

Barley

Package of practices for higher productivity



ICAR-Vivekananda Parvatiya Krishi Anusandhan Sansthan

(An ISO 9001 : 2008 Certified Institute)

Almora-263 601 (Uttarakhand)

2017

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Contact Timings- Every working day (10 A.M. to 5 P.M.)

Yellow (stripe) and Brown rust (leaf rust):

Yellow rust symptoms include bright yellow-orange spores that form pustules which occur in stripes along the leaves. Pustules of leaf rust are small and circular, producing a mass of orange-brown powdery spores predominantly on the upper leaf surfaces. Later in the season, pustules also develop on leaf sheaths. The pustules easily rub off on a finger. As the crop matures the pustules turn dark and produce black spores embedded in the old plant tissues.

Spot blotch:

The disease spreads as small light brown spindle spots distributed on leaf blade increasing in size along the leaf veins. The spots are irregular and vary from oval to oblong or elliptical. Fully developed lesions become dark brown color and cover entire leaf by merging together.

Control measures:

- The newly released high yielding cultivars coupled with in-built disease resistance are the best option (Table 1).
- Seed treatment with fungicide Vitavax/Thiram @ 2-3g/kg or Tebuconazole @ 1g/kg of seed at time of sowing.
- Foliar sprays of Propiconazole (25 EC) @ 0.1% (500 ml in 500 litres of water/ha) at the appearance of rusts and foliar blights and later at 15 days intervals till physiological maturity, if needed.

Pest control

In hills, damage by insect pests to barley crop is not so severe. However, field rats cause heavy loss to barley crop and do considerable damage to the harvested crop lying in stacks in the fields. For rat control fumigate live-burrows with aluminum phosphide @ one tablet of 0.5 g per small burrow, and 3.0 g per large burrow. In case of appearance in the same field, bite with Cumarin (Ratafin) @ 1 kg of prepared bite (1 part Cumarin; 19 part wheat or maize flour, 1 part molasses and 1 part mustard oil).

Harvesting, threshing and storage

When moisture content of the grains is about 25-30%, crop should be harvested. After harvesting, it should be sun dried and threshed with a pair of bullock or by using threshers. Harvesting of mature crop should not be delayed, because at that time the occurrence of rain and hailstorms are high. The grain should be dried properly so that moisture content remains between 10-12%. After keeping grains in warehouse, application of EDB @ 3.0 ml/q found to be effective against storage insect pest.

For further details, contact us

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Barley (*Hordeum vulgare* L.) is the important cereal crops of northern hills of India comprising the states of Himachal Pradesh and Uttarakhand, particularly in marginal and fragile lands as well as in higher hills. It is the staple food crop in the tribal areas of hills where it is also used in preparation of the local beverages in addition to food and cattle feed. Barley is predominantly grown under rainfed conditions in northern hills using very low inputs by the farmers. During past few years the winters have become warmer in hills and drought is becoming a frequent phenomenon. Therefore, most of the farmers now prefer to grow barley over other crops as it is supposed to be drought tolerant.

Majority of the farmers in this region, popularly use the seeds of own farm saved improved varieties as well as local farmer's varieties. Their genotypic ability to higher production under low input conditions is very low and they are highly susceptible to many diseases. However, by cultivating improved high yielding disease resistant varieties and adopting recommended package of practices in barley, the productivity level can be increased to 2-3 times from the present level of 11.94 q/ha under rainfed and marginal lands.

Improved package of practices in barley

The recommended improved package of practices and latest high yielding varieties of barley (Table 1) for higher production in northern hills are as follows.

Sowing Time

The time of sowing is an important aspect in successful cultivation of barley. Barley gives best results when sown between 15th October to 10th November. In rainfed areas, sowing should be done in second fortnight of October to utilize the residual soil moisture from monsoon rains.

Seed rate and spacing

Under rainfed conditions 100 kg seed per hectare is required. For normal sown rainfed crop, the spacing of 23 cm between two rows is recommended. Sowing should be done at a depth of 4-5 cm.

Method of Sowing

Barley requires well pulverized clod free soil and it can be achieved by 2-3 rounds of ploughing. To achieve good germination and crop stand, the seed must be sown in moist soil at a suitable depth. Seed drill can be used for sowing the seed at the optimum depth. *Desi* plough can also be used to open furrows of appropriate depth and seed dropped in the open furrows and covered by planking. The best results are achieved by the use of seed-cum-fertilizer drills.

Manures and fertilizers

Manures and fertilizers both play important roles in the barley cultivation. Combination of organic manures and chemical fertilizers give superior results than the use of chemical fertilizers alone. The application of organic matter to soil improves water holding capacity of the soil besides providing essential nutrients to the plants. Application of farmyard manure (round 10tonnes/ha) before 15 days of sowing is beneficial.

The quantity of fertilizer to be applied varies according to the fertility status of the soil. In general, the recommended doses are: 40-30-20 kg/ha N-P₂O₅-K₂O (0.8-0.6-0.4 kg/nali N-P₂O₅-K₂O).

Full dose of nitrogen, phosphorous and potash should be placed 8-10 cm deep in furrows at the time of sowing.

Water management

Barley generally is grown as a rainfed crop due its low water requirement. However, there should be enough moisture in the soil for proper germination and good crop stand which ultimately leads to better yield in rainfed areas.

Weed control

It is desirable to control weed through use of good cultural practices. Two manual weedings at 30-35 and 55-60 days after sowing are sufficient to manage the weed population. The chemical methods of weed control are recommended where infestation of weed is very heavy and availability of labors is limited. Post-emergence application of tank mixed herbicides (isoproturon a.i. @ 0.75 kg/ha + 2, 4-D a.i. @ 0.5 kg/ha in 800-1,000 liter of water) control both

grass and broad leaved weeds are recommended. The post-emergence herbicides should be sprayed 30-35 days after sowing (to ensure sufficient moisture in the soil for better effectiveness of herbicide).

Table 1. Salient features of improved high yielding and disease resistant/tolerant varieties of barley recommended for northern hill regions

S No.	Variety	Year of notification	Recommended area	Niche	Days to maturity	Potential Yield (q/ha)	Special Features
1	HBL 276	1999	Uttarakhand, HP and J&K	Rainfed Timely sown	170	30.0	Six-row husk less barley with amber grains, good threshing ability
2	BHS 352 (Himadri)	2003	Uttarakhand, HP and J&K	Rainfed Timely sown	173	38.0	Husk-less, 6-rowed, Amber grain, Erect growth habit
3	VLB 56	2005	Uttarakhand	Rainfed Timely sown	153	49.6	Recommended for organic cultivation
4	VLB 85	2007	Uttarakhand	Rainfed Timely sown	163	26.3	Recommended for organic cultivation
5	BHS 380 (PUSA LOSAR)	2010	Uttarakhand, HP and J&K	Rainfed Timely sown	182	29.8 (G), 59.4 (F)	Hulled, 6-rowed, Dual Purpose, Semi-spreading
6	UPB 1008	2011	Uttarakhand, HP and J&K	Rainfed Timely sown	161	35.0	Two-row hulled feed barley
7	VLB 118	2014	Uttarakhand, HP and J&K	Rainfed Timely sown	164	30.84	Six-row hulled barley with higher degree of resistance to brown and yellow rust
8	VLB 94	2016	Uttarakhand hills	Rainfed Timely sown -	164	30.84	

Disease control

Barley crop suffer from several diseases which reduces its yield. Yellow rust, leaf blight and powdery mildew are the main diseases prevalent in the Northern hills. The symptoms and their suitable control measures are given below: