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Comparison of improved barley varieties with local variety in Almora district of Uttarakhand

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Abstract

An on-farm testing (OFT) was carried out by Krishi Vigyan Kendra, Almora during rabi seasons on 2014-15, 2015-16 and 2016-17 in Uttarakhand at farmers' fields in village Dhari in Hawalbagh Block, to compare the yields of local low yielding varieties with the high yielding hybrid varieties (VL 56 and VL 118). On the basis of results it is revealed that improved varieties i.e. VL 56 and VL 118 performed better in terms of yields and gave higher net returns and B:C ratio. While the best treatment to get best results was from the improved variety VL 118.

Keywords: OFT, Improved Barley varieties, B:C Ratio, Yield

Introduction

Barley (*Horedum vulgare L.*) is the one of the first domesticated cereals, one of the founder crops of old world agriculture and was one of the first domesticated cereals. It is considered as the fourth largest cereal crop after maize, wheat and rice in the world with a share of 7 per cent of the global cereal production (Kumar *et al.*, 2014) [1]. Barley can replace wheat as the dominant crop due to its tolerance to drought and salinity. Barley is more productive under adverse environments than other cereals. Barley serves as a major animal fodder, base malt for beer and certain other distilled beverages.

In the hilly region of Uttarakhand, India both in the irrigated and rainfed areas, the predominant system of agriculture is mixed crop-livestock farming. The farmers, mostly marginal, mainly depend on forest resources to feed their livestock. This sometimes contributes to degradation of forests in certain areas, particularly in the lean periods (summer and winter). But it is found that in the same regions some of the farmers cultivate barley for fodder purpose (use of grain for human consumption was an earlier practice but discontinued later, despite being highly nutritious). Therefore, awareness among farmers needs to be created to resume the use of barley grain as human food considering its nutritional value. Barley has the potential to be utilised as a green fodder under water scarcity conditions, as it is very fast growing crop with high biomass in the early stages and requires less water (Verma *et al.* 2011) [4]. It is grown during winter season (rabi) in the northern plains as well as in northern hills, mostly under rainfed or limited irrigation condition on poor to marginal soils. Hence it is very clear that large scale promotion of high yielding barley varieties as a food-feed crop in the hills of Uttarakhand, can help addressing the fodder shortage issue (in the lean periods), reduce dependence on forest, increase food security as well as the improved lines of barley could be valuable feed resources that could fit well in the feeding calendar for the winter months especially in hilly areas where other feed resources are scarce.

Like other hilly areas villages, in Almora also, farmers grow traditional barley in rainfed condition. The yield obtained by this crop is very low due to use of traditional seed, use of undecomposed FYM, negligible use of chemical fertilizers and non-adoption of weed control and plant protection measures. Considering the above constraints in mind, an on-farm-trial (OFT) was conducted in the village Dhari of Hawalbagh block in Khunt-Dhamas road, about 15 km from the KVK in the Almora district in Uttarakhand, by Krishi Vigyan Kendra, Almora during rabi seasons of 2014-15, 2015-16 and 2016-17 in Uttarakhand to improve the yields of barley, thereby combating the feed scarcity.

Materials and Methods

The present on-farm testing (OFT) was carried out by Krishi Vigyan Kendra, Almora during rabi seasons on 2014-15, 2015-16 and 2016-17 in Uttarakhand at farmers' fields in village Dhari in Hawalbagh Block, which is about 15 km by the Krishi Vigyan Kendra, Almora To compare the yields of local low yielding varieties with the high yielding hybrid varieties (VL 56 and VL 118), barley crop was sown from end of October to early November and harvested

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by the end of March to first fortnight of April. The trial was carried out with three treatments i.e, T₁ (local variety), T₂ (VL 56) and T₃ (VL 118) with plot size of 200 m² and five replications (5 farmers) with recommended package of practices.

