was carried out in sandy loam soil under irrigated conditions. The mustard crop was sown in around mid October and harvested in last week of march across the years. The variety BIO-902 was used in demonstration in all the villages and years excepts in 2007-08 at Jeetpur village, here the variety Laxmi was demonstrated. The front line demonstration were conducted in Kalota , Kolwa, Gurjar Gothdi and Beegas in Dusa block and Ralawas, Kushalpura, Didwana and Jeetpur in Lalsot block of Dausa district. Infront line demonstrations especial emphasis was given to proper seed rate (4 kg/ha), balance use of fertilizers (60 kg/ha N and 30 kg/ha P_2O_5), 250 kg/ha gypsum, high yielding variety (Bio-902 & Laxmi), seed treatment with pesticides and culture, Irrigation at critical stages and proper & need based plant protection measures. In traditional or local check plots farmers were using higher seed rate (6-8 kg/ha), Imbalance use of fertilizers, no or

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rare use of gypsum, local or own seed for sowing, improper seed treatment and plant protection measures. The cross section data on output of mustard crop and input used per hectare have been collected from the front line demonstration trials. In addition to this in traditional or control plot followed by farmers have also been collected and used for further calculation like cost of cultivation, gross returns, net returns, additional cost, additional returns, B:C ratio. The benefit cost ratio (B: C) was calculated dividing the net monetary return by the total cost of cultivation.

Yield gap , extension gap and technology index were calculated as follows:-

Technology gap = Potential yield- Demonstration yield

Extesion gap = Demonstration yield- Farmers/ Traditional yield

Technology index = Pi-Di/Di X 100

Where Pi= Potential yield of the crop

Di= Demonstration yield of the crop

RESULTS AND DISCUSSION

Yield gaps: Yield of front line demonstration trials and potential yield of the respective variety and year were compared to estimate the yield gap which were further categorized in to technology and extension gaps. **Technology gaps** (505 kg/ha) was highest in case of Pusa Jaikishan (Bio-902) at village Gurjar gothadi in 2009-10 and lowest (126 kg/ha) of Pusa Jaikishan (Bio-902) at village Ralawas in the year 2005-06 and surplus (084 kg/ha) were found in Pusa Jaikishan at village Didwana in 2006-07. Average technology gap were 263.3 kg/ha. Though, the front line demonstration trials were laid down under the supervision of KVK scientists at the farmers' fields'. There exists gap between the potential yield and trial yield. This may be due to the soil fertility and weather condition hence, location specific recommendations are necessary to bridge the gap. Higher technology gap (647 kg/ha) were also recorded by Meena *et al* (2012) and Subhash Katare *et al* (2011).

The extension gap for all the year in front line demonstrations on mustard were higher as compared to technology gap except in the year 2009-10. This emphasized the need to educate the farmers in adoption of improved technology to narrow the extension gaps. Among the front line demonstration on mustard in different years, extension gap was highest in variety Laxmi (512) at village Jeetpur in year 2007-08, and lowest (220) at village Gurjar Gothadi in variety Pusa Jaikishan (Bio-902) in year 2009-10. The average extension gap was 338.1 kg/ha. These findings are in line with the findings obtained by Kaushik in 1993 and Meena et al 2012) i.e. 406 kg/ha. All demonstrations were found higher extension gap as compared to technology gap except in the year 2009-10. Similar findings were also reported by Sharma and Sharma (2004).

Technology Index: Technology index shows the feasibility of the evalued technology on the farmers fields'. The lower the value of the technology index more feasibility of technology. Technology index was highest in 33.77 per cent at village Gurjar Gothadi in the year 2009-10, and lowest 6.72 per cent at village Ralawas in 2005-06, the supersets (0.00) at village Didwana in year 2006-07. The average technology index was found 15.54 per cent. Similarly, technology index were also reported by Meena et al (2012) i.e. 26.98 per cent ang Subhash Katare et al (2011) i.e. 24.21 per cent. This indicates that in FLDs a wide gap exists between the technology evalued at research station and farmers fields'. Hence, according to the criterion Pusa Jaikishan (Bio-902) variety at village Didwana in year 2006-07 is best followed by at village Ralawas in the same variety in year 2005-06.

Comparison of yield and economics: The highest mustard yield of front line demonstration were found 2475 kg/ha in 2005-06 at Ralawas village followed by 2400 kg/ha, 2275 kg/ha, and 2150 kg/ha at villages Didwana in 200-07, Jeetpur in 2007-08 and Kalota in 2007-08, respectively. And lowest yield were found 1200 kg/ha followed by 1320 kg/ha and 1375 kg/ha at village Gurjar Gothadi in year 2009-10, Kalota in year 2005-06 and Beegas in year 2009-10, respectively. Average yield of front line demonstration were found maximum by the tune of 2152 kg/ha at village Jeetpur in 2007-08 with the variety Laxmi, followed by 2084 kg/ha and 1874 kg/ha at Didwana in year 2006-07 with the variety of Pusa Jaikishan (Bio-902) and Ralawas in year 2005-06 with the same variety, respectively. The Maximum percentage increase over

Table 1. Comparative statement of yield and other parameters of front line demonstrations on mustard in different villages of Dausa district of Rajasthan

year	Village	Block	Variety Demo of Demo	No of (ha) yield of Demo	Area est yield of Local	High-est yield of (kg/ ha)	Low-age yield (kg/ ha)	Aver-age ase gap (kg/ ha)	Aver-incre-gy gap Check (kg/ ha)	% nolo-sion index	Tech-ten-gy	Ex-nolo-	Tech-
2005-06	Kalota	Dausa	Bio-902	13	5.2	2140	1320	1748	1365	28.05	252	383	14.61
2005-06	Ralawas	Lalsot	Bio-902	12	4.8	2475	1620	1874	1490	25.77	126	384	6.72
2006-07	Kushalpura	Lalsot	Bio-902	11	5.5	1950	150	1714	1445	18.61	286	269	16.68
2006-07	Didwana	Lalsot	Bio-902	9	4.5	2400	1850	2084	1715	21.11	-	369	-
2007-08	Kolwa	Dausa	Bio-902	8	4	2150	1650	1816	1469	23.62	186	347	10.24
2007-08	Jeetpur	Lalsot	Laxmi	10	5	2275	1975	2152	1640	31.21	348	512	16.17
2009-10	Gurjar Gothdi	Dausa	Bio-902	16	6.6	1600	1200	1495	1275	17.25	505	220	33.77
2009-10	Beegas	Dausa	Bio-902	19	8.4	1715	1375	1550	1329	16.62	405	221	26.12
Total	-	-	-	98	44	-	—	-	-	-	-	-	-
Average	-	-	-	-	-	2088	1561	1804	1466	23.05	-	-	-

Potential yield of Bio-902=2000 kg, Potential yield of Laxmi= 2500 kg

control or traditional practice recorded 31.21 per cent at village Jeetpur in 2007-08 with the variety of Laxmi, folloed by 28.05 per cent at village Kalota in year 2005-06 with the variety Pusa Jaikishan (Bio-902). Studies shows that average percentage increase were found 23.05 per cent which show that front line demonstrations found better than farmers practices or control (Suryawansi and Prakash, 1993, Sagar and Chandra, 2004 and Meena et al 2012) for increasing the productivity of farmers community. (Table -1).

On the basis of Table 2 for economics of various front line demonstrations on mustard in different years, the highest percent increase were found 29.48 per cent at village Jeetpur in year 2007-08 with the variety of Laxmi followed by 28.05 per cent and 25.76 per cent at village Kalota in year 2005-06 with the variety Pusa Jaikishan (Bio-902) and at village Ralawas in year 2005-06 with the same variety. Average per cent increase of gross return were found 22.02 per cent which is substancial for the farming community of Dausa district. The highest increase in net return were found 50.58 per cent at village Jeetpur in year 2007-08 with the variety of Laxmi followed by 48.76 per cent and 38.68 per cent in vil;lage Kolwa in year 2007-08 and village Ralawas in year 2005-06 with the variety Pusa Jaikishan (Bio-902). Average net return was found 28.49 per cent increase which shows front line demonstrations can be increasing the living standard of farming community of Dausa District.

Among all front line demonstrations the highest B:C ratio were found 3.13 in village Ralawas in year 2005-06 with the variety Pusa Jaikishan (Bio-902) followed by 3.02 and 3.01 at village Jeetpur in year 2007-08 with the variety of Laxmi and village Kalota in year 2005-06 with the variety of Pusa Jaikishan (Bio-902), respectively. Similar findings were also reported by Meena *et al.* 2012.

Overall results shows that variety Laxmi is found better in per cent increase, gross returns and net return but Pusa Jaikishan (Bio-902) were found better

Table 2. Economics of the front line demonstrations on mustard in different villages of Dausa district of Rajasthan

Year	Village	Variety	No of De-mon-stra-tion	Area (ha)	Cost of culti-vation (Rs/ha)		Gross return (Rs/ha)		% incre-se in Gross return	Net return (Rs/ha)		% incr-ease in net ret-urn	Addi-tio-nal cost (Rs/ ha)	Add-itio-nal re-turn (Rs/ha)	B:C ratio	
					De-mo	Lo-cal	De-mo	Lo-cal		De-mo	Lo-cal				De-mo	Lo-cal
2005-06	Kalota	Bio-902	13	5.2	10868	10186	32775	25594	28.05	21907	17254	26.96	682	6449	3.01	2.51
2005-06	Ralawas	Bio-902	12	4.8	11208	10684	35137	27938	25.76	23929	17254	38.68	596	6625	3.13	2.61
2006-07	Kushal-pura	Bio-902	11	5.5	13825	13575	33652	28610	17.62	19827	15035	31.87	250	4792	2.43	2.10
2006-07	Didwana	Bio-902	9	4.5	14714	14380	40512	33630	20.32	25798	19290	33.73	334	6508	2.75	2.34
2007-08	Kolwa	Bio-902	8	4	16329	16350	42652	34918	22.14	26323	18568	41.76	-	7755	2.60	2.13
2007-08	Jeetpur	Laxmi	10	5	16651	16505	50344	38880	29.48	33693	22375	50.58	146	4318	3.02	2.35
2009-10	Gurjar Gothdi	Bio-902	16	6.6	15086	14730	35690	30650	16.44	20604	15920	29.42	356	5040	2.36	2.08
2009-10	Beegas	Bio-902	19	8.4	16106	15750	37100	32038	15.79	20994	16288	28.89	356	5062	2.30	2.03
Total	-	-	98	44	-	-	-	-	-	-	-	-	-	-	-	-
Average	-	-	-	-	14348.37	14020	38482.75	31537.25	22.02	23552.75	18329.62	28.49	341.25	5818.62	2.70	2.26

in respect of B:C ratio. Across the years front line demonstrations were found higher productivity ranging from 16.62 to 31.21 per cent and higher B:C ratio from 2.30 to 3.13. Front line demonstrations shows in respect of per cent increase of yield and B: C ratio is sufficient for increasing production of mustard and increasing living standard of farmers' community of Dausa district. Presently 23.05 per cent increase reveals that if farmers adopt the demonstrated technologies, they will fetched Rs. 5223/ha in addition to they are getting now in traditional practices will improving their livelihood.

CONCLUSION

It can be concluded that presently the area of mustard in Dausa district is 71186 ha, by adopting the demonstrated technology farmers of Dausa district can get additional Rs. 37 carrore rupees in terms of net returns per year.

REFERENCES

Katare Subhash, Pande, S.K. and Mustafa Mohd. 2011. Yield gap analysis of rapeseed mustard through FLD. *Agriculture update* **6** (2): 5-7.

Kaushik, K. K. 1993. Growth and instability of oilseed production. *Indian Jounal of Agricultural Economics* **48**: 334-8.

Meena, B.L., Meena, R.P., Meena,R.H and Balai, C.M. 2012. Yield gap analysis of rapeseed mustard through FLD in agroclimatic zone Iva of Rajasthan. *Journal of Oilseeds Brassica* **3**(1): 51-55.

Sagar, R.L. and Ganesh Chanra 2004. Evaluation of FLD on mustard in Sunderbans, West Bengal. *Indian Journal of Extension Education* **40** (3&4):96-97.

Sharma, R. N. and Sharma, S. K. 2004. Evaluation of front line demonstration trails on oilseed in Baran district of Rajasthan. *Madhya Journal of Extension Education* **7**: 72-75.

Suryawanshi, S. D. and Prakash, M. 1993. Impact of viable technology of promoting oilseeds in Maharastra. *Indian Journal of Agricultural Economics* **48**: 420.

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KNOWLEDGE LEVEL OF FISHERMAN IN RESERVOIRS FISHERIES MANAGEMENT

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ABSTRACT

The study was conducted in two reservoirs namely Dahod and Pahuj located in Raisen and Jhansi districts of Madhya Pradesh and Uttar Pradesh.It was found that majority of the fish farmers had the medium level of knowledge regarding scientific fish culture practices.Majority of fish farmers were middle aged and old age group category.Overall education level is medium that is, primary and middle school level. Majority of fish farmers possessed low to medium level of experience in fish farming. Most of the farmers belonged to low level of credit orientation. Majority of fish farmers exhibited medium level of mass media participation extension agency contact while their cosmopoliteness was low. It is necessary to increase innovative proneness, extension agency contact and mass media participation by the means of organizing awareness campaigns, field days, demonstrations, exhibitions, kishan gosti, kishan mela etc. enabling farmers to accrue latest knowledge on scientific fish culture practices.

INTRODUCTION

Reservoirs are the ubiquitous 'man-made lakes' that dot the Indian landscape from north to south and east to west covering more than 1% of the country's land surface. Although created primarily for irrigation, power generation and other water resource development purposes, these water bodies have become the prime inland fisheries resource of India due to many reasons. Development of reservoir fisheries has many economic and social advantages. The marine capture fisheries are fast approaching a plateau and the inland aquatic ecosystems like rivers face degradation due to anthropogenic habitat changes. The aquaculture development projects are capital intensive and constrained by many environmental risks. In view of these and considering the enormous resource size and untapped production potential, the reservoirs have become the focus of future fisheries development plans in India. Nearly half of the projected demand of 3 million tones of additional fish by the end of 2012 may be meet out can come from the reservoirs. Thus, national efforts to enhance fish production from India have to rely heavily on reservoirs. Reservoirs in Madhya Pradesh and Uttar Pradesh are primarily for irrigation purpose. These reservoirs are highly productive from the biological point of view as they get adequate light and optimum atmospheric / water temperature which are conducive for growth of fish. Reservoirs in M.P. are relatively small having water spread area less than 1000 ha each. Present average fish yield is below 20 kg/ha/yr which is below the national average. There is a scope to increase the production level. Low fish production in the State can be attributed to several reasons. However,

Knowledge of the fish farmers on scientific fish culture is the single largest known factor responsible for low fish production. Knowledge about scientific fish culture plays a very important role in the adoption of scientific technologies. To improve the adoption of scientific fish culture under village conditions it is necessary to assess the knowledge of the fish farmers. This would form a base for the future extension efforts. Keeping these facts in view, the present study was carried out with the following objectives: To Study of the Knowledge level of Fisherman in Reservoirs Fisheries Management

RESEARCH METHODOLOGY

This study is concerned to two reservoirs namely Dahod and Pahuj located in Raisen and Jhansi districts of Madhya Pradesh and Uttar Pradesh respectively. Dahod reservoir had 65 fishermen randomly selected for the study. And Pahuj reservoir were selected 55 fishermen randomly which involved in fishing. Thus Total 120 Fishermen (Respondents)

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were selected randomly for the study. The both District Raisen and Jhansi was purposely selected for the study. as it has vast and diverse inland fishery resources ideally suited for taking up scientific fish culture .were selected for the study in the consideration of the preponderance of Fisherman among the population. In the selected study area, each sample was selected by simple random sampling technique. The research procedure followed for the study consisted of the methods used in the collection of relevant evidences and information as secondary data from Fisheries Department of the state level, District level, Cooperative Societies, and Panchayats operative in the sampled area. The primary data were obtained from the sampled respondents pertaining to achieve the objectives and hypothesis of the study. The survey method was used for collection of primary data as this method was found to be the most appropriate and feasible for descriptive type of study like the present one. The primary data were collected directly from the sampled respondents by visiting their premises several times to obtain required relevant information like their family structure, occupation, their assets, investment, expenditure incurred in fish farming, etc. with the help of specific and pre-tested interview scheduled.

RESULTS AND DISCUSSION

Quantified brief account of Socio-personal, Socio-economic, Communicational and Psychological characteristics of fisherman

Majority of 55% fishermen were middle age and 27.5% old age group category. high majority i.e. 89.17% respondents belong to scheduled caste, while only 10.83% respondents belong to general caste including OBC. None of the respondents was found under scheduled tribe categories. Overall education level is medium that is, 16.67%, primary and 57.50% middle school level. Majority of fish farmers possessed low to medium level of experience in fish farming. Majority of fish farmers belonged to low social participation, High majority of respondents 67.50 % have above five members in their family, while 32.50% respondents have up to 5 members, majority of respondents 64.17% belong to joint family structure, while 35.83% are still living in single family. It is interesting to note that joint family system is still prevalent in the study area which may be identical one as in general the single family is more common in the rural areas. Small land holding and medium income group as they have other source of income. Majority of respondents perceived fish culture as primary occupation. Agriculture was an important secondary occupation followed by fish culture. It may be concluded that maximum number of fishermen have added livestock assets after having fisheries as their main activities. Majority of fishermen. 67.50% have migrated from original place to study area, while 32.50% belong to study area. Thus it may be concluded that almost two third of the respondents have migrated from original place to other places to perform the fishing activity. Belonged to low level of credit orientation. majority of respondents i.e. 65% have kucha house in which the family live, while 18.33% respondents have mixed house (kucha+pukka) and 16.67% respondents have built pukka house and their family members lived there. Majority of fish farmers exhibited medium level of mass media participation extension agency contact while their cosmopoliteness was low.In the present study knowledge was operationalised as the extent to which information is possessed by the respondents about the specific items of recommended scientific fish culture practices in the study area. It is known fact that education is the basic requirement which widens the knowledge of an individual to expose him to various media and information sources. It can be interpreted from these figures that there is a scope to endow these respondents from medium knowledge category to high score category. Keeping in view the need to improve the fishermen's socio economic condition, both the policy makers and extension functionaries should make adequate use of various teaching methods effectively like demonstration, field day, On-farm testing, exhibition, film show, educational tour, campaigns, farm clinic, seminar, workshop and information communication technology like radio, TV, different audio visual aids and internet,etc.

level of knowledge of fishermen pertaining to fisheries activities

Table-2 indicates that of the total 120 fishermen, majority of the respondents.ie 70% , 65 %, 60.83%,58.3%3 and 54.17% respondents have possessed Medium knowledge regarding Fish seed

Table 1. A quantified brief account of Socio-personal, Socio-economic, Communicational and Psychological characteristics of fisherman

Variables	No. of respondents	Percentage(%)
A. *Socio-personal variables*		
1. Age		
Young (>30 years)	21	17.50
Middle (31 to 50 years)	66	55.00
Old (51years and above)	33	27.50
2. Caste		
General /OBC	13	10.83
SC	107	89.17
ST	0	0.00
3. Family size		
Small family (< 5 members)	39	32.50
Large family (>5 members)	81	67.50
4. Family type		
Singal	43	35.83
Joint	77	64.17
5. Education		
Illiterate	09	7.00
Primary school	20	16.67
Middle school	79	57.50
High school/ Higher secondary	12	10.00
Graduation /PG	0	0.00
6. Fish farming experiences		
Low (>1years)	12	10
Medium(1to3years)	38	30.67
Low (3years and<)	70	58.33
B. *Socio-economic variables*		
7. Occupation		
Main occupation (Fisheries)	120	100
Secondary occupation		
Agriculture and Agriculture labour	80	66.67
Animal husbandry	70	58.33
Dairy	32	26.67
Other	0	0
8. Credit Availability		
Those who have availed credit	75	62.50
Those who have not availed credit	45	37.50
9. Annual income		
Low Income (Up to Rs. 25000/-)	22	18.34
Medium Income (Rs. 25000 to Rs. 50000/-)	67	55.83
High Income (Rs.50000/-and above)	31	25.83

10. Assets		
a. Livestock Position		
Cow	67	58.33
Buffalo	11	9.17
Goat	80	66.67
Birds(Poultry)	57	47.50
b. Housing Pattern		
Pucca	20	16.67
Mixed	22	18.33
Kucha	78	65.00
11. Migration		
Short duration migration	76	63.33
Midum duration migration	24	20.00
Long duration migration	20	16.67
C. *Communication variables*		
12. Mass media participation		
Low	45	37.5
Medium	50	42
High	21	21
13. Extension agency contact		
Low	33	27.2
Medium	67	55.8
High	20	17
14. Cosmo politeness		
Low	55	45.8
Medium	29	24.2
High	36	30.0
D. *Psychological variables*		
15. Credit orientation		
Low	40	48
Medium	38	31.6
High	*34*	28.3
16. Value orientation		
Low	37	30.8
Medium	55	45.8
High	28	21.6
17. Risk orientation		
Low	35	29.2
Medium	60	50.0
High	25	20.8
18. Economic motivation		
Low	36	30.0
Medium	49	40.8
High	35	29.2

Table 2. Level of knowledge of fishermen pertaining to fisheries activities.

S.No.	Fisheries Activities	Level of knowledge					
		High knowledge		Medium knowledge		Low knowledge	
		No.	%	No.	%	No.	%
1	Fish Seed Rearing	16	13.33	84	70.00	20	16.67
2	Fish Capture	30	25.00	70	58.33	20	16.67
3	Fish Culture	14	11.67	78	65.00	28	23.33
4	Fish processing	32	26.67	73	60.83	15	12.50
5	Fish Marketing	36	30.00	65	54.17	19	15.83

rearing, fish culture, fish processing, fish capture and fish marketing. Table 2 further reveals that less than 30% i.e. 26.6%, 25%, 13.33% and 11.67 % respondents possessed high knowledge, while in reveres less than 24% i.e. 23.33% 16.67% each, 15.83 % and 12.50% respondents possessed low knowledge regarding fish culture, fish capture, seed raising, fish marketing and fish processing respectively. overall about 17.00% fishermen possessed low knowledge regarding fisheries activities which clearly indicates that the knowledge gaps pertaining to fisheries activities still prevail among fishermen regarding fisheries, therefore, they need proper training to minimize the gap.

Knowledge level of fishermen regarding scientific orientation fish culture

Table 3 Clearly reveals that very high majority of respondents i.e. 77.50 % , 75%, 73.33%, and 67.50% have medium scientific orientation in case of fish marketing, fish seed rearing, craft making and fish capture, while 81.67% respondents have high scientific orientation in case of fish culture. The percentage of respondents who have low scientific orientation in case of net making was 54.16%.Thus from the above discussion, it may concluded that majority of respondent had medium scientific orientation particularly in case of fish marketing, seed raising, craft making and fish capture respectively. For raising the level of knowledge on different aspects of scientific fish culture together with marketing and cultural practices.

CONCLUSION

On the whole it may be concluded that majority of the respondents of the study area were having medium level of knowledge on scientific fish culture. It is worth to increase innovative proneness, extension agency contact and mass media participation.

Hence, it is suggested that technology dissemination system must focus on these variables

Table 3. Knowledge level of fishermen regarding Scientific orientation fish culture

S. No.	Practices	Scientific orientation					
		Low		Medium		High	
		No.	%	No.	%	No.	%
1	Fish Seed Rearing	17	14.16	90	75.00	13	10.83
2	Fish Culture	07	0.06	15	12.50	98	81.67
3	Fish Capture	22	18.33	81	67.50	16	13.33
4	Craft Making	20	16.67	88	73.33	10	12.00
5	Net Making	65	54.16	35	29.17	20	16.67
6	Fish Marketing	07	0.06	93	77.50	18	15.00

by organizing awareness campaigns, field days, demonstrations, exhibitions,krishan gosti, kishan mela etc. enabling farmers to accrue latest knowledge on scientific fish culture practices. In order to improve the process of reorienting the fishery extension system and to provide technical and input support to the farmers to enhance knowledge, the authorities should arrange to formulate and monitor visit schedule of extension officials along with introduction of a system of evaluation at apex level.

REFERENCES

Awasthi, H.K., Singh, P.R. and Sharma, R.N. 2000. Knowledge and attitude of dairy farmers towards improved diary practices. *Maharashtra J. Ext. Edu.* **19** : 290-292.

Goswami, B. and Samadar, T. 2011. Knowledge of Fish Growers about Fish Culture Practices. *Indian Res. J. Ext. Edu.* **11** (2) : 25-30.

Jaiseelan committee report 2007. Stakeholder analysis in command area of Sasan Canna of Hirakud Reservoir in Mahanadi Basin, Odisa state center forum for policy dialogue on water conflicts in India pp 13.

Mahandra Kumar K. 1996. Communication behaviour of fish farmers in Tamil Nadu. Ph.D. thesis (unpub.), CIFE, Mumbai.

Meeran, N.M. 1983. A study on the adoption behavior of fish farmers, M.Sc. (Ag).thesis (unpub.), Agricultural College and Research Institute, Madurai, TNAU.

Praveena, I. 1993. A study on the constraints in adoption of fish culture as perceived by fish farmers of Nellore district of Andhra Pradesh. M.Sc. thesis (unpub.), EEI, APAU, Hyderabad.

Rajan, Parvez 2013. Factors affecting knowledge of fish farmers regarding fish production Technology. *Indian Res. J.Ext. Edu.* **13** (2): 126-128.

Sarangi, N. and Jena, J.K. 2005. Including promising species. The Hindu Survey of Indian Agriculture, pp. 137

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EFFECT OF NON-GENETIC FACTORS ON TOTAL CALVES BORN AND TOTAL FEMALE CALVES REACHING MILKING HERD IN SURTI BUFFALOES

Shiv Murat Meena*

ABSTRACT

The data on calving records of 510 Surti buffaloes spread over a period of 25 years 1973-1997 were collected from LRS, Vallabhnagar, Udaipur, RAU, Bikaner. Least-squares means ad their standard error of total calves born and total female calves reaching milking herd were estimated in relation to period, season, AFC and FLMY. The overall means and their standard error of total calves born and total female calves reaching milking herd from each buffalo were 3.55±0.16 days and 0.68± 0.07 days respectively. The least squares analysis of variance indicated that season did not effect significantly the total calves born and total female calves reaching milking herd. The effect of period, AFC and FLMY were significant on total calves born and total female calves reaching milking herd.

INTRODUCTION

The buffalo is main dairy animal in India, contributing more than 50 per cent of total milk production on the country, although its population is about one third of the cattle population. The most important factor limiting the intensity of selection is the size of herd and reproduction ability of breeding animals.

The present investigation was undertaken study of the effect of non genetic factors on total number of calves born per buffalo and the number of female calving reaching milking herd per buffaloes.

RESEARCH METHODOLOGY

The data used for this study were collected from the history sheets, calving records, mortality reports, culling reports and milk records maintained under network project on buffaloes at LRS, Vallabhnagar, Udaipur, RAU, Bikaner (Rajasthan).

The data were classifies according to period of first calving, season of first calving, age at first calving (AFC) and first lactation milk yield (FLMY) in order to study their effect on total calves born and total female calves reaching milking herd in Surti buffaloes.

The overall means standard errors and coefficient of variation were computed for total calves born and total female calves reaching milking herd using standard statistical procedure (Snedecor and Cochran1968).

The following mathematical model (Harvey 1989) was used for least-squares analysis.

$$Y_{ijklm} = \mu + P_i + S_j + A_k + L_l + e_{ijlkm}$$

Where,

Y_{ijklmb} = total calves born and total female calves reaching milking herd from mth buffalo lth first lactation milk yield class and kth age at first calving group calved first time in jth season and ith period; μ, overall means; P_i, effect of ith period of first calving ($P_i = P_1$ to P_5); S_j, effect of jth season of first calving ($S_j = S_1$ to S_5); A_k, effect of AFC group ($A_k = A_1$ to A_9); L_l, effect of lth FLMY class ($L_l = L_1$ to L_8); e_{ijlkm}, random error specific to particular observation and assumed to be normally and independently distributed with mean zero and variance ($\sim e^2$).

The total period (1973-1997) was grouped in five periods of five years each as P_1, P_2, P_3, P_4 and P_5. Season of calving were classified as summer (April-June), rainy (July- Sept), autumn (Oct- Nov), winter (Dec- Jan) and spring (Feb- March). Age at first calving was classified by taking the class interval of 150 days as 1300 days and less (A_1), 1301-1450 (A_2), 1451-1600 days (A_3), 1601-1750 days (A_4), 1751-1900

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days (A_5), 1901-2050 days (A_6), 2051-2200 days (A_7), 2201-2350 days (A_8) and above 2350 days (A_9). First lactation milk yield (FLMY) kg was classified as 700 kg and less (L_1), 701-850 (L_2), 851-1000 (L_3), 1001-1150 (L_4), 1151-1300 (L_5), 1301-1450 (L_6), 1451-1600 (L_7) and above 1600 kg (L_8).

RESULTS AND DISCUSSION

The overall means for total calves born (TCB) and total female calves reaching milking herd (TFCRMH) per buffalo has been shown in (Table 1). The total calves born per buffalo in herd were 3.55±0.16. This agreed reasonably with the value 3.59±0.38 and 8.75±0.03 reported in buffaloes (Tomar and Ram 1992). Total female calves reaching milking herd per buffalo were 0.68 ±0.07. This was in close agreement with the value 0.75 ±0.03 reported by Tomar and Basu (1981) in murrah buffaloes, Mukharjee and Tomar (1996) in brown swiss cross breed cows and Lathwal and Kumar (1994). The overall CV value for

Table 1. Least square means and standard errors for total calves born (TCB) per buffalo and total female calves reaching milking herd (TFCRMH) across different non genetic factors

