

Barley

Botanical Name: *Hordeum vulgare*

Family: Gramineae

Origin: Abyssinia

Economic Importance:

1. Barley is one of the important **cereal crops** of the world and India.
2. It is a major **source of food** for large number of people living in cooler semi-arid areas of the world.
3. Grains are used for making **Chapaties**.
4. Grains can be used for **making feed** for livestock, piggery, and Poultry.
5. The **straw** is used for making good forage, hay and Silage.
6. Barley is used in **malt industries** for manufacturing of beer, Whisky, brandy etc.
7. Grains is roasted and ground and used as sattu.
8. Barley grain contains 12.55 Moisture, 11.5% albuminoides, 74% Carbohydrates, 1.3% Fat, 3.9% CF and 1.5% ash.

Geographical Distribution:

Barley is one of the important cereals of the world. It is cultivated almost all parts of the world except tropical regions. The important barley growing countries are Russian Federation, China Canada USA, Spain, France Australia, U.K. and India. Barley growing region in India are Himalayas region, Uttar Pradesh, Rajasthan, Madhya Pradesh, Bihar, Haryana, Punjab and Himachal Pradesh. Productivity of barley is higher in Punjab followed by Himachal Pradesh and Uttar Pradesh.

Ecology:

Climatic requirements:

Barley requires **cool weather** during early growth and warm and dry weather at maturity. It grows fairly well in **temperate as well as in sub-tropical regions of the earth**. It requires low weather than wheat. Being a **drought resistant**, Barley grown in areas where scanty rainfall occurs.

Soil requirement:

Barley thrives best on well drained fertile deep loam soils. Being a **salt tolerant** crop, it can do well even in salt affected soils. **P^H** requirement should be **7 to 8**. It is more **tolerant to alkaline soils** than other cereals. However, acidic soils are unsuitable for its cultivation.

Field Preparation:

Barley requires slightly **loose seedbed**. One deep ploughing followed by 2-3 harrowing are adequate to prepare seedbed for sowing. Planking is necessary for uniform distribution of irrigation water.

Seed and Sowing:

1. **Sowing Time:** 15 Oct. to 15 Nov.

2. **Seedrate:**

Irrigated : Normal- **75 Kg/ha** and for late sowing **100 kg/ha**.

Rainfed : 80-100 Kg/ha

Saline soils: 100 kg/ha.

3. **Spacing:** 22.5 cm between rows.
4. **Sowing Depth:** 4-5 cm.
5. **Seed treatment:** For sowing in rainfed and saline areas seed soaked in water over night at room temperature for better and quicker germination. Seeds should be treated with **Bavistin or Thirum or vitavax 3 gm./kg** of seeds to protect the crop from various seed and soil borne diseases.
6. **Sowing method:** Line sowing by seed drill.

Manures and fertilizers:

Well decomposed **farm yard manure or Compost @ 10-15 t ha⁻¹** should be applied at the time of land preparation.

The quantity of fertilizers to be applied varies according to the fertility status of the soil. However, when soil test data is not available, apply fertilizers as below.

- a. **Irrigated: 80: 50: 50 Kg NPK /ha.**
- b. **Rainfed: 50:30:30 Kg NPK /ha.**
- c. **Late sowing: 40:30:20 Kg NPK /ha.**

Half of the nitrogen and total amount of phosphorus should be applied at the time of sowing. The remaining half quantity of nitrogen should be top dressed at the time of first irrigation.

Water Management:

Barley is generally grown as **rainfed crop** because it has low water requirement. It needs two to three irrigations to give good yields. If supply is inadequate its efficiency should be increased by **applying it at critical growth stages**. If a only one irrigation is available, it should be **given near active tillering** stage i.e. 30-35 DAS. When two irrigations are available, one should be applied at active tillering stage and other at flowering stage.

Weed control:

Generally weed problem is more under irrigated condition. One harrowing and one weeding after first irrigation at 30-35 DAS gives effective control. Broad leaved weeds can be controlled by an application of 2,4-D Sodium salt or 2,4-D amine salt @ 0.75 kg a.i. /ha in 700-800 lit of water.

For control of Phalaris minor and Wild oat spray Isoproturon 75 WP @ 1.0 kg a.i. /ha or Pendimethalin (Stomp) 30 EC @ 3.3 lit in 600-800 lit of water at 2-3 DAS.

Cropping systems:

Best barley based cropping systems are, Rice-barley, Sorghum–barley, Pearl millet-barley, Cotton-barley, Black gram-barley.

Mixed cropping: Barley is raised as mixed crop with Chickpea, pea, mustard, linseed, and lentil

Insect pests and Diseases:

Soil Insects: White ants, Termites, Gujhia weevil and cut worms

Foliage pests: Aphids

Rodents: Field Rats

Stripe, Net blotch disease, spot blotch disease, Rusts, Powdery Mildew, Sumt & Molya. **Molya Disease of barley caused by nematode *Heterodera avanae*.**

Harvesting and Threshing:

The crop should be harvest immediately after ripens otherwise lodge and shelter grains. It should be harvested in the forenoon before the heads become too dry and fragile for handling. Harvesting of crop is done with sickle by manual labour. Threshing is done either by trampling bullocks or by threshers.

Yield:

By adopting scientific methods and high yielding varieties obtain 30-35 quintals of grain and 40-45 quintals of straw per hectare.

Varieties:

Karan 18 & 19 are popular varieties and have more demand from farmers.

Suited for hills: Himani, Dolma, Kailash.

Suited for rainfed areas: Ratna, Vijay, Azad, Ameru (best for malt).

Suited for irrigated areas: Jyoti, Ranjit, Clipper (best for malt & brewing), Karan 18 & 19.

Dual purpose (fodder and grain): Ratna, Karan 2, Karan 5, Karan 10.

Malting in barley:

During threshing, malting grains does not get injured or skinned, malting seeds are soaked in water for overnight, after inhibitions the seeds are tied in bags loosely and hang for germination germinated seeds are hot air dried and it is powdered, for liquid malt extraction, the powder is cooked under pressure and malt is extracted by filter press, malt is inoculated with yeast culture and is fermented for beers and alcoholic drinks.

