



## Quality Seed Production of Barley

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### Abstract

One of India's most major cereal crops, barley (*Hordeum vulgare* L.) makes a substantial contribution to the food, feed, and nutritional security of the area. It ranks with rice, wheat, maize, and other essential cereal crops. Barley has been bred in a variety of forms by SAUs like ICAR-IIWBR, IARI, CCSHAU, RARS, Durgapura, BHU, CSAUT, and NDUAT. The most important factor in producing crops profitably is seed, and the effectiveness of all other agricultural inputs, including land, fertilizer, labor, and irrigation, is dependent on the quality of the seed used for sowing. To ensure uniform field establishment, plant development, and yield, farmers must utilize high-quality seeds of improved variety. Only when an enough quantity of improved variety seed is produced and given to farmers at an affordable price and at the appropriate time will it be shown that an improved variation or newly developed variety of crop is advantageous to the farmers or end-users.

**Keywords:** substantial, high-quality, profitably, improved

### Introduction

Since barley is a self-pollinating crop, farmers can produce quality seed on their own farms with the proper precautions. In order to increase the quality of Farm Saved Seed (FSS), promote the exchange of high-quality seed among farmers, and ensure the horizontal spread of improved varieties for barley growers, farmers could use excellent seed produced on their own farm for three consecutive years. In order to prevent contamination in the seed multiplication chain, seed production requires ensuring seed purity (both physically and genetically), maintaining isolation distance, identifying off-types, damaged plants, and weeds, and rouging of off-types. To produce and preserve the best quality of seeds, it is usually advised to conduct out seed production activities in well-drained, fertile soils with reliable irrigation systems.

### Botanical Description

**Plant Features:** The stems are erect, thick, tufted, and reach heights of 60 to 120 centimeter. It has few alternately arranged leaves. Near the spike is the upper leaf. Smooth and striated describe the sheath. Large auricles that frequently clasp or overlap are present in barley. The ligules are thin, membrane-like structures.



Barley field

**Seed Characteristics:** Spindle shaped, light tan to yellowish in hue, seeds. Compared to rye and wheat, barley is lighter.

### Seed Production Technology of Barley

**Selection of field:** In order to have the best seed output and quality, barley seed cultivation requires terrain that is fertile, level, and well-draining. Barley cultivation is not good for acidic soils. The seed plot must be free of any cultivated weeds from the previous year. This will stop contamination from crops that grow on their own or other varieties.

**Isolation distance:** Since barley is a self-pollinating crop, it is necessary to maintain a 3 meter separation between neighboring barley seed and grain production plots in order to prevent mechanical mixing or variety contamination. However, it is advised to maintain a 150 meter isolation distance for smut-infected plots.

**Preparation of field:** A flat, well drained field should be plowed two to three times with a cultivator to discover tith before being planked. The field needs to be leveled for optimal water distribution across the seed plots since barley is sensitive to water logging.

**Sowing time:** In order to produce high-quality seeds, it is recommended to sow them at the right period, ideally between November 10 and 25.

**Seed rate & sowing:** For the best plant population and the simplest rouging of off kinds, a seed rate of 40 kg per acre should be used in timely sowing conditions. Knowing seed germination before spreading seeds in the field is a crucial technique. 400 seeds can be chosen to test their germination on germination paper (the paper towel method) or newspaper for 7 days at room temperature while keeping the conditions wet. The quantity of seeds that germinated and healthy seedlings must be counted after seven days. The seed lot is deemed suitable for sowing if the barley seeds' germination percentage is greater than 85%.

**Seed treatment:** To prevent smut disease, seeds should be treated with Bavistin/@ Vitavax @2.5 gm/kg.

**Spacing:** When producing seeds, line sowing is always favored because it makes inspection and rouging easier. The ideal row spacing for the production of barley seed is 22.5 cm. Preferably, sowing should take place at a depth of 4-5 cm.

**Rouging:** Rouging is the selective removal of unwanted plants from a seed production plot, such as other kinds, diseased plants, offtypes, other crop plants or weed plants, and volunteer plants, in order to preserve the genetic purity, physical purity, and disease-free characteristics of the seed plot. Rouging is advocated during the heading and maturity stages of the barley crop since most offtypes and other varieties of plants may be easily detected at these developmental periods. It is advised that barley seed plots be cleared of all other crop plants, including wheat, oat, triticale, and gram. In isolated areas, diseased plants and offtypes can be carefully removed and disposed of or killed.

### Nutrient Management:

Stage	Nitrogen	Phosphorous	Potash
Timely sown & irrigated condition	24 kg N	12 kg P	08 kg K
1/2 N and entire P and K should be applied as a basal dose wherein remaining nitrogen at first irrigation; (26 kg Urea, 75 kg of SSP and 13 kg of MOP as a basal dose wherein 26 kg urea at first irrigation @ per acre) Or If using DAP, then apply 26 kg DAP; 15 kg of Urea and 13 kg MOP per acre as a basal dose wherein, 26 kg urea per acre at first irrigation @ per acre.			
Timely sown and irrigated condition for Malt purpose	36 Kg N	12 kg P	08 kg K
1/2 N and entire P and K should be applied as a basal dose wherein remaining nitrogen at first irrigation; (39 kg Urea, 75 kg of SSP and 13 kg of MOP as a basal dose wherein 26 kg urea at first irrigation @ per acre) or If using DAP, then apply 26 kg DAP; 28 kg of Urea and 13 kg MOP per acre as a basal dose wherein, 39 kg urea per acre at first irrigation @ per acre.			

**Irrigation:**

Irrigation schedule	Days after sowing (DAS)	(DAS) Stage of Crop
1 st Irrigation	30-35	Crown root initiation
2 nd Irrigation	65-70	Panicle emergence
3 rd Irrigation	90-95	Grain formation

**Weed management:** Producing quality seeds and preventing further contamination in the cycle of seed multiplication need the absence of weed seeds in the seed production process. The following herbicides may be used for successful weed control depending on the situation and type of weed flora:

**Pre-emergence:** Spraying Pendimethalin (1250 ml per acre) on weeds with narrow and broad leaves between one and three days after sowing can be used as a pre-emergence method of management.

**Grasses type:** Various weeds viz., *Phalaris minor* (Mandus/ Kanaki), *Avena fatua* (Wild oat/ Jangali Jau) are controlled by spraying of Pinoxaden 5 EC (400 ml/ acre) at 30-35 days of application.

**Broad leaves type:** Broad leaves weeds *Chenopodium album* (Bathua); *Convolvulus arvensis* (Hirankuri); *Melilotus indica* (Senji/Metha) can be controlled by 2,4-D (400 ml per acre) at 30-35 days after sowing.

**Disease and Pest management:**

1. Vitavax @ 2g/kg seed and Vitavax & Thiram in a 1:1 ratio should be used for seed treatment on covered smut of barley.
2. Rust: You can spray Propiconazol 0.1% (1 ml/litre of water) on the affected area as soon as the ailment manifests itself.
3. Spraying with propiconazol 0.1% or (1 ml/litre of water) is advised for leaf blight.
4. Aphid: Imidacloprid (17.8 SL) @ 40 ml per acre is sprayed on plants to effectively control aphids.

The second spray can be used 15 days apart in cases of severe incidence.

**Harvesting and Threshing:** In India, harvesting is typically done by hand, however recently combine harvesters have been used to make harvesting and threshing easier. Therefore, it is crucial to thoroughly clean all combine machines in order to prevent any admixtures or mechanical combinations of various kinds. It is advised that seeds be properly dried before storing to prevent storage losses caused by high moisture. To lower the moisture content to a safe level, or less than 12%, seed crops are exposed to sun drying for three to four days.

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