Effects	No. of Buffaloes	TCB Mean ± SE	TFCRMH Mean ± SE
Overall	510	3.55 ±0.16	0.68 ±0.07
Period			
P_1 (1973-1977)	20	5.79 ±0.51	1.53 ±0.23
P_2 (1978-1982)	139	4.45 ±0.21	0.84 ±0.09
P_3 (1982-1987)	134	3.32 ±0.22	0.67 ±0.10
P_4 (1988-1992)	142	2.80 ±0.19	0.23±0.09
P_5 (1993-1997)	75	1.39 ±0.26	0.12 ±0.12
Season			
S_1 (April-June)	54	3.38 ±0.16	0.58 ±0.07
S_2 (July-Sept)	204	3.63 ±0.19	0.76 ±0.09
S_3 (Oct-Nov)	148	3.69 ±0.21	0.73 ±0.09
S_4 (Dec-Jan)	52	3.21 ±0.31	0.53 ±0.14
S_5 (Feb-March)	52	3.84 ±0.33	0.78 ±0.15
AFC			
A_1 (Less than 1300 days)	36	3.48 ±0.36	0.70 ±0.16
A_2 (1301-1450 days)	65	3.63 ±0.29	0.65 ±0.13
A_3 (1451-1600 days)	78	4.10 ±0.27	1.02 ±0.12
A_4 (1601-1750 days)	87	4..45 ±0.26	0.79±0.11
A_5 (1751-1900 days)	112	3.45 ±0.25	0.65 ±0.11
A_6 (1901-2050 days)	42	3.93 ±0.34	0.79 ±0.15
A_7 (2051-2200 days)	43	3.13 ±0.35	0.63 ±0.15
A_8 (2201-2350 days)	78	2.69 ±0.41	0.54 ±0.22
A_9 (Above 2350 days)	19	3.09 ±0.50	0.36 ±0.22
FLMY			
L_1 (Less than 700 kg)	26	3.10 ±0.43	0.33 ±0.19
L_2 (701-850 kg)	71	3.02 ±0.29	0.50 ±0.13
L_3 (851-1000 kg)	90	3.49 ±0.25	0.67 ±0.11
L_4 (1001-1150 kg)	116	3.25 ±0.22	0.69 ±0.10
L_5 (1151-1300 kg)	102	4.04 ±0.23	0.69 ±0.10
L_6 (1301-1450 kg)	57	4.26 ±0.29	0.69 ±0.13
L_7 (1451-1600 kg)	31	3.53 ±0.39	0.74 ±0.17
L_8 (Above 1600 kg)	17	3.70 ±0.52	1.11 ±0.23

Means in particulars class bearing different superscript differ significantly (P<0.05) from each other

TCB and TFCRMH were being 68.25 percent and 160.98 per cent respectively (Table 1).

Period

A decreasing trend in total calves born and total female calves reaching milking herd per buffalo were evident in the present study from P_1 to P_5. The least square means for TCB to a buffalo were 5.79 ±0.51, 4.45 ±0.21, 3.32 ±0.22, 2.80 ±0.19 and 1.39 ±0.26 during P_1, P_2, P_3, P_4 and P_5 period respectively. The statistical analysis of data indicated that these traits were highly significantly affected by period of calving. All the five periods differed significantly among themselves. Period of TCB and TFCRMH contributed 16.67 per cent and 9.85 percent to the total variability (R^2) respectively (Table 3a). Significant of period of calving on TCB and TFCRMH were also observed by Hegade and Bhatnagar (1985), Mukharjee and Tomar (1996), Tomar and Verma (1988a) and Lathwal *et al*. (1993) in crossbred cows.

Season

Maximum Number of TCB to each buffalo (3.84 ±0.33) was observed during spring season (February to March) and lowest number of TCB to each buffalo (3.21 ±0.31) and 0.53 ±0.14 were observed during winter season (December to January). However, the effect of season on TCB and TFCRMH were non significant. The result of present study supported the findings of Ashok Kumar (1997) who reported that affect of season of calving on TCB and Tomar and Verma (1988b), Tomar and Rawal (1994) and Mukharjee and Tomar (1997) who reported that effect of season of calving of total female calved reaching milking herd were non significant in crossbred cows respectively.

Age at first calving

Total calves born and total female calves reaching milking herd to each buffalo ranged between 2.69±0.41 to 4.45± 0.26 and 0.36± 0.22 to 1.02± 0.12 among different AFC groups respectively. The effect of AFC was significant. The number of calves produced by a single buffalo in her life time was significantly higher at 4.45± 0.26 in A_4 AFC as compare to A_1, A_1, A_5, A_7, A_8 and A_9 AFC groups. These were in agreement with the findings of Mukharjee and Tomar (1996) who reported that TCB and TFCRMH to Brown Swiss crossbred cow were significantly affected by AFC. The least square means for TFCRMH to a buffalo were significantly higher at 1.02± 0.12 in A_1 AFC group as compare to A_2, A_5, A_7, A_8 and A_9 AFC groups. The result of present study indicated that maximum number of TCB and TFCRMH to each buffalo was observed for those which calved first time into age of 1750 days and

Table 2. Least square analysis of variance for TCB and TFCRMH per buffalo

Source of variation	df	TCB/ Buffalo		TFCRMH/ Buffalo	
		MS	R^2	MS	R^2
Period	4	121.64**	16.67	12.11**	9.85
Season	4	3.420	1.15	0.70	0.63
AFC	0	14.279*	3.91	1.44*	2.35
FLMY	7	11.456*	2.74	1.09*	1.5

**Significant @ P<0.01, *significant @ P<0.05.

Table 3. Overall means, standard deviation and CV values for different traits

Traits	No. of observations	Means	SD	CV
Total calves born/Buffalo	510	3.50	2.39	62.78
Total female calves reaching milking herd/ Buffalo	510	0.61	0.98	160.98

1451-1600 days and thereafter it decreases respectively. The TCB and TFCRMH contributed 3.91 per cent and 2.35 per cent to total variability (R^2) respectively (Table 2).

First lactation milk yield

The total number of calves born and total female calves reaching milking herd to each buffalo in present study increased with increase in FLMY respectively. The TCB and TFCRMH were 3.10 ±0.43 and 0.33 ±0.19 in buffaloes which produced less than 700 kg milk in first lactation. The TCB were significantly more in L_6 FLMY group as compare to L_1, L_2, L_3 and L_4 FLMY groups. Maximum number of TCB and TFCRMH were 4.26 ±0.29 and 1.11 ±0.23 observed in those buffaloes which produced 1301 to 1450 and 1600 kg milk in first lactation respectively. The TFCRMH per buffalo was significantly higher in L_8 FLMY group as compared to L_1 and L_2 FLMY groups. However, statistically the level of milk production beyond 1150 kg and 851- 1000 kg had no effect of TCB and TFCRMH to each buffalo in the herd. Differences due to FLMY group on TCB and TFCRMH were significant ($P<0.05$) in the present study. The significant effect of FLMY on TCB and TFCRMH were reported by Mukharjee and Tomar (1996) and Ashok Kumar (1997) which is in agreement with the findings of present investigation.

CONCULSION

It is concluded that period of calving, age at first calving and first lactation milk yield play a very important role on its components as TCB and TFCRMH. Surti buffaloes having milk production of 1301 to 1450 kg or more should be selected for TC per buffalo. Similarly, TCB and TFCRMH etc. selective value traits animals having AFC between 1451-1750 days should be selected.

REFERENCES

Ashok Kumar, 1997. Evaluation of crossbred cattle for selective value. M.Sc. (Ag.) Thesis, Department of Animal Husbandary, RAU, Bikaner.

Harvey, W. R., 1989. User's guide for LSMLMW and MIXMDL PL-2 version Mixed Model Least Squares and Maximum likehood Computer Programme. 4255 Mumford Drive, Columbus, **Ohio, 43220, USA.**

Hegade, M. E. and Bhatnagar, D.S. 1985. Lifetime performance of different genetic groups of Brown Swiss crossbred cows. *Indian Journal of Dairy Science* **38**(4): 321-26.

Lathwal, S.S., and Kumar, A. 1994. Genetic of replacement rate and its components in Red Sindhi cows. *Indian Veterinary Journal* **71**: 892-96.

Lathwal, S. S., Tomar, S. S., Verma, G. S., and Malik, R. K. 1993. Factors effecting replacement rate in herd of Red Sindhi cows. *Indian Journal of Dairy Science* **46** (8): 349.

Mukharjee, K. and Tomar, S.S. 1996. Genetic analysis of selective value and its components in herd of Brown Swiss. *Indian Journal of Animal Science* **66** (7): 738-41.

