

## In-Depth Guide on Barley Cultivation

### 1. Introduction

Barley (*Hordeum vulgare*) is an important cereal crop grown in India for food, fodder, and brewing industries. It is a versatile Rabi crop, mainly cultivated in Rajasthan, Uttar Pradesh, Haryana, and Punjab.

### 2. Climate and Soil Requirements

- Temperature: Ideal range is 15–25°C. It thrives in cool weather during growth and moderate heat during maturity.
- Rainfall: Requires 30–40 cm of rainfall; excessive rain can damage crops.
- Soil:
  - Prefers well-drained sandy loam or loamy soils.
  - Soil pH: 6.0–7.5.
  - Saline or alkaline soils can be managed for barley cultivation with proper care.

### 3. Seed Selection and Preparation

- Varieties:
  - RD 2552: High-yielding and disease-resistant.
  - Lakhan: Suitable for rainfed areas.
  - Karan 16: Used in malt industries.
- Seed Rate: 80–100 kg per hectare for rainfed areas; 100–125 kg for irrigated.
- Seed Treatment: Treat seeds with Captan or Carbendazim (2 g/kg) to prevent seed-borne diseases.

### 4. Sowing Techniques

- Time of Sowing:
  - Irrigated regions: Late October to mid-November.
  - Rainfed regions: Early November to December.
- Methods:
  - Line sowing with seed drills for better spacing and higher yield.
  - Broadcasting for small fields.
- Depth and Spacing:
  - Sow seeds 4–5 cm deep.
  - Maintain 20 cm row spacing and 10 cm plant spacing.

### 5. Fertilizer Management

- Base Fertilizers:
  - Nitrogen (N): 60 kg/ha.
  - Phosphorus (P): 40 kg/ha.
  - Potassium (K): 30 kg/ha (optional based on soil test).
- Application:
  - Apply half Nitrogen and full Phosphorus and Potassium at sowing.
  - Add the remaining Nitrogen during the tillering stage.

### 6. Irrigation Management

- Critical Stages:

- Crown Root Initiation (CRI): 20–25 days after sowing.
- Tillering Stage: 40–50 days after sowing.
- Grain Filling Stage: 70–80 days after sowing.
- Avoid water stagnation as it can harm root systems.

### **7. Pest and Disease Management**

- Pests:
  - Aphids: Spray Dimethoate (0.03%) or Neem oil.
  - Armyworms: Apply Chlorpyrifos (0.05%).
- Diseases:
  - Leaf Blight: Spray Mancozeb (0.25%).
  - Covered Smut: Seed treatment with systemic fungicides.

### **8. Weed Control**

- Common Weeds: Wild oats, Phalaris minor, Chenopodium.
- Methods:
  - Apply Pendimethalin (1 liter/ha) as pre-emergence herbicide.
  - Perform hand weeding 25–30 days after sowing in small fields.

### **9. Harvesting and Post-Harvest Management**

- Harvesting:
  - Harvest when the crop turns golden yellow, and grains harden.
  - Use combine harvesters for large-scale production or manual methods for small fields.
- Threshing: Use threshers or beat the crop to separate grains.
- Storage:
  - Store grains in dry, airtight containers.
  - Fumigate storage units to prevent pests.

### **10. Yield and Economics**

- Yield: 2.5–4 tons per hectare, depending on variety and practices.
- Cost of Cultivation: ₹18,000–₹25,000 per hectare.
- Market Price: ₹1,500–₹2,000 per quintal (varies by region).