Raj. J. Extn. Edu. 17 & 18 : 87-91, 2009 & 2010

LIVELIHOOD SECURITY OF FARMERS THROUGH ADOPTION OF PIGEON-PEA CULTIVATION TECHNOLOGY IN UDAIPUR DISTRICT OF RAJASTHAN

Upma Vashishtha[*], F.L. Sharma[**] and H.K.Jain[***]

ABSTRACT

In Rajasthan pigeon-pea is mainly grown in Alwar, Sawai Madhopur, Banswara, Dungarpur, Udaipur and Bhilwara districts. Udaipur is major pigeon-pea growing district of the state. The crop is grown in 3646 ha area with production of 3280 metric tonnes in Udaipur district. The climatic conditions of the districts is most suitable for cultivation of pigeon-pea. Keeping these facts in view the present study was conducted in Udaipur district of Rajasthan. There are total eight tribal tehsils in Udaipur district of Rajasthan, out of which two tehsils namely Jhadol and Kotra has been selected on the basis of maximum area under pigeon-pea cultivation. Four villages from each identified tehsil were selected on the basis of maximum area under pigeon-pea cultivation. For selection of respondents, 160 pigeon-pea growers (80 tribal and 80 non-tribal farmers) 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 contact method.

The findings indicated that 56.25 per cent of the total respondents adopted the pigeon-pea production technology to medium level whereas, 26.88 and 16.87 per cent of total respondents adopted pigeon-pea production technology to low and high level respectively. It was also observed that the extent of adoption in tribal farmers was 30.83 to 90.4 per cent, while in case of non-tribal farmers the extent of adoption was observed to he 32.50 to 92.50 per cent in all improved pigeon-pea cultivation practices. The study further indicated that there was significant difference between tribal and non-tribal farmers with regard to adoption of pigeon-pea production practices. It was found that adoption of pigeon pea cultivation technology contributes significant role in livelihood security of farmers in tribal area of Udaipur district of Rajasthan.

INTRODUCTION

Pigeon-pea (*Cajanus cajan* L.) is grown over the world, mostly in tropical and sub-tropical countries for grains, green manuring, fodder and forage as the sole crop, intercrop, mixed crop and in sequential cropping systems. Pigeon-pea is cultivated in more than 25 tropical and sub-tropical countries. Among the major countries growing pigeon-pea, India ranks first with an area of about 3.61 million hectares with a total production of 2.70 million tonnes with an average productivity of 747 kg/ha. The major pigeon-pea producing states are Maharashtra, Uttar Pradesh, Karnataka, Gujarat and Andhra Pradesh which together accounts for 87 per cent of the area and 83.8 per cent of the production of the crop. In Rajasthan, pigeon-pea is cultivated in 20,000 hectares area with production about 13,000 metric tonnes. It is cultivated in almost all the districts of Rajasthan but the important pigeon-pea producing districts are Alwar, Sawai Madhopur, Banswara, Dungarpur, Udaipur and Bhilwara. Udaipur is one of the major pigeon-pea growing districts of the state with respect to considerable area 3646 hectares and production 3280 metric tonnes. The climatic conditions of the district are most suitable for cultivation of pigeon-pea but the productivity of this crop is far below than desired level. Thus, there is an urgent need to conduct a systematic study to assess the adoption of pigeon pea technology the farmers. Keeping the above facts in view the present study entitled "Livelihood security of farmers through adoption of pigeon-pea production technology in Udaipur district of Rajasthan" was undertaken.

* Ph.D. Scholar, Department of Extension Education, RCA, Udaipur.
** Associate Professor, Department of Extension Education, RCA, Udaipur.
*** Associate Professor, Department of Agricultural Statistics & Computer Application, RCA, Udaipur.

RESEARCH METHODOLOGY

The present study was conducted in Udaipur district of Rajasthan. There are total eight tribal tehsils in Udaipur district of Rajasthan, out of which two tehsils namely Jhadol and Kotra were selected on the basis of maximum area under pigeon-pea cultivation. Four villages from each identified tehsil were selected on the basis of maximum area under pigeon-pea cultivation. For selection of respondents, 160 pigeon-pea growers (80 tribal and 80 non-tribal farmers) 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 contact method.

RESULTS AND DISCUSSION

To get an overall view of adoption level, the respondents were divided into three groups *viz.*, (i) low adoption (≤ 32), (ii) medium adoption group (33 to 39) and (ii) high adoption group (> 39). The groups were based on the calculated mean and SD of the adoption scores obtained by the respondents. The results of the same are presented in Table 1.

