



Research Article

Constraints faced by the farmers in adoption of cowpea production technology in arid zone of Rajasthan

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ARTICLE CHRONICLE :

Received:

21.09.2012;

Revised :

21.01.2013;

Accepted:

19.02.2013

SUMMARY : Present study was conducted in Western Zone of Rajasthan in Bikaner and Churu districts. A sample size of 316 farmers who were cultivating cowpea for last five years was drawn for the present investigation. The study highlighted that the majority of farmers had medium knowledge as well as medium level of adoption of cowpea production technology. The study further highlighted that majority of the respondents were not adopting the cowpea production technology to the fullest extent due to various reasons like weed control through herbicides is technically complex phenomenon, lack of knowledge about inoculation of seed through culture, sandy storm, high wind velocity and high temperature affect the growth of crop and productivity, 'lack of knowledge about recommended dose of fertilizers', 'lack of live saving irrigation facilities', 'lack of knowledge about seed treatment and their advantages', 'non- availability of fertilizers at peak season', 'compel to sell the produce soon after harvesting' and 'high cost of chemicals' were the main constraints perceived by the farmers.

How to cite this article : Singh, P., Lakhera, J.P., Sharma, K.C. and Mitharwal, B.S. (2013). Constraints faced by the farmers in adoption of cowpea production technology in arid zone of Rajasthan. *Agric. Update*, 8(1&2): 22-25.

KEY WORDS :

Adoption, Cowpea, Constraints, Peak season, Seed treatment

BACKGROUND AND OBJECTIVES

The exact statistics of acreage under cowpea in India is not available as the crop is predominantly grown in more than 1.5 million hectares. Thus, India supports around 10 per cent of the global acreage under cowpea. At present the global production of cowpea over around 4-5 million metric tons, thereby pitching the productivity around 321 kg per hectare in India, though the rough estimates put it around five to six quintal per hectare. Cowpea is the other important *Kharif* pulse in the Rajasthan. The productivity of this crop was low in comparison of potential yield 810 q/ha. However, the experimental yields of the improved genotypes have been reported to over around 13 q/ha. Thus, indicates that cowpea production technology have tremendous potential for high yield. Low in the zone due to poor knowledge as well as adoption of cowpea recommended production technology.

The fodder cowpea is rich source of protein to livestock also. It has immense potential for

sustainable agriculture in marginal lands and semi-arid regions of the country. The crop ability to survive under drought conditions enables it to produce green forage during lean periods of fodder availability. However, the crop is vulnerable to the attack of various insect pests particularly defoliators such as fleabeetles semi leopard and phadaka grasshopper and drought, heat, low fertility and the main abiotic hindrances in realizing attainable yield levels. This zone is endowed with harsh adverse climatic conditions with very limited irrigated water, erratic rains, fraziles ecosystem etc. under these conditions farming is a challenging task. Agricultural Research Stations, Bikaner has generated and recommended technologies for *Kharif* pulse crops to farmers for adoption. Efforts are being made to transfer of these technologies through different extension agencies. However, farmers are not using these recommended technologies to the fullest extent due to various reasons. Considering these, the present study was under taken with the specific objective to identify major constraints faced by the farmers in adoption of recommended production technology of

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cowpea.

RESOURCES AND METHODS

Rajasthan state comprises of ten agro-climatic zones and the Zone-Ic was selected purposely for the study. As this zone is comprised of three district, out of these, Bikaner and Churu districts were selected randomly. Fifty per cent Panchayat samities were selected randomly from the selected districts (total number of four Panchayat samities were selected from eight Panchayat samities). Ten per cent Gram Panchayats were selected from selected Panachayat samities and hence, 19 Gram Panchayats were also selected randomly. One village was randomly selected from each Gram Panchayat. A list of all the farmers who were growing cowpea crop for last 5 years was prepared from each selected village. From this list 40 per cent respondents were selected from the total cultivators of the selected villages on the basis of random sampling method. Thus, total sample of 316 respondents were selected for the study purpose. The information was collected from respondents with the help of structured interview schedule by personally interviewing the respondents. The knowledge and extent of adoption were measured by using rating scale which was developed by the investigator himself and responses of respondents have been reported against constraints encountered by them. The statistical tests like, frequency, percentage score, mean, standard deviation and rank order were used to analysed the data. The study was conducted during *Kharif* 2009.

OBSERVATIONS AND ANALYSIS

The observations of the present study as well as relevant analysis have been summarized under the following heads:

Knowledge and adoption level of cowpea growers:

Knowledge and adoption level of the respondents were measured and data have been presented in Table 1. It has been observed from the data in table that more than half of the respondents could be categorized as having medium knowledge level about cowpea production technology however, 21 per cent and 18 per cent respondents were possessing low and high knowledge level, respectively. Further, it is evident from the table that about 55 per cent of

the respondents were medium adopters. Whereas, 27.85 per cent and 16.45 per cent respondents were low and high adopters, respectively. It may be deduced from the above findings that majority of the respondents were possessing medium knowledge level about cowpea production technology and medium adopters of the technology. Similar findings have been reported by Sharma and Sharma (2008).

