

Balancing of Sowing Time and Nitrogen Dose of Barley (*Hordium vulgare*) Under Temperate Region of Jammu

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Abstract A field experiment was laid out at farmers field of Padder during the winter season of 2007-08 and 2008-09, to work out the appropriate time of sowing (10th, 20th and 30th October) and nitrogen (5, 75 and 100 kg/ha) requirement of barley (*Hordium vulgare* L.). Time of sowing and nitrogen levels show significant difference on productivity. Slightly early and timely sown i.e. 10 and 20 October, are significantly superior in grain yield over late sown (30th October). Nitrogen 100 kg/ha was at par with 75 kg/ha and both are significantly superior over 60 kg/ha

in respect of grain and straw yield. Significantly higher N uptake was recorded in 20th October sown crop. Application of N 75 kg/ha also recorded significant values for nitrogen uptake. The crop barley sowing at the time of 20th October with 75 kg N/ha gave better profit.

Keywords Sowing time, Nitrogen, Barley, Grain yield.

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Introduction

The area Padder is situated about 300 km away from Jammu and 150 km distance from Regional Horticulture Research Sub-Station, Bhadarwah (Doda) running under Sher-e-Kashmir University of Agriculture Science and Technology, Jammu. The head-quarter of the Padder is Gulabgarh. The whole area is fall under temperate region and during winter season faces heavy snowfall. The topography of the area is undulated, hilly track, mountainous and fully covered with vegetation and forest. During month of December, January and February the total area falling very low temperature (even in minus), during this period the standing crop (at seeding stage) goes un-

der dormant condition and fully covered with snow, but just after increase in temperature from March and receding of snowfall vegetative growth takes place.

The crop barley is cultivated in most part of the country for different uses, but in Padder its especially grown for fodder and making Chhang (locally made vine). The crop has very poor productivity and acreage in the absence of improved variety and package of practices i.e. lack of information regarding sowing time and without or with little use of fertilizers. Yield is the outcome of the agronomic manipulation of various crop producing factors and their interactions, which are influencing growth and development of crop. High yielding variety Sindhu of barley shows greater response when chemical fertilizer are adequately supplied. Hence a attempt was made to find out the optimum sowing time and judicious requirement of nitrogen under temperate conditions.

Materials and Methods

An experiment was conducted at farmer field during the *rabi* seasons of 2007-08 and 2008-09. The soil was clay loam in texture having pH 6.7 available N 150, P 16 and K 270 kg/ha. The treatment comprised three date of sowing (10th, 20th and 30th October) and three nitrogen levels (50, 75 and 100 kg/ha) in ran-

domized block design with three replications.

Results and Discussion

Sowing time

Significant variation was found in grain yield in respect to time of sowing. The highest grain yield was recorded under 10th October sowing, but was at par with 20th October sowing and both are significantly superior over 30th October sowing. The mean data on yield clearly revealed that sowing of barley either on 10th October or 20th October anticipated significantly higher yield and thereafter the yield declined with delayed sowing. The results confirm the findings of Patel et al. [1]. This was probably due to early germination of crop with early sowing and prolonged cold span available to the crop, resulting in favorable development of crop Singh et al. [2], Rao and Wattal [3] observed that delayed planting reduced the growing season and adversely affected the yield. The straw yield data indicated that 20th October sowing being at par with 30th October and significantly increased over the 10th October sowing.

Nitrogen

There were significant differences between the nitrogen levels. The increase in grain and straw yield

Table 1. Effect of sowing time and nitrogen on growth, yield and economics of barley.

Treatments	Plant popul- ation/m	Effective tillers/m	Plant height (cm) at harvest	Days to maturity	Grains/ year	1000- grain wt (g)	Grain yield (q/ha)	Straw yield (q/ha)	Net return (Rs/ha)
Date of sowing									
10 th Oct	30.34	41.70	71.52	222	38.00	45.70	38.21	38.46	10,877
20 th Oct	29.00	40.34	73.00	216	37.20	42.16	37.43	41.67	10,213
30 th Oct	28.00	38.00	72.86	212	37.80	40.87	32.00	40.16	7,172
CD ($p=0.05$)	NS	NS	NS	NS	NS	NS	4.72	2.02	
N (kg/ha)									
50	29.6	41.80	69.90	216.1	38.6	42.23	33.42	37.42	8,426
75	29.3	43.30	72.70	214.7	37.10	42.00	36.05	40.04	9,192
100	30.5	46.00	73.30	219.1	37.30	44.10	38.32	42.38	10,632
CD ($p=0.05$)	NS	NS	NS	NS	NS	NS	2.28	2.92	

Table 2. Effect of sowing time and nitrogen in N uptake by grain and straw at barley.

Treat- ments	N uptake (kg/ha)		Total
	Grain	Straw	
Date of sowing			
10 th Oct	46.48	32.01	78.49
20 th Oct	45.02	35.31	80.33
30 th Oct	34.36	34.12	68.48
CD (<i>p</i> =0.05)	1.42	1.12	1.34
N (kg/ha)			
50	38.92	29.17	68.09
75	41.35	34.65	76.00
100	45.63	35.83	81.46
CD (<i>p</i> =0.05)	1.76	4.91	

was up to 100 kg N/ha, but the 100 and 75 kg N/ha were at par. Mean data clearly revealed that 75 kg N/ha gave significantly higher yield over the 50 kg N/ha and any further increment caused reduction in yield. The increase in grain and straw yield could be the result of improvement in growth and yield attributes. The results are in agreement with those of Rai et al. [4] and Patel et al. [1].

Nitrogen uptake

Effect of sowing time and nitrogen on N uptake by grain and straw was found significant. Crop sown at 10th October recorded higher N uptake by grain but N uptake by straw was higher with sowing time of 20th October. Different levels of N application showed significant differences in nutrient uptake. The results are in agreement with those of Patel et al. [1].

Economics

The economics analysis of different treatments clearly show that, the sowing during 10th October and 20th October not only resulted in better yield but also accrued maximum net return over the 30th October sowing. Nitrogen mineralization also enhanced the profit index and the highest net profit was recorded with 100 kg N/ha followed by 75 kg/ha.

Conclusion

On the basis of data presented in the Tables 1 and 2 and above result and discussion it will be concluded that sowing time 20th October with 75 kg/ha N responding better yield and net return to the farmers and also allow ten extra days for field management. This experiment was laid out with objective of dissemination of technology in Paddar area. Farmers are highly willing to know how about the result due to unawareness or less knowledge. The experimental result was highly appreciated by community and they demanded another researcher extension activity in the area.

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