Table 1. Distribution of respondents on the basis of their level of adoption of improved pigeon-pea production technology

(n=160)

S. No.	Level of adoption	Tribal farmers		Non-tribal farmers		Total	
		F	%	F	%	F	%
1.	Low (≤ 32)	30	37.50	13	16.25	43	26.38
2.	Medium (33 to 39)	42	52.50	48	60.00	90	56.25
3.	High (> 39)	8	10.00	19	23.75	27	16.87
	Total	80	100	80	100	160	100

F = Frequency, % = Per cent

Data presented in Table 1 depict that majority (56.25%) of the total respondents were in the medium adoption group, whereas, 26.88 per cent respondents were in low adoption group and remaining 16.87 per cent pigeon-pea growers to be observed in the high level of adoption about pigeon-pea production technology.

Further, among the categories of pigeon-pea growers it was observed in high adoption group, 10.00 per cent respondents were found to be from tribal farmers category and 23.75 per cent of respondents from non-tribal farmers category. In the medium adoption group, 52.50 per cent respondents from tribal farmers category and 60.00 per cent respondents from non-tribal farmers category whereas, in the low adoption group, 37.50 per cent respondents were from tribal farmers group and 16.25 per cent from non-tribal farmers category. From the above results it could be concluded that 83.75 per cent respondents from non-tribal category were to be observed either from medium or from high adoption group, whereas 90.00 per cent tribal farmers adopted pigeon-pea technology medium to lower level in the study area.

These findings are similar with the findings of Bareth (1991), who reported that majority (69.27%) of gram growers were in medium adoption group and 17.19 per cent respondents in the high adoption group, while only 13.54 per cent were in the group of poor adopters.

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

Table 2 depicts that the adoption regarding high yielding varieties was 42.08 and 57.50 per cent among tribal and non-tribal farmers respectively. It was found that majority of the respondents were sowing BDN-2, ICPL-151, G-100 varieties of pigeon-pea in the study area. Likewise, the tribal and non-tribal pigeon-pea growers had extent of adoption 43.33 and 44.58 per cent with respect to soil treatment respectively. Further analysis of table shows that adoption in tribal and non-tribal category of respondents about recommended time of sowing was 90.4 and 92.5 per cent respectively. The above practice was ranked first by both the categories of respondents. It means most of the farmers in the

study area were following the recommended time of sowing.

The study of table further reveals that the extent of adoption about useful method of sowing was 47.08 and 48.75 MPS among tribal and non-tribal pigeon-pea growers respectively and ranked eleventh and twelfth by the tribal and non-tribal farmers. Recommended seed rate was possessed 87.08 and 87.91 per cent adoption in tribal and non-tribal farmers respectively and ranked second by both the category of respondents.

Table 2. Extent of adoption of production practices by pigeon-pea growers

(n = 160)

S. No.	Practices	Tribal farmers		Non-tribal farmers		Total	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Adoption of high yielding varieties	42.08	14	57.50	8	49.79	11
2.	Recommended soil treatment	43.33	12	44.58	13	43.95	13
3.	Recommended time of sowing	90.40	1	92.50	1	91.45	1
4.	Adoption of useful method of sowing	47.08	11	48.75	12	47.91	12
5.	Using recommended seed rate	87.08	2	87.91	2	87.49	2
6.	Recommended seed treatment	52.91	9	53.33	10	53.12	9
7.	Inoculation of seed with *Rhizobium* culture	56.66	8	55.00	9	55.83	8
8.	Maintaining recommended spacing	80.41	3	82.08	3	81.24	3
9.	Recommended depth of sowing	74.58	4	67.91	5	71.24	4
10.	Applying FYM as per recommended by scientists	49.58	10	50.00	11	49.80	10
11.	Using nitrogenous fertilizers	30.83	17	32.50	17	63.33	17
12.	Applying phosphatic fertilizers	62.08	7	63.75	7	62.91	7
13.	Intercultural operations	63.33	6	65.41	6	64.37	6
14.	Irrigation management	67.08	5	75.42	4	71.25	5
15.	Using recommended chemicals for disease control	37.91	15	40.41	15	39.16	15
16.	Using recommended insecticides for insect pest control	34.58	16	37.08	16	35.83	16
17.	Recommended method and time of harvesting	42.90	13	44.16	14	43.53	14

MPS = Mean per cent score
** Significant at 1 per cent level.

$r_s = 0.94^*$

It was found that extent of adoption in both the categories of respondents about recommended seed treatment was above 50 per cent. This practice was ranked ninth by tribal and tenth by non-tribal respondents. The adoption about inoculation of seed with *Rhizobium* culture was obtained to be 56.66 and 55.00 per cent in tribal and non-tribal category of respondents, respectively. It was also found that recommended plant to plant and row to row spacing of pigeon-pea was 80.41 and 82.08 per cent in tribal and non-tribal farmers respectively. This aspect was ranked third by both the categories of respondents.