Mukharjee, K. and Tomar, S. S. 1997. Genetic of female calf losses upto maturity and replacement rate in crossbred cattle. *Indian Journal of Dairy Science* **50** (6): 473-76.

Snedecor, G. W. and Cochran 1968. Statistical methods. 6th Edn., Oxford and IBH Publication, New Delhi.

Tomar, S. S. and Basu, S.W. 1981. Genetic study on life time reproductive traits in murrah buffaloes. *Indian Journal of Dairy Science* **34:** 195-98.

Tomar, S. S. and Ram, R. C. 1992. Inheritance of life time calf crop in a herd of murrah buffaloes. *Indian Veterinary Journal* **69:** 233-35.

Tomar, S. S. and Rawal, S. C. 1994. Replacement rate in Sahiwal herd. *Indian Veterinary Journal* **71:** 35-38.

Tomar, S. S. and Verma, G. S. 1988a. Genetic and non genetic variations in components of replacement rate in Tharparkar cattle. *Indian Journal of Dairy Science* **41:** 94-100.

Tomar, S. S. and Verma, G. S. 1988b. Genetic and non genetic variations in components of replacement rate in Karan Fries cattle. *Indian Journal of Animal Science* **38:** 1204-08.

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ECONOMIC IMPACT ANALYSIS OF WEATHER BASED AGROMET ADVISORIES ON CROPS UNDER CLIMATE CHANGE SCENARIO

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ABSTRACT

Crop yield is a function of several factors such as weather, soil type, its nutrients status, moisture, management practices and other available inputs. Weather significantly affects nearly every phase of agricultural activity from the preparatory tillage to harvesting, routine agricultural operation to plant protection measure and storage. Success or failure of farming is therefore intimately related to the prevailing weather conditions. Agricultural operations can be proper managed according to weather forecast which can help in optimum utilization of scarce resources and in turn maximize farm yield and minimize the farm losses. It is not possible to completely overcome all the production losses, but timely and accurate information of weather forecast is a boon to minimize production losses to some extent by making adjustments to intercultural operations and in increasing the B:C: ratio. Information of weather conditions in advance helps farmers to go for suitable management practices. Weather forecast and weather based agromet advisories are very useful in terms of maximizing production and economic returns to the farmers. Therefore, field experiments was conducted during rabi and kharif season of 2012 and 2013 at Rajasthan Agricultural Research Institute, Durgapura, Jaipur to study the economic impact of weather based agromet advisories on crops under climate change scenario. Field experiment comprises of use of agromet advisory services (AAS) and non-use of agromet advisory services (non AAS) in mustard and gram in rabi season and in cowpea and clusterbean in kharif seasons. Results of these experiments revealed that under use of agromet advisory services (AAS), the input cost is reduced and the net profit increased as compared to the non AAS in all the four crops. This economic benefit is attributed to timely and economic management of scarce resources in crops according to weather forecast based agromet advisory. Therefore it can be concluded that the application of weather forecast based agromet advisory bulletin is an important and useful tool for enhancing the production and overall farm income.

INTRODUCTION

Atmospheric and environmental conditions of soil are known to influence the growth and development of crop plants. Weather is one of the key components influencing agricultural production and productivity. Success or failure of farming is therefore intimately related to the prevailing weather conditions. Studies indicate that weather during cropping season strongly influences every phase of growth and development of the crop plants and it accounts for two thirds (67%) of the variation in productivity. Delay in the onset of monsoon, droughts, heavy rains, floods, hot and cold winds and frost etc. are the major factors affecting the crop development and growth and finally to the quality and quantity of the production. But all these extreme weather events can not be controlled. Only losses due to these extreme weather events can be minimized by adopting timely and proper crop management best suited to the anticipated climatic conditions. All the management practices starting from selection of crops, varieties, sowing, fertilizer application, irrigation scheduling, weeding, time of weedicide, herbicide and pesticides spray etc can be effectively managed according to the weather forecasts. Weather forecast based advisories minimizes the cost of cultivation by increasing efficiency in the use of scarce resources like water, labor and energy and finally increase agriculture production in terms of quality and quantity. In India, location specific weather forecast (five days in advance) is issued by National Centre for Medium Range Weather Forecast (Rathore *et al.*, 2001). Stigter (2006) reported agrometeorological services in various parts of the world under conditions of a

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changing climate. Vogel *et. al*., (2006) studied and examined the effectiveness of seasonal climate forecasts and regional climate-risk management strategies. Stigter (2007) proposed conceptual framework of basic agrometeorological science to agrometeorological services and information for agricultural decision makers. The primary objective of this study was to study the economic impact of weather based agromet advisories on crops under climate change scenario.

RESEARCH METHODOLOGY

Field experiments were carried out at research farm of Rajasthan Agricultural Research Institute, Durgapura, Jaipur (Rajasthan) during kharif 2013 and rabi 2013. Durgapura is situated in the eastern part of Rajasthan and lies between $26^0$51' North latitude and $75^0$47'east longitude and at an elevation of 390 m. It falls under semi arid climatic conditions, which is characterized by the features of hot dry summers and cool dry winters. The annual rainfall ranges from 500-600 mm. The rainfall of the locality is often erratic and ill-distributed along with an occasional long dry spells or frequent heavy rainy days during rainy season. The mean daily maximum temperature ranges from 22.0 to 40.6 ^{0}C and daily minimum temperature ranges from 8.3 ^{0}C to 27.3 ^{0}C. The relative humidity varies from season to season. It ranges between 80 to 95% during rainy season, which goes upto 100% and 20 to 30% during winter and summer seasons, respectively. The soil type of the experimental field was loamy sand with sand (87.7 %), silt (5.6%), clay (7.7%), 8.3 pH, 0.24% organic carbon and 143.3, 33.0, and 223.6 kg/ha available N, P_2O_5 and K_2O respectively. Cowpea and clusterbean were grown in the kharif season of 2013 and mustard and gram were grown in the rabi season of 2013. The present investigation for each crop was comprised of 2 treatment combinations consisting with resource management as per AAS and other as Non- AAS treatment . The experiments were laid out in a randomized block design with four replications. In AAS treatment all the cultural operations and selection of cultivar was done as per AAS bulletin. In Non-AAS treatment, all the cultural operations were done as per farmers practice. The Gramin Krishi Mausam Seva (formerly, Integrated Agromet Advisory Services) is located in the Division of Agronomy, Rajasthan Agricultural Research Institute, Durgapura, Jaipur (Rajasthan). Four districts (Ajmer, Dausa, Tonk and Jaipur) are covered under Jaipur centre. India Meteorological Department (IMD), New Delhi provides district wise weather forecast (five days in advance) twice a week i. e. on every Tuesday and Friday for rainfall, maximum and minimum temperature, cloud cover, wind speed, wind direction, maximum and minimum humidity. After receiving the weather forecast, the scientists from various disciplines meet and the agro advisory bulletin containing summary of previous week's weather, deviation of weather from the normal value, weather forecast data for the next five days, and crop specific advisory are prepared in English as well as in local language for each district. These agro advisory bulletin are uploaded on the IMD website (www.imdagrimet.gov.in) in both English and local language. The district wise agro advisory bulletins from all over India are complied for preparation of state and national level. Bulletins are regularly disseminated to the end users (farmers) on real time basis through electronic, print and mass media, Govt. agencies, KVKs, NGOs, ATMA Project, Web portal, Radio and Television, Farmer portal, SMS, RARI website (www.raridurgapura.org) and by different extension agencies.

RESULTS AND DISCUSSION

Results revealed that in the weather forecast based agromet advisory adopted cowpea crop and clusterbean crop, there was total input benefit of Rs. 2363.5 and Rs. 5074.5 per hectare and the yield advantage were 302.0 kg/ha and 1.69 kg/ha respectively (Table 1& 2). The total benefit in the weather forecast based agromet advisory adopted cowpea crop and clusterbean crop were Rs. 12383.0 and Rs. 12342.0 respectively as compared to the non AAS treatment.

