



## Pusa Losar (BHS 380) – the first dual-purpose barley variety for northern hills of India\*

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Archaeological evidence has revealed that barley (*Hordeum vulgare*) is the oldest crop grown by ancient farmers (Pourkheirandish and Komatsuda 2007). It is considered fourth largest cereal crop in the world with a share of 7% of the global cereal production (Anonymous 2010). In India, area under barley cultivation is 0.75m ha with production estimated to 1.3m tonnes. In plains, Rajasthan, Uttar Pradesh, Punjab, Haryana, Madhya Pradesh and Bihar are the leading states to grow barley. It is also cultivated in the elevated hilly tracts of Himachal Pradesh covering an area of 23.5 thousand ha with production estimated to 30.7 thousand tons (Anonymous 2010). Grasslands, sub-alpine and alpine pastures are the major feed resources in the Himalaya. Cultivation of barley as green fodder crop would supplement to meet the fodder requirements in this region. The marginal farmers of this region would prefer to grow barley varieties giving high forage yield for their live stock and foodgrain for human consumption as it is an astounding source of proteins, vitamins and minerals. Therefore, it is imperative to develop and deploy high-yielding dual-purpose barley varieties resistant to stripe rust and suitable under rainfed condition to meet the food and forage requirements of north-western Himalayan region of India. In this direction, a new barley variety Pusa Losar (BHS 380) developed at IARI, Shimla, is released and notified by the Central Sub-Committee on Crop Standards in 2010.

BHS 380 was evaluated under All India Coordinated Trials consisting 14 entries and two checks at three locations under initial varietal trials (IVT 2006–07); with 10 entries and two checks at four locations under advance varietal trials (AVT 2007–08) and with 14 entries and two checks at three

locations under advance varietal trials (AVT 2008–09) of northern hills zone (NHZ). The crop was raised in 6 rows, 4 × 1.38 m plot size in a randomized block design with four replications. The crop was cut at first node stage (70–75 days after sowing-DAS) and fodder yield was recorded as kg/ net plot (4 × 0.92m) and then grain yield was recorded from the regenerated crop. The fodder yield and grain yield data converted into tonnes/ha. Recommended fertilizer dose 40kg N, 30kg P and 20kg K was applied to raise the crop. Nitrogen was given in split doses as 1/3 basal, 1/3 after first rain and 1/3 after cutting the crop for green fodder.

The performance of BHS 380 was assessed under AICW&BIP trials of barley during three crop seasons (2006–07 to 2008–09) of NHZ. The variety has average forage yield of 5.94 tonnes/ha along with average grain yield of 2.1 tonnes/ha. It has shown superiority for forage yield over both the checks, viz BHS169 and HBL 276, revealing regeneration capabilities of the newly released variety. It has shown significant advantage over HBL276 and at par with BHS169 after harvesting the crop for green fodder (Table1). Pal and Kumar (2009) suggested that harvesting of the barley crop at 75 days after sowing (DAS) is the best forage cutting time for getting good amount of green fodder and grain yield to meet the fodder and food requirements of the hill people up to some extent. Leaf and stripe rusts are two important diseases of barley in the hills. The newly released variety BHS 380 has shown resistance against leaf rust with maximum score of 5S as compared to 60S in checks. Also BHS380 has distinct superiority for stripe rust resistance with maximum average co-efficient of infection (ACI) of 4.3 as compared to ACI of 16.4 and 20.7 in both of the checks, BHS 169 and HBL 276, respectively. BHS 380 has mean height of 60cm after forage harvest and takes on an average 182 days to mature. The other important features of BHS 380 are: semi-spreading growth habit, waxy leaf sheath and peduncle, parallel ear shape with intermediate ear density, short glume beak without glume pubescence and light yellow hulled grains with 35g thousand grain weight.

### Short note

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Table 1 Performance of barley variety BHS 380 for forage and grain yield in northern hills

Testing year and location	Green forage and grain yield (tonnes/ ha)			CD at 5%
	BHS 380	BHS 169 ©	HBL 276 ©	
2006–07 (3)	7.75 (2.76)	6.72 (2.64)	7.77 (1.83)	1.54 (0.26)
2007–08 (4)	4.81 (1.62)	4.30 (1.56)	4.28 (1.19)	0.58 (0.13)
2008–09 (3)	5.83 (2.07)	5.35 (2.28)	5.08 (1.74)	0.74 (0.3)
Mean (weighed)	5.94 (2.10)	5.34 (2.10)	5.56 (1.55)	
Per cent increase over checks	11.2 (0.0)	6.7 (35.5)		

Number of locations and grain yield are given in parentheses

Source: *Progress Report*, Barley Network, 2006–07, 2007–08, 2008–09. DWR, Karnal.

The newly released dual, purpose barley variety Pusa Losar (BHS 380) could be an appropriate choice for replacing BHS 169 and HBL 276 which are not only low yielding but also highly susceptible to rusts. Its cultivation would prove boon for meeting the forage and food requirements of the hilly people for sustaining their livelihood and stabilizing productivity of barley in the Himalayan region.

#### SUMMARY

A new barley variety Pusa Losar (BHS 380), developed at Regional Station, Shimla, is released and notified by the Central Sub-Committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops for commercial cultivation under rainfed condition of northern hills zone. The variety has average forage yield of 5.94 tonnes/ha along with average grain yield of 2.1 tonnes/ha from the regenerated crop after cutting for forage. It has shown forage yield superiority over the checks and also grain yield superiority over HBL 276 in regenerated crop. This variety combines resistance against leaf and stripe rusts. Cultivation of newly released variety Pusa Losar (BHS 380) in north- western Himalaya would prove boon for meeting the forage and food

requirements of the hilly people for sustaining their livelihood and stabilizing productivity of barley in the Himalayan region.

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