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Improved Barley Production Technology Adoption by the farmers of Jaipur

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ABSTRACT

Barley (*Hordeum vulgare* L.) is an ancient cereal grain, which upon domestication has evolved from largely a food grain to a feed and malting grain. The present study was conducted in Jaipur by selecting a total sample of 102 barley growers. The personal profile and knowledge level of farmers was measured through an interview schedule prepared in consultation with the experts. The study concluded that majority of beneficiary (66.67%) and non-beneficiary (74.51%) had medium adoption about improved barley production technology. Both type of respondents (beneficiary and non-beneficiary) possessed maximum adoption regarding use of high yielding varieties of barley crop.

Key Words: Adoption index, Barley, Beneficiary, Farmers, Non-beneficiary.

INTRODUCTION

Barley (*Hordeum vulgare* L.) an important cereal, is globally ranked next to maize, wheat and rice both in acreage and production (FAO, 2017). The crop is considered as poor man's crop and better adaptable to problematic soil and marginal lands. It is not only useful for malting, feed and food purposes but also its b- glucans is helpful in lowering the risk of cardio-vascular diseases. Barley can grow in a wide range of environments than any other cereal, including extremes of latitude, longitude and high altitude. It is frequently being described as the most cosmopolitan of the crops and also considered, as poor man's crop because of its low input requirement and better adaptability to drought, salinity, alkalinity and marginal lands. Barley is an important *Rabi* cereal crop of Rajasthan and occupies about 2.74 lakh ha. area, which accounts for 8.23 per cent of the total *Rabi* cereals area of the state but contributed 7.46 per cent to total *Rabi* cereals production of the state. The average productivity of barley is 3324 kg/ha. which is low as compared to wheat (3698 kg/ha) and total *Rabi* cereals (3666 kg/ha) (Anonymous 2017-18). Farm level data on barley report stagnation in farmers yield in the recent years as measured under the best possible growing conditions and even some indications that average yields were hovering around 2500kg/ha and plateaued in many regions (ICAR-IIWBR 2017). Inter alia, yield gaps have been attributed to old varieties, production constraints, variations in management, site and inputs usage (Sendhil *et al,* 2014). The present study was undertaken to study adoption level of improved barley production technology by the farmers of Rajasthan.

MATERIALS AND METHODS

The present study was under taken in Jaipur district of Rajasthan consisting of 17 tehsils, out of

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Table 1. Adoption of beneficiary farmers. **(n=51)**

Sr. No.	Adoption category	Frequency	Percentage
1	Low (below 48.39 score)	08	15.68
2	Medium (from 48.39 to 56.63 score)	34	66.67
3	High (above 56.63 score)	09	17.65

Mean = 52.51, SD = 4.12

which Chomu tehsil was selected. All the 4 villages and 51 beneficiary respondents where the FLDs conducted by KVK, Chomu were seleted. Likewise, 4 villages namely Samod, Devthala, Bai ka bas and Dhobolai and 51 non - beneficiary farmers were also selected randomly and included in the study as control group. Thus, the total sample size of 102 respondents was formed consisting of 51 beneficiary and 51 non-beneficiary farmers. For research study, an interview schedule was constructed with the help of experts. The responses of respondents were recorded and filled in the interview schedule by the respondents themselves. Ten package of practices of barley production technology were included in the schedule. Some of the practices were further divided into sub practices. Finally, the adoption index was calculated by the following formula:

The mean and standard deviation of all the respondents adoption scores were computed for classifying the adoption in different categories. Based on the mean adoption score and standard deviation, the farmers were categorized under three adoption level categories, namely low, medium and high adoption level.

RESULTS AND DISCUSSION

Extent of adoption of beneficiary farmers about improved Barley production technology

The data (Table 1) revealed that majority of beneficiary farmers (66.67%) had medium adoption whereas 17.65 per cent and 15.68 per cent beneficiary farmers were having high and low adoption about improved barley production technology, respectively.The findings of the study were similar to the findings of Geengar (2006), Kumbhare and Singh (2011) and Kakkad *et al* (2019). The data regarding the extent of adoption of non-beneficiary farmers about improved barley production technology have been presented in Table 2.

The data (Table 2) revealed that majority of the non - beneficiary farmers (74.51%) had medium adoption whereas 13.73 per cent and 11.76 per cent non - beneficiary farmers were having low and high adoption about improved barley production technology, respectively. The findings of the study were in consistency with the findings of Kumbhare and Singh (2011) and Kakkad *et al* (2019).

