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RESEARCH NOTE

On farm assessment of performance of barley (*Hordeum vulgare* L.) varieties in semi-arid region under arid agro-ecosystem of Rajasthan

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Abstract : Four barley varieties were evaluated and compared with farmers' local variety for their grain yield at farmers' own field. The results revealed that barley varieties differed significantly for grain and straw yield. Among varieties, RD 2592 recorded highest grain (4570 kg ha^{-1}) yield. The results proved that the RD 2592 was most suitable varieties under prevailing climatic condition of the study area.

Key Words : Barley, Variety, Grain yield, Production

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Barley is an important crop of India. Barley occupies nearly 6.9 lakh ha area producing nearly 15.52 lakh tones grain, with a per hectare productivity of 22.45 q (Verma *et al.*, 2012). The major producers of barley in the country are Rajasthan, Uttar Pradesh, Madhya Pradesh, Haryana and Punjab. Some cultivation is also undertaken in Bihar, Himachal Pradesh, and Uttaranchal. It is being used as a substitute of wheat by a large population of the country. It is also used as feeds for cattle and poultry birds. Besides these it is an important industrial crop, because of its industrial applications. Barley is very adaptable and is a widely grown crop. It requires far less water and can be cultivated in areas where irrigation water is less easily obtainable.

The changing climatic scenario has made barley a potential crop for near future. Climate change impacts on agriculture are being witnessed all over the world, but India is more vulnerable in view of the huge population dependent on agriculture, excessive pressure on natural resources and poor coping mechanisms. Enhancing productivity of major crops therefore, is critical for ensuring food security for all, particularly the resource poor small and marginal farmers who would be affected most. Barley being a crop for marginal lands and low inputs but with very fast initial growth has also being looked as dual purpose crop with one cut for green forage in dry areas. These issues are being addressed by development of high yielding varieties for restrictive environments for feed and food and for optimum management conditions targeting industrial use in malting and brewing.

The identification of such high yielding varieties as per crop growing situation is considered to be first and foremost step for transfer of production technology. Different varieties respond differently to agro climatic conditions of a particular area due to difference in their genetic makeup and physical life process (Behera, 1994). Selection of improved and high yield genotypes of different cereals having a wide range of adaptation to agro climatic conditions is essential to increase the yield ha^{-1}. Further, it is established fact that yield potential of genotypes is

released to the full extent when it is grown under optimum agro climatic environment and adequate mineral nutrition. Therefore, an attempt was made to study the performance of new barley varieties under changing climatic condition in rainfed areas.

The study was conducted in Tonk district of Rajasthan. Production performance of four barley varieties were evaluated at the farmers' field during the rainy season of two consecutive years 2010 and 2011 under "Action research for refinement of package of practices for productivity enhancement of crops in different agro-ecological situations" of Rashtriya Krishi Vikash Yojana. Four varieties namely RD 2503, RD 2035, RD 2552 and RD 2592 were demonstrated at farmers field involving farmers with their resources as active participants. Existing varieties (local germplasm) was used as local check. The production performance of demonstrated varieties was compared with existing varieties. The soils of the demonstration fields were medium to coarse textured with pH ranging from 8.32 to 8.53, medium in available nitrogen (145-160 kg/ha), phosphorus (23-34 kg/ha) and high in available potassium (345-434 kg/ ha). The average annual rainfall received during crop season was about 659 mm. All the recommended cultural operations to raise the crop were followed as and when required. Crops were harvested manually at maturity. A net plot area of 25 m^2 from each experimental plot was harvested for seed yield as measurable indicators of output and compared with farmers' practices.

The technology gap and technology index were calculated using the following formulas as given by Samui *et al*. (2000):

Technology gap = Potential yield – Demonstration yield

Technology index = Potential yield – Demonstration yield/Potential yield ×100

Four barley varieties RD 2503, RD 2035, RD 2552, RD 2592 evaluated at farmers field for their production potential under rainfed situation. The data revealed that barley varieties differed significantly for grain yield (Table 1). All the variety under study performed better than the local variety under cultivation. The highest grain yield was obtained from barley variety RD 2592 (5110 kg ha^{-1}) followed by RD 2035 (4920 kg ha^{-1}) and RD 2503 (4890 kg ha^{-1}). Barley variety RD 2592 recorded 13.40 per cent higher over farmers' local germ plasm.

Yield of the demonstrations and potential yield of the varieties under study was compared to estimate the technological gap which shows the gap in the demonstration yield over potential yield. It was observed that technological gap in variety RD 2592 (430 kg ha^{-1}) was substantially lower than that of all other varieties (Table 2).

Technology index showed the feasibility of the variety at the farmer's field. The lower the value of technology index, more is the feasibility. Table 2 revealed that, the technology index value of RD 2592 was lowest (8.6 %) followed by RD 2035 (10.5 %). The results proved that the RD 2592 was most suitable varieties under prevailing climatic condition of the study area.

Conclusion :

It may be concluded that barley varieties differed in their capability of producing grain yield. Among the tested genotypes, RD 2592 produced higher grain yield than all other varieties. This variety was also found most suitable under prevailing climatic condition of the study area.

Table 1 : Production performance varieties on farmers' field

Varieties	Average yield (kg ha^{-1})	Additional yield over local check (kg ha^{-1})	% increase over local check
RD 2503	4460	430	10.67
RD 2035	4475	445	11.04
RD 2552	4240	210	5.21
RD 2592	4570	540	13.40
Local check	4030	-	-

Table 2 : Yield gap and technology index

Varieties	Technology gap (kg ha^{-1})	Technology index (%)
RD 2503	540	10.8
RD 2035	525	10.5
RD 2552	760	15.2
RD 2592	430	8.6

REFERENCES

Behera, A.K. (1994). Response of wheat (*Triticum aestivum* L.) verities to sowing dates. *Indian. J. Agric*., **42** : 247-263.

Fisher, R.A. (1950). *Statistical methods for research workers.* Oliver and Boyd. Edinburg, London, UNITED KINGDOM.

Gomez, K.A. and Gomez, A.A. (1984). *Statistical procedures for agricultural research* (2nd Ed.). John Wiley and Sons Inc. LONDON, UNITED KINGDOM.

Panse, V.G. and Sukhatme, P.V. (1967). *Statistical method for agricultural workers*, ICAR Publication, NEW DELHI, INDIA.

Samui, S.K., Maitra, S., Roy, D.K., Mandal, A.K. and Saha, D. (2000). Evaluation of front line demonstrationon groundnut. *J. Indian Soc. Coastal Agric. Res.*, **18**(2): 180-183.

Snedecor, G.W. and Cochran, W.C. (1967). *Statistical methods* (6th Ed.) Oxford and IBH Publishing House, Calcutta (W.P.) INDIA.

Verma, R.P.S., Kharub, A.S., Sarkar, B. and Kumar, D. (2012). Barley: A crop for changing climate in India. *Prog. Agric.*, **11** (Conf): 63-73.