Constraints towards cowpea production technology:

The findings on the constraints faced by cowpea growers as perceived by the respondents related to production, technical know how, financial, storage, marketing and ecological is given in Table 2. The data reveal that the constraints a great majority of the respondents were not fully adopted the seed, weed management and nutrient management practices due to weed control through herbicides is technically complex phenomenon (89.25%, I rank) followed by lack of knowledge about inoculation of seed through culture (85.12%, II rank), sandy storm, high wind velocity and high temperature affect the growth of crop and productivity (83.23%, III rank) and lack of knowledge about seed treatment (81.02%, IV rank), respectively. However, about three fourth majority of the respondents were not being adoption due to lack of knowledge about recommended doses of fertilizers (79.11%, V rank), lack of live saving irrigation facilities (76.26%, VIth rank), lack of knowledge about advantages of seed treatment (75.0%, VII rank) and non- availability of fertilizers at peak season (74.05%, VIII rank). Whereas, more than three fifth majority of the respondents were not adopting the cowpea production technology due to lack of financial, marketing, storages practices and input availability *i.e.*, compel to sell the produce soon after harvest (68.35%, IX rank), high cost of chemicals (68.03%, X rank), lack of technical knowledge toward plant protection measures (65.18%, XI rank), low and erratic rainfall (64.87%, XII rank). Lack of knowledge about scientific storage (62.97%, XIII), inadequate capital (62.02%, XIV rank) and lack of motivation from training institutions (59.82%, XVI rank) non-availability of required chemical at local market (60.12%, XV rank), respectively. More than half of the respondents were not fully adopted the cowpea production technology due to various reasons, *viz.*, poor condition of farmers (57.27%, XVII rank), lack of suitable implements for application of fertilizers (55.06%, XVIII rank), lack of knowledge

Table 1: Distribution of cowpea growers according to their knowledge and adoption level (n= 316)

Sr. No.	Categories	Knowledge	Extent of adoption
1.	High	58 (18.35)	52 (16.45)
2.	Medium	189 (59.81)	176 (55.70)
3.	Low	69 (21.84)	88 (27.85)
4.	Mean score	30.52	34.42
5.	S.D. score	8.05	8.54

Figures in the parenthesis indicated percentage

Table 2 : Constraints faced by the farmers in adoption of recommended production technology of cowpea cultivation

Sr. No.	Constraints	No. of respondents	Percentage	Rank order
1.	Lack of knowledge about HYV seed and conviction	167	52.85	XIX
2.	High cost of seed	142	44.94	XXIV
3.	Adulteration in improved seed	104	32.91	XXX
4.	Lack of technical guidance	127	40.18	XXVI
5.	Low yield potential of prevalent varieties	92	29.11	IV
6.	Lack of knowledge about seed treatment	256	81.02	IV
7.	Lack of knowledge about advantages of seed treatment	237	75.00	VII
8.	High cost of chemical	158	50.00	XXI
9.	Lack of knowledge about inoculation of seed through culture	269	85.12	II
10.	Lack of live saving irrigation facilities	241	76.26	VI
11.	Lack of knowledge about recommended doses of fertilizers	250	79.11	V
12.	Non-availability of fertilizers at peak season	234	74.05	VIII
13.	High cost of fertilizers	160	50.64	XX
14.	Low and erratic rainfall	205	64.87	XII
15.	Lack of suitable implements for application of fertilizers	174	55.06	XVIII
16.	No importance of fertilizers	105	33.22	XXIX
17.	Weed control through herbicides is technically complex phenomenon	282	89.25	I
18.	Lack of technical knowledge towards plant protection measures	206	65.18	XI
19.	High cost of chemicals	215	68.03	X
20.	Non-availability of required chemical at local market	190	60.12	XVI
21.	Low productivity of cowpea	143	45.25	XXIII
22.	Non-availability of plant protection equipments	79	25.00	XXXII
23.	Lack of proper knowledge about grain pests	111	35.12	XXVIII
24.	Lack of knowledge about scientific storage	199	62.97	XIII
25.	Inadequate capital	190	62.02	XIV
26.	Compel to sell the produce soon after harvest	216	68.35	IX
27.	Non-availability of credit	136	43.03	XXV
28.	Poor condition of farmers	181	57.27	XVII
29.	Sandy storm, high wind velocity and high temperature affect the growth of crop and productivity	263	83.23	III
30.	labour charges are costly	152	48.10	XXII
31.	Lack of motivation from training institutions	189	59.82	XV
32.	Problem of transportation	124	39.24	XXVII

about HYV seed and conviction (52.85%,XIX rank), high cost of fertilizers (50.64%,XX rank), high cost of chemicals (50.32%,XIX rank), less than 50 per cent of the respondents were not adopting to the fullest extent due to some hindrances like, labour charges are costly, low productivity of cowpea, high cost of seed, non-availability of credit, lack of technical guidance and problem of transportation and accorded rank, XXII,XXIII,XXIV,XXV,XXVI and XXVII, respectively. Other constraints *i.e.* lack of proper knowledge about grain pests, no importance of fertilizers, adulteration in improved seed, low yield potential of prevalent varieties and non-availability of plant protection equipments were least perceived by the cowpea growers in the study area.

The findings are in line with the findings as reported by

Raje *et al.* (1994), Singh and chauhan (2001), Sharma *et al.* (2006), Sharma and Sharma (2008) and Verma and Yadav (2011).

Conclusion:

From the above explanation it can be concluded that the knowledge level and extent of adoption of cowpea growers were found dependent. It can be also concluded that majority of the respondents were perceived major constraints like, weed control through herbicides is technically complex phenomenon, lack of knowledge about inoculation of seed through culture, high wind velocity and high temperature affect the growth of crop and productivity, lack of knowledge about recommended dose, lack of technical knowledge towards plant protection measures, sold soon after harvesting, sandy

storm, high wind velocity and high temperature affect the growth of crop and productivity. Whereas, non-availability of plant protection equipments, low yield potential of prevalent varieties, adulteration in improved seed and no importance of fertilizers were least perceived by the cowpea growers.

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