**Cultivation of Potato**

**About Potato:**

* Potato is the third most important food crop globally.
* Economical crop is known as "Poor Man’s Friend" due to affordability.
* Major source of carbohydrates, often substituting cereals.
* Rich in essential nutrients: protein, minerals (Ca, P, Fe), vitamins (B1, B2, B6, C), and amino acids (leucine, tryptophane, isoleucine).
* Cultivated widely in India, especially in Indo-Gangetic plains.

**Production**

* West Bengal is a major potato-producing state in India, with Hoogly district leading in both area and production.

**Climate:**

* Cool-season crop requiring bright sunshine
* Low humidity (60-80%)
* Temperatures 15-25°C.
* The optimal night temperature for growth is 21°C.
* Grown in winter in plains and summer in hills.
* High temperatures (>30°C) hinder growth
* Humidity and rain can cause diseases

**Soil requirements:**

* Friable, well-aerated, fairly deep, organic matter-rich.
* Prefers light soils for uniform temperature and easy harvesting.
* Unsuitable for alkaline or saline soils, acidic soils (pH 5.0 to 6.5) limit scab diseases.

**Time of Planting:**

* Autumn Crop: Last week of September to mid-October
* Spring Crop: Second fortnight of January
* September planting dependent on the prevailing temperature

**Seed Rate:**

* Depends on variety, size, and planting time
* Per hectare seed rate varies based on:

|  |  |  |  |
| --- | --- | --- | --- |
| **Time of**  **sowing** | **Seed size (Diameter in cm)** | **Spacing in cm**  **(P to P x R to R)** | **Required seed in q/ha** |
| Early Sowing | 2.5-3.0 | 45 x 15 | 10 – 15 |
| Main Sowing | 3.0-4.0 | 60 x 25 | 25 – 30 |
| Late Sowing | 4.0-5.0 | 50 x 20 | 20 – 22 |

* Autumn Crop:
  + Sowing: Last week of September to mid-October
  + Seed rate varies based on the above factors
* Spring Crop:
  + Sowing: Second fortnight of January
  + Seed rate varies based on the above factors

**Land Preparation:**

* + Plough the field 20-25 cm deep after Kharif crop harvest
  + Use mould board or disc-plow followed by disc-harrow or tiller
  + Perform two to three cross harrowing, then plank to level surface
  + Incorporate 25-30 t/ha of well-decomposed FYM during plowing

**Manures and Fertilizers:**

* + Apply 20 tonnes of farmyard manure or green manuring
  + Add 2 kg each of *Azospirillum* and *Phosphobacterium* during land preparation
  + Fertilizer dose: 180-240 kg N, 60-90 kg P2O5, 85-125 kg K2O for Indo Gangetic plains
  + Apply phosphorous and potash as basal dressing, split nitrogen at planting and earthing-up

**Selection of Seed Tubers:**

* + Choose healthy, pure seeds of high-yielding varieties
  + Avoid tubers with surface-borne diseases or rot
  + Obtain seed from certified agencies; replace every 3-4 years

**Seed Treatment:**

* + Store seed potatoes in a cool, shady place for 1-2 weeks to sprout
  + Treat both whole and cut tubers with Aretan or Tafasan against diseases
  + Break tuber dormancy if planting before completion; use Thiourea and Gibberellic Acid

**Methods of Planting:**

* + Plant on ridges, flat beds, or flat surfaces with subsequent ridging
  + Use appropriate methods based on soil type and conditions

**Integrated Weed Management:**

* + Employ hand weeding, mulching, and herbicides for effective weed control
  + Apply pre-emergence herbicides like Alachlor or post-emergence herbicides like Paraquat

**Irrigation:**

* + Employ furrow irrigation; irrigate immediately after planting
  + Provide light and repeated irrigations or drip irrigation
  + Avoid over-flooding

**Major Insect-pests:**

* + Aphids
  + Whiteflies
  + Thrips
  + White Grub
  + Cutworm
  + Potato Tuber Moth

**Control**

* + Through traps:
  + Tolerant varieties:
  + Insecticides:

**Major Diseases:**

* + Late blight (Control through crop rotation, seed treatment, and fungicides)
  + Black scurf (Control through crop rotation, seed treatment, and fungicides)
  + Bacterial soft rot (Control through crop rotation, seed treatment, and fungicides)
  + Bacterial wilt (Control through crop rotation, seed treatment, and fungicides)
  + Potato scab (Control through crop rotation, seed treatment, and fungicides)

**Dehaulming:**

* + Remove aerial parts of plants to prepare quality seed and reduce viral disease spread

**Harvesting:**

* + Harvest about 15 days after cutting haulms; dig manually or with diggers
  + Grade and pack tubers properly for storage

**Yield and Income:**

* + Average yield of 300-350 quintals per hectare with proper practices
  + Approximate cost of cultivation: Rs.1,50,000 per hectare; net profit: Rs.1,40,000