Further analysis of table indicates that adoption regarding depth of sowing was 74.58 and 69.91 MPS by tribal and non-tribal respondents. It was found that nearly 50 per cent farmers were applying FYM as per recommended by scientists for cultivation of pigeon-pea. Regarding adoption of nitrogenous fertilizers 30.83 per cent tribal and 32.50 per cent non-tribal farmers were recorded. On the other hand application of phosphatic fertilizers, the extent of adoption was 62.08 and 63.75 per cent among tribal and non-tribal farmers respectively. It was found that the farmers were using more of phosphatic fertilizers like DAP, than nitrogenous

fertilizers in the study area. Regarding inter-cultural operations, the extent of adoption was 63.33 and 65.41 per cent in tribal and non-tribal farmers respectively.

The adoption about irrigation management practice was 67.08 per cent in tribal farmers and 75.42 per cent in non-tribal farmers and ranked fifth and fourth by tribal and non-tribal farmers respectively.

The extent of adoption about recommended chemicals for disease control was 37.91 and 40.41 per cent in the tribal and non-tribal farmers respectively. On the other hand, application of recommended insecticides for insect pest control, the extent of adoption was 34.58 and 37.08 per cent among tribal and non-tribal farmers. The extent of adoption of disease and insect pest control was observed poor in the study area. The reason behind less adoption was they had less knowledge about scientific insect-pest and disease control techniques as well as various insecticides and pesticides available in the market. It was further noted that extent of adoption about method and time of harvesting was 42.90 and 44.16 per cent in case of tribal and non-tribal farmers respectively.

From the above discussion, it could be concluded that the extent of adoption in tribal farmers was 30.83 to 90.4 per cent, while in case of non-tribal farmers the extent of adoption was 32.5 to 92.5 per cent in all the improved pigeon-pea cultivation practices. Further, it was noted that non-tribal farmers had more extent of adoption than tribal farmers about almost all the pigeon-pea cultivation practices, still there is a gap in the adoption of improved pigeon-pea production technology. To improve the extent of adoption in both the categories of farmers intensive training programmes should be organized timely and location specific in the study area. In the recent years there were many NGOs (non-government organizations) and government organization running their programmes for the betterment of the people but the expected results were not visible, yet in the study area.

The present findings are in line with the findings of Singh (1999) who revealed that farmers had very poor adoption of improved practices of pigeon-pea i.e., inoculation of seed with *Rhizobium* culture, seed treatment, soil treatment, plant protection measures, high yielding varieties and fertilizer application, whereas, they had good adoption regarding time of sowing, seed rate, plant spacing and weed management in pigeon-pea.

Comparison of Adoption Between Tribal and Non-tribal Farmers with Respect to Improved Pigeon-pea Production Technology

To find out the variation or similarity in the adoption of tribal and non-tribal respondents about improved pigeon-pea technology, 'Z' test was applied. The results were presented in Table 3.

Table 3 indicates that calculated 'Z' value was greater than its tabulated value at 1 per cent level of significance. Further analysis of table shows that mean score value of non-tribal farmers in most of the practices is more than tribal farmers, which clearly indicates that non-tribal farmers had more adoption level than the tribal farmers about improved pigeon-pea production technology. It might be due to the fact that non-tribal farmers possessed more knowledge than tribal farmers about pigeon-pea production technology.

Table 3. Comparison of adoption between tribal and non-tribal farmers about improved pigeon-pea cultivation practices

S. No.	Category of respondents	Mean	±S.D.	Difference	'Z' value
1.	Tribal farmers	31.2	3.6	8.8	17.56**
2.	Non-tribal farmers	40.0	2.68		

** Significant at 1 per cent level.

The findings are in tune with the results of Dangi and Poonia (1997), who reported that there was significant difference in the adoption of improved ginger cultivation practices between literate and illiterate farmers. The level of adoption was noted highest in the category of literate farmers. It may be on account of possession of high extent of knowledge by the farmers who are treated as literates in the present investigation.

CONCLUSION

From the above discussion, it could be concluded that 56.25 per cent of the total respondents adopted the pigeon-pea production technology to medium level whereas, 26.88 and 16.87 per cent of total respondents adopted pigeon-pea production technology to low and high level respectively. It was also observed that the extent of adoption in tribal farmers was 30.83 to 90.4 per cent, while in case of non-tribal farmers the extent of adoption was observed to be 32.50 to 92.50 per cent in all improved pigeon-pea cultivation practices. The study further indicated that there was significant difference between tribal and non-tribal farmers with regard to adoption of pigeon-pea production practices.

REFERENCES

Bareth, L.S. 2001. Technological constraints in adoption of improved pulse production technologies in agro-climatic zone II A and B of Rajasthan. Ph.D. thesis submitted to Rajasthan Agricultural University, Bikaner, Rajasthan.

Poonia, P.P. and Dangi, K.L. 1997. Adoption behaviour of ginger growers. *Maharashtra Journal of Extension Education,* 16:116-119.

Singh, H. 1999. A study on knowledge and adoption of improved cultivation practices of pigeon-pea (*Cajanus cajan* L.) by the farmers of Bagidora Tehsil in Banswara district, M.Sc. thesis submitted to Rajasthan Agricultural University, Bikaner, Rajasthan.

❐❐❐