Practice wise adoption of improved Barley production technology

The data (Table 3) showed that beneficiary farmers possessed high adoption about use of high yielding varieties with 84.31 MPS and ranked first,

Table 2. Adoption of non-beneficiary farmers. **(n=51)**

Sr. No.	Adoption category	Frequency	Percentage
1	Low (below 43.54 score)	07	13.73
2	Medium (from 43.54 to 49.60 score)	38	74.51
3	High (above 49.60 score)	06	11.76

Mean = 46.57, SD = 3.03

Table 3. Practice wise adoption of beneficiary and non-beneficiary farmers. (n=102)

Sr. No.	Package of practices	Beneficiary n_1-51		Non- beneficiary n_2-51	
		MPS	Rank	MPS	Rank
1	Use of high yielding varieties	84.31	I	72.55	I
2	Time of sowing	81.70	II	71.90	III
3	Seed rate and recommended spacing	80.23	III	72.39	II
4	Irrigation management	75.16	IV	70.37	IV
5	Organic manure and fertilizer application	71.24	VIII	65.36	VI
6	Soil & Soil treatment	73.20	VI	63.73	VII
7	Seed Treatment	72.55	VII	41.83	X
8	Weed management	64.05	IX	54.25	VIII
9	Plant protection measures	53.27	X	47.06	IX
10	Harvesting and Storage	74.07	V	65.80	V
	Overall	72.93		64.68	

r_s=0.89** t = 5.5

r_s=Rank correlation ** Significant at 1% level of significance

time of sowing with 81.70 MPS followed by seed rate and recommended spacing, irrigation management, harvesting and storage and soil and soil treatment in descending order. The practices like seed treatment and organic manure and fertilizers application were moderately know by beneficiary farmers to the level of MPS 72.55 and 71.24. Further, it was found that beneficiary farmers had least adoption towards practices of great concern like weed management and plant protection measures with 64.05 and 53.27 MPS and stood ninth and tenth ranked in position, respectively.

In case of non - beneficiary farmers they possessed high adoption about use of high yield varieties with 72.55 MPS and ranked first. The second highest adoption of non - beneficiary farmers was seed rate and recommended spacing with 72.39 MPS followed by time of sowing, irrigation management, harvesting and Storage and organic manure and fertilizers application which were ranked third, fourth, fifth, and sixth with 71.90, 70.37, 65.80 and 65.36 MPS respectively. The practices like soil and soil treatment and weed management were moderately known by non - beneficiary farmers to the level of MPS 63.73 and 54.25. Thus, ranked seventh and eight respectively. Further, it was found that non - beneficiary farmers had least adoption towards practices of great concern like plant protection measures and seed treatment with 47.06 and 41.83 MPS and stood ninth and tenth ranked in position, respectively.

The value of calculated rank order correlation (r_s) was 0.89 which is positive and significant, leading to conclusion that there is correlation with extent of adoption of improved barley production technology by the beneficiary and non-beneficiary farmers, though there were difference in magnitude of MPS of beneficiary and non-beneficiary farmers. The findings of the study were in line with the findings of Kumbhare and Singh (2011) and Meena and Sharma (2019).

Comparison between farmers about improved Barley production technology adoption

This calls for rejection of null hypothesis and acceptance of alternative hypothesis leading to

Table 4. Comparison of extent of adoption between beneficiary and non-beneficiary farmers with regard to different package of practices of barley production technology.

Sr. No.	Package of practice	Beneficiary n_1-51		Non – beneficiary n_2-51		Z' Value
		Mean	S.D	Mean	S.D	
1	Use of high yielding varieties	2.53	0.50	2.18	0.71	3.60**
2	Soil & Soil treatment	4.39	1.34	3.82	0.91	3.15**
3	Seed Treatment	2.18	0.87	1.25	0.44	8.53**
4	Time of sowing	2.45	0.70	2.16	0.67	2.68*
5	Seed rate and recommended spacing	9.63	1.60	8.69	1.03	4.42**
6	Organic manure and fertilizer application	12.78	1.98	11.76	1.05	4.07**
7	Irrigation management	6.76	1.11	6.33	0.65	2.99**
8	Weed management	1.92	0.77	1.63	0.69	2.60**
9	Plant protection measures	3.20	0.87	2.82	1.01	2.48*
10	Harvesting and Storage	6.67	1.31	5.92	1.09	3.90**

** Significant at 5% level of significance; ** Significant at 1% level of significance*

conclusion that there was a significant difference in adoption of beneficiary and non-beneficiary farmers regarding to all 10 practices of barley cultivation. In other words, there was significant difference between adoption of beneficiary and non-beneficiary farmers regarding improved barley production technology.

The overall calculated 'Z' value was also greater than that of its tabulated value. This indicates that there was a significant difference between the overall adoption of improved barley production technology between beneficiary and non-beneficiary farmers. It might be concluded that the beneficiary farmers were having highest overall and practice wise adoption about improved barley production technology whereas, non-beneficiary farmers were having less adoption about it. Thus, it was proved that the adoption of barley production technology was more among beneficiary farmers compared to non-beneficiary farmers. The significant difference between beneficiary and non- beneficiary farmers about adoption of barley production technology in the study was not unexpected. It may be due to the fact that beneficiary farmers being in continuous touch with the Krishi Vigyan Kendra scientists might have acquired sufficient skills pertaining to barley production technology. The findings of the study were in line with the findings of Mahadik and Tripathi (2016) and Samota *et al* (2019).

CONCLUSION

It can be concluded that majority of beneficiary farmers (66.67%) and non-beneficiary (74.51%) farmers had medium adoption about improved barley production technology. According to practice wise adoption, it was also found that both type of respondents (beneficiary and non-beneficiary) possessed maximum adoption regarding use of high yielding varieties of barley crop. Similarly, the least adoption of beneficiary farmers was possessed regarding plant protection measures whereas, in case of non-beneficiary farmers it was seed treatment in barley.

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