The crop was sown (seed rate 100 kg/ha) by broadcasting (local variety) and in line sowing of high yielding hybrid varieties (VL 56 and VL 118) at a row spacing of 23 cm. For the study, yield (q/ha), increase in yield (%), Net Return (Rs/ha) and Benefit Cost ratio was calculated. In this study, critical inputs in the form of high yielding variety seed and fertilizers were provided by KVK to farmers.

Results and Discussion

Yield: Yields were calculated and the result of the study

Table 1: Barley yields as influenced by improved and local varieties from 2014 -15 to 2016-17.

| Technology Option | No. of trials | Yield (qt./ha) | | | Increase in yield (%) | | |
|----------------------------|---------------|----------------|---------|---------|-----------------------|---------|---------|
| | | 2014-15 | 2015-16 | 2016-17 | 2014-15 | 2015-16 | 2016-17 |
| T1 Farmers practice(Local) | 05 | 17.2 | 15.8 | 17.5 | - | - | - |
| T2 VL 56 | | 23.8 | 22.1 | 23.4 | 38.37 | 39.87 | 33.71 |
| T3 VL 118 | | 26.4 | 24.2 | 28.3 | 53.48 | 53.16 | 61.71 |

Net Returns and Benefit Cost Ratio: The inputs (seed, total mandays, ploughing and other cultivation practices) and the produce prices prevailed during the study of trial were taken for calculating the Net Returns and Benefit Cost Ratios. The cultivation of high yielding varieties of barley resulted in higher Net returns of Rs.20,550/ha and Rs.24,450/ha during 2014-15; Rs 19,700/ha and Rs.22,250 /ha during 2015-16 and

showed that during all the three years in rabi seasons of the year 2014-15, 2015-16 and 2016-17, barley variety VL 118 resulted the maximum yield i.e. 26.4 q/ha during 2014-15, 24.2 q/ha during 2015-16 while it was 28.3 q/ha during 2016-17 as compared to VL 56 and local variety. The percentage increase in yields than farmers practices were 38.37 and 53.48 during 2014-15; 39.87 and 53.16 during 2015-16 and 33.71 and 61.71 during 2016-17, in VL 56 and VL 118, respectively. The results indicated that the on-farm trials on high yielding varieties have given good impact over farmers practices (local varieties) (Table 1) as higher yields were obtained by the farmers, thereby increasing their net returns. Similar results were reported by Singh *et al.*, 2013^[3] & Ram and Dhaliwal, 2012^[2].

Rs 22,610/ha and Rs.25,920 /ha during 2016-17 in VL 56 and VL 118, respectively over local variety. The B:C Ratios with sowing of high yielding varieties calculated were 2.37 and 2.61 during 2014-15; 2.41 and 2.13 during 2015-16 and 2.29 and 2.72 during 2016-17 in VL 56 and VL 118, respectively over local variety (Table 2)

Table 2: Net Return (Rs./ha) and B:C ration of barley as influenced by improved and local varieties from 2014 -15 to 2016-17.

| Technology Option | No.of trials | Net Return (Rs./ha) | | | B:C Ratio | | |
|-----------------------------|--------------|---------------------|----------|-----------|-----------|---------|---------|
| | | 2014-15 | 2015-16 | 2016-17 | 2014-15 | 2015-16 | 2016-17 |
| T1 Farmers practice(Local) | 05 | 12900.00 | 12500.00 | 13,100.00 | 2.00 | 1.90 | 1.98 |
| T2 VL 56 | | 20550.00 | 19700.00 | 22,610.00 | 2.37 | 2.41 | 2.29 |
| T3 VL 118 | | 24450.00 | 22250.00 | 25,920.00 | 2.61 | 2.13 | 2.72 |

Conclusion

It can be concluded that, both the improved varieties i.e. VL 56 and VL 118 performed better in terms of yields and gave higher net returns and B:C ratio. While the best treatment to get best results was from the improved variety VL 118. Hence, it can be calculated that use of improved agronomic practices along with HYV's may help in improving the economy of the farmers and thereby can curtail the fodder problems of the farmers.

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