The weather forecast based agromet advisory adopted mustard crop and chickpea crop, there was total input benefit of Rs. 1349.3 and Rs. 4377.0 per hectare and the yield advantage were 380.0 kg/ha and 139.0 kg/ha respectively (Table 3 & 4). The total benefit in these crops was Rs. 13129.3 and Rs. 12309.2 respectively as compared to the non AAS treatment. Higher net returns of AAS adopted treatments over

Table 1. Resource management through AAS in cowpea for maximization of yield and returns.

Treatment	Land preparation	Sowing	Seed	Fertilizer	Insecticide/ pesticide/ herbicide	Harvesting/ threshing	Total input benefit	Yield (kg/ha)	Net return	B:C ratio
Non-AAS	3500.0	1500.0	2000.0	2520.0	2522.0	2400	14442.0	708.0	11754.0	1.87
AAS	3500.0	1500.0	1600.0	1576.1	1502.4	2400	12078.5	1010.0	24137.0	3.04
Net benefit	-	-	400.0	943.9	1019.60	-	2363.5	302.0	12383.0	

Table 2. Resource management through AAS in clusterbean for maximization of yield and returns.

Treatment	Land preparation	Sowing	Seed	Fertilizer	Insecticide/ pesticide/ herbicide	Irrigation	Harvesting/ threshing	Total input benefit	Yield (kg/ha)	Net return	B:C ratio
Non-AAS	4100.0	1500.0	1600.0	2520.0	3340.0	1600.0	4150.0	18810.0	11.56	30898.0	2.64
AAS	3500.0	1500.0	1280.0	1576.1	1729.4	-	4150.0	13735.5	13.25	43240.0	4.15
Net benefit	600.0	-	320.0	943.9	1610.6	1600.0	-	5074.5	1.69	12342.0	

Table 3. Resource management through AAS in mustard for maximization of yield and returns.

Treatment	Land preparation	Sowing	Seed	Fertilizer	Insecticide/ pesticide/ herbicide	Irrigation	Harvesting/ threshing	Total input benefit	Yield (kg/ha)	Net return	B:C ratio
Non-AAS	4500.0	1500.0	325.0	2782.2	1308.0	1600.0	4150.0	16165.2	1320.0	24754.8	2.53
AAS	4000.0	1500.0	107.5	2104.4	1354.0	1600.0	4150.0	14815.9	1700.0	37884.1	3.56
Net benefit	500.0	-	217.5	677.8	-46.0	-	-	1349.3	380.0	13129.3	

Table 4. Resource management through AAS in chickpea for maximization of yield and returns.

Treatment	Land preparation	Sowing	Seed	Fertilizer	Insecticide/ pesticide/ herbicide	Irrigation	Harvesting/ threshing	Total input benefit	Yield (kg/ha)	Net return	B:C ratio
Non-AAS	3000.0	1500.0	4320.0	2520.0	8086.3	2400.0	4150.0	25976.3	1070.0	5053.8	1.19
AAS	3000.0	1500.0	3600.0	1755.5	5993.8	1600.0	4150.0	21599.3	1209.0	17363.0	1.98
Net benefit	-	-	720.0	764.5	2092.5	800.0	-	4377.0	139.0	12309.2	

non-AAS treatments can be due to optimum, timely and judicious use of inputs, following weather based management practices like timely selection of suitable varieties, land preparation, timely sowing, use of recommended seed rate, seed treatment, timely application of irrigation, weeding, harvesting and timely management of pests and diseases as per weather based agromet advisory. Similar findings were also reported by Vashisth *et. al* (2013) in wheat, carrot and rice.

CONCLUSION

It can be concluded that weather forecast based agromet advisory bulletin is a very useful tool for enhancing the crop production and productivity and farm income.

REFERENCES

Rathore, L. S., Gupta, Akhilesh and K. K Singh, 2001. Medium range weather forecasting and agricultural production. *J. Agric. Physics* **1**(1): 43-45.

Stigter, C. J., 2007. From basic agrometeorological science to agrometeorological services and information for agricultural decision makers: a simple diagnostic and conceptual framework. Guest editorial. *Agric. For. Meteorol* **142**: 91-95.

Stigter, C. J. 2006. Agrometeorological services in various parts of the world, under conditions of a changing climate. Austin Bourke Memorial Lecture, Dublin. Extended Abstract on the INSAM web site (www.agrometeorology.org) under "Accounts of operational agrometeorology".

Vashisth, A, Singh, R, Das, D. K. and Baloda, R. 2013. Weather Based Agromet Advisories for Enhancing the Production and Income of the Farmers under Changing Climate Scenario. *Int. J. Agric. Food Sci. Tech.* **4**(9): 847-850.

Vogel, C. and K. O'Brien, 2006. Who can eat information? Examining the effectiveness of seasonal climate forecasts and regional climate-risk management strategies. *Climate Research*, **33**: 111-122.

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LAMB REARING AND MANAGEMENT PRACTICES OF SHEEP FOLLOWED BY SHEPHERDS IN SONADI BREEDING TRACTS

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ABSTRACT

The study with respect to lamb rearing and management practices of sheep in four districts of southern Rajasthan i.e. Udaipur, Chittorgarh, Rajsamand and Bhilwara from breeding tract of Sonadi sheep were conducted. Total 4 tehsils in each district and 5 villages in each tehsils were selected for complete enumeration. Finally 450 shepherds were selected to collect the information related to lamb rearing and management practices of sheep. Newly born lamb is highly susceptible to various diseases and environmental stress. Feeding of Colostrum within 1-1½ hours was in practice. It provides stamina, vigor and immunity against diseases. The overall 38.9% shepherd maintained more than 40 sheep in the breeding tract. More than 68 % of households in Rajsamand district maintained low to medium flock size. On other hand 58.3% households of Udaipur district maintained large flock size (> 40). The overall average sheep holding was 51.5 sheep in Udaipur district, which was significantly higher than Chittorgarh (44.8), Rajsamand (36.8) and Bhilwara (37.8) districts. The wool production ranged from 200-400 gm per adult unit per shearing. Men in 88.9% cases performed grazing while women and children did only in 8.7 and 2.4%, respectively. Men in 51.6% families performed the duty of sale of milk and women in 48.4% households. The involvement of men and children in care of animals at home and care of sick animals were 73.3 and 94.7 and 4.9 and 0.6% families.

INTRODUCTION

Sheep is an important species of livestock in arid and semi arid part of Rajasthan as it provides gainful employment and income to large rural as well as poor masses. It contributes to the farm households not only by acting as a source of livelihood and nutritional security, but also as a moving asset, which can be liquidated at times of crises within a short time. Most of the Indian sheep breeds are of dual purpose- both for mutton and wool. It is necessary to improve the production and productivity of sheep which will not be possible without knowledge with respect to lamb rearing and management practices followed by shepherds in Sonadi breeding tracts. Hence, the present investigation was carried out to study the lamb rearing and management practices of sheep followed by shepherds in Sonadi breeding tract.

RESEARCH METHODOLOGY

The major breeding tract of Sonadi sheep consist of Udaipur, Chittorgarh, Rajsamand and Dungurpur districts of Rajasthan while the minor breeding tract consist of Bhilwara district of Rajasthan and part of Gujarat (Acharya, 1982). Three districts namely Udaipur, Rajsamand and Chittorgarh were selected from major and Bhilwara from minor breeding tract. For selection of tehsils within districts and villages within tehsils, the two stage stratified sampling procedure was adopted. Total 4 tehsils in each district and 5 villages in each tehsils were selected for complete enumeration. Finally 450 shepherds were selected to collect the information with respect to demographical and geographical distribution as well as lamb rearing and management practices of sheep followed by shepherds in Sonadi breeding tract in the ad-hoc project entitled "Performance evaluation and characterization of Sonadi sheep in their native tract". Data were tabulated and analysed statistically (Snedecor and Cochran, 1997).

RESULTS AND DISCUSSION

Lamb rearing practices:-The lamb is foundation stock of future flock and good lamb are raised and not purchased. The quality of flock depends on raising the newly born lambs produced from best ewe. The future productivity will depends upon the way it is reared during early age. Newly born lamb is

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highly susceptible to various diseases and environmental stress. Therefore, their raising is difficult task. The mortality between 0-3 months of age was as high as 65%. It has been established that the surest way of overcoming mortality during early age is through a package of pre, peri and post natal management practices including proper postpartum feeding of dams and avoidance of the breeding of underweight ewe. In fact due to poor economic conditions and regular draughts, farmers in the area have not offered pre and post partum feeding resulting production of underweight lambs.

Feeding of Colostrum within 1-1½ hours was in practice. Such practices are reported earlier also Thiruvenkadan *et al.,* (2007). Due to misconception first few strips of Colostrum are not used for feeding to newly born lamb by 45% farmers but it is more beneficial. Colostrum is a "Boon" to newly born lamb. It provides stamina, vigor and immunity against diseases. Therefore, farmers must be educated to feed the colostrums to young lamb at the earliest possible, which reduce mortality in lambs. The milk production of Sonadi sheep in the area ranged between 100-600 gm/day. Some lamb remains under feeding because no extra feeding was in the practice. Regular deworming was not followed during young stage. Improved practices like cutting of naval with disinfected knife and applying antiseptic sealing of naval cord, cleaning the mucus of pulegm from mouth and nostrils of lamb with smooth and dry cloth after birth were not at all adopted by farmers in the area and allowed the dam to lick the lamb at the time of lambing.

Seventy five per cent households maintained one breeding Ram while remaining 25% maintained 2 or more breeding Rams due to higher flock size i.e. more than 50 adult sheep. The households surveyed were classified according to flock size of sheep and the results are presented in Table-1. The three categories low (up to 20), medium (21-40) and large (>41) were formed. There was unequal distribution of shepherds according to flock size within districts. Maximum at 29.7% households of Rajsamand district maintained 20 sheep which is closely followed by Bhilwara (24.2%), Chittorgarh (15.8%) and Udaipur (8.3%) with overall of 21.3%. Under medium category the households ranged between 33.4% at Udaipur to 46.0% at Chittorgarh district with the overall of 39.8%. Maximum at 74.9% households in Udaipur district maintained large flock (>41) with minimum at 8.8% flock in Rajsamand district. The overall 38.9% shepherd maintained more than 40 sheep in the breeding tract. The results indicated that the more number at 68.2% of households in Rajsamand district maintained low to medium flock size due to day to day decreasing grazing area under marble industry. On the contrary, 58.3 % households of Udaipur district maintained large flock size (> 40) which was due to availability of sufficient grazing area.

Table 1. Distribution of households according to flock size

Districts	Flock size		
	Small (up to 20)	**Medium (21-40)**	**Large (>41)**
Udaipur	6 (8.3)	24 (33.4)	42 (58.3)
Chittorgarh	12(15.8)	35 (46.0)	29 (38.2)
Rajsamand	27(29.7)	35 (38.5)	29 (8.8)
Bhilwara	51(24.2)	85 (40.3)	75 (35.5)
Overall	**96(21.3)**	**179 (39.8)**	**175 (38.9)**

Figures in parenthesis indicates percentage

Sheep holding:-Average sheep unit maintained by farmers surveyed in different districts are presented in Table 2. There was significant difference of sheep holding per family across different breed of sheep as well as districts. A total of 51.5 sheep units were maintained by the farmers in Udaipur district, which was significantly higher than Chittorgarh (44.8), Rajsamand (36.8) and Bhilwara (37.8) districts. The differences between Chittorgarh on one hand and Rajsamand and Bhilwara on the other were also significant. Among the available sheep, Sonadi was significantly higher in Udaipur and Rajsamand districts while other breeds in Chittorgarh and Bhilwara district.

Searing and wool production:- In general the searing is done thrice a year i.e. in the month of March, July and October. The wool production ranged from 200-400 gm per adult unit per shearing. Similar findings also reported by Suresh *et al*. (2008). The quality of wool of Sonadi sheep is course carpet type hence the rate ranged between Rs 20-40 per kg.

Generally the wool was sold to the middlemen.

Table 2. Average sheep holding in Sonadi breeding tract

Districts	Breed of Sheep		Total Sheep
	Sonadi	Other breeds	
Udaipur	42.5^{dz}	9.0^{ay}	51.5^{c}
Chittorgarh	42.5^{by}	31.8^{cz}	44.8^{b}
Rajsamand	19.1^{cz}	17.7^{by}	36.8^{a}
Bhilwara	8.0^{ay}	29.8^{cz}	37.8^{a}
Overall	16.6	24.4	41.10

Mean with different superscripts differed significantly within column (a-d) and within row (y-z)

Management operations:-Use of surplus family member is one of the important components of livestock rearing in India. Although the work is carried out jointly but survey was conducted with respect to distribution of managemental operations like grazing, decision for sale of animal and sale of milk, care of animal at home and care of sick animals and pooled results are presented in Table-3. There was unequal distribution of respondents with respect to managemental practices performed by men, women and children. The results indicated that men in 88.9% cases mostly did grazing while women and children did only 8.7 and 2.4%, respectively. Decision of sale of animal is an important aspect hence in 98.2% families; the decision was taken by men while women take decision in only 1.8% cases. Men in 51.6% families performed the duty of sale of milk and women in 48.4% households. These results are in close agreement with findings of Lavania *et al*.(2006)

The involvement of women in care of animals at home and care of sick animals was very low at 21.8 and 4.7% families. The respective values for men and children were 73.3 and 94.7 and 4.9 and 0.6% families. Similar observations were reported by Kumar (2004) and Lavania *et. al.*, (2006)

Cleaning of udder and utensils for milking:-All the households surveyed cleaned the milking utensils before milking with clean water and ash but use of detergent was very rare. The washing of udder before milking is not in practice in the area.

Table3. Managemental operations

Operations	Men	Women	Children
Grazing	400 (88.9)	39 (8.7)	11 (2.4)
Decision for sale of animal	442 (98.2)	8 (1.8)	0 (0.0)
Sale of milk	232 (51.6)	218 (48.4)	0 (0.0)
Care of animal at home	330 (73.3)	98 (21.8)	22 (4.9)
Care of sick animal	426 (94.7)	21 (4.7)	3 (0.6)

REFERENCES

Acharya, R.M. 1982. Sheep and Goat breed of India. In: FAO (UN). Animal Production and health paper, pp. 1-2 and 25-27 Rome.

Kumar, Dinesh. 2004. Role of women in sheep production in Rajasthan. *Indian Journal of Small Ruminants* **10**: 176-179.

Lavania, Pankaj, Singh, P.K. and Pathodiya, O.P. 2006. Invlovement of women and children in goat keeping in mewar region of Rajasthan. *Indian Journal of Small Ruminants* **12**: 173-175.

Suresh, A., Gupta, D.C. and Mann, J.S. 2008. Farmers management practices and economics of sheep farming in eastern semi-arid region of Rajasthan. *Indian Journal of Small Ruminants* **14**: 236-242.

Thiruvenkadan, A.K., Purushothaman, M.R., Karunanithi, K and Gurmej Singh. 2007. Husbandry practices of Mecheri sheep in its breeding tract of Tamilnadu. *Indian Journal of Animal Sciences* **77**: 489-494.

Snedecor, G.W. and Cochran, W.G. 1997. *Statistical Methods. 6th Edn.* Oxford and IBH publishing Co., Calcutta.

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