

# POTATO

Scientific Name:- Solanum tuberosum

Chromosome No.:-  $2n = 4x = 48$ .

Family:- Solanaceae

Centre of origin:- Peru

## TAXONOMY:-

The potato is a native to South American region. It is believed that the cultivated potato originated from its wild ancestors near the lake Titicaca basin in Peru. Belizian region in high mountains. Potato was introduced to Europe in 17th Century. Potato is a dicot plant and.

### TAXONOMY POSITION:-

Class:- Dicotyledon

Order:-

Family:- Solanaceae

Genus:- Solanum

Species:- tuberosum

## SEED PRODUCTION TECHNOLOGY :-

### SEED PLOT TECHNIQUE:-

- Developed by Pushkarnath in 1967.
- It is a technique of multiplication of disease free / virus free seed in Northern plains of country by growing of healthy seeds in October and remove upper haulms between mid-January and leave tubers underground for maturity.

### TRUE SEED POTATO SEEDS:-

- Sexual reproduction in potato is given by Ramonyan in 1957.
- In this TPS is seen in nursery for raising seedling which are later transplanted in field.
- Disease free potato seed can be produced and prevention of disease to new areas can be checked.

- Cost of Cultivation can be ~~was~~ reduced as compared to traditional method of planting by tuber.
- 100-150g seeds/ha in nursery (95 m<sup>2</sup>) is sufficient.

## DISEASES AND IT'S MANAGEMENT:-

### 1. ~~Late~~ LATE BLIGHT OF POTATO:-

- It is caused by *Phytophthora infestans*.

#### SYMPTOMS:-

- It is also known as Irish famine.
- Small, light to dark green, circular to irregular shaped water-soaked spots.
- These lesions usually appear first on the lower leaves.

#### MANAGEMENT:-

- Eliminating the infected leaves and debris.
- Using proper harvesting and storage practices.
- Apply of mancozeb at 0.25%.
- Air drainage to facilitate the drying of foliage.

### 2. EARLY BLIGHT OF POTATO:-

- It is caused by *Alternaria solani*.

#### SYMPTOMS:-

- Watery rot of leaves occur.
- The spots turn brown in colour.
- Small brown spots with concentric rings that form a bull eye.
- It occurs in the oldest foliage.

#### MANAGEMENT:-

- Proper fertilization, irrigation should be maintained.
- Spraying with copper fungicide concentrate.
- Spraying with mancozeb + chlorothalonil at the base.

### 3. BLACK SCURF:-

- It is caused by *Rhizoctonia solani*

#### SYMPTOMS:-

- Black speck, scab on tubers are seen.
- At the time of sprouting dark brown colour appear on the eyes.
- Hard decay rot with browning on initial time.

#### MANAGEMENT:-

- Use of disease-free soil.
- Use certified potato seed and ensure disease-free propagation material.
- Treating seed tubers with mercuric chloride solution for 15hr for 5min.
- Treating the soil with pentachloroni + benzene @ 70kg/ha.

### 4. SCAB:-

- It is caused by *Streptomyces scabies*

#### SYMPTOMS:-

- Raised, rough patches of skin on the tuber surface.
- Irregular brown raised areas or depressions, often with papery margins on the surface of tubers. These areas contain masses of white bread-like spores.

#### MANAGEMENT:-

- Obtain healthy, disease-free seed tubers for planting.
- Plant the tubers shallow.
- Disinfect the tubers by dipping in suspension of mercurial fungicide e.g. emisan-6 or agalul-6 at 0.25% conc. for 5 minutes.
- Maintain soil pH 5.0 to 5.5.
- Follow crop rotation with non-host crops including. Lucerne, Carrot etc.

## 5. WART DISEASE OF POTATO:-

It is caused by the fungus *Synchytrium endobioticum*.

### SYMPTOM:-

- Affected plant shows warty to growth protuberances on stems, stolon and tubers.
- The roots are not affected.
- The wart consists of distorted proliferated-branched structures which are given together into a mass of hyper parasitic tissue.
- It is difficult to control once it has been established in a field.

### MANAGEMENT:-

- Avoid growing potatoes in affected soil.
- Obtain disease free seed tubers for planting.
- Soil treatment with 5 percent formalin.

## 6. CHARCOL ROT :-

It is caused by *Macrophomina phaseoli*.

### SYMPTOM:-

- The roots become brown in colour.
- Rotting starts on the stem portion.
- It is common during the hot and dry months in late season crops.

### MANAGEMENT:-

- Use disease free seed tubers for planting.
- Grow early maturing varieties such as Kufri Alankar or Kufri Chandramukhi.
- Irrigate crop at regular intervals.
- ~~Old~~ Seed tubers may be treated with AgriVal-6 or Antran at 0.25% solution before storage.

## 7. LEAF ROLL:-

- It is caused by potato leaf roll virus.
- affected plant becomes dwarf, more upright, leaves are rolled especially the lower one. they are thick and leathery.

### MANAGEMENT:-

- Plant only certified seed tuber.
- Apply systemic insecticide thimet, temik or furadon.
- Uproot affected plants along with complete root system and mother tuber, and destroy them.
- Spray the crop with metaxystox at 0.1%.
- Remove haulms in the first week of January, when aphid population build up is very fast.

## PEST AND IT'S MANAGEMENT:-

### 1) CUTWORM:- *Agrotis* spp.

- They cut the sprouts at ground level.
- They feed only at night.
- They also attack tubers and make holes.

#### CONTROL:-

- Spray the crop with dursban 20 EC at 2.5 ml/lit. of water or drench the plants, where the damage is noticed.
- Apply phosphate 10 G granules at 10 kg/per ha one oil around the plants and rake the soil thereafter.
- Use only well rotten farmyard manure.

### 2) EPILACHNA BEETLE:- *Hemipilachna vigintioctopunctata*

- Both the adults and larvae of this beetle feed on skeletonization of leaves.

#### CONTROL

- Pick up the eggs, larvae and adults manually.
- Spraying with Carbaryl at 0.1%.

3) **LEAF EATING CATERPILLAR** :- *Spilosoma obliqua*, *Spodoptera exigua*.

- These feed on the leaves.

CONTROL:-

- Spray the crop with thiodon 35 EC or endosul at 0.15%.
- Making border around the field with carbaryl dust would be effective control.

4) **APHIDS** :- *Myzus persicae*

- They suck the sap from leaves.

- The affected plants become weak, leaves turn yellow and curl downwards.

CONTROL:-

- Spraying with rogor or metaxyston or nuxavon or monocil at 1 ml per litre of water at 10-12 days interval.
- Apply thimel 10 G granules at 10 kg/ha in furrow at the time of planting.
- Rotation should be practiced in the 1st week of January.

5) **JASSIDS** :-

- They suck sap from under surface of leaves causing yellowing, curling & later withering of leaves known as 'hopper burn'.

CONTROL:-

- Spraying with metaxyston @ 0.1%.
- Applying thimel 10 G granules @ 10 kg/ha.

6) **POTATO TUBER MOTH** ~~CAMPY~~ *Phytophthora operculella*.

- This is a major pest in potato in storage.
- It bores and make tunnel into the potato tubers.

CONTROL:-

- Use healthy tubers.
- Spraying with carbaryl or nuxavon or monocil @ 0.1%.
- Disinfecting the storage with Malathion @ 0.05% before storing potatoes.

## 7) GOLDEN NEMATODE (*Gylobodera rostochinensis*, *Heterodera rostochinensis*)

- It is also known as potato root ellworm or potato cyst nematode.
- The infected plants produced additional roots near the soil surface.
- Later outer leaves become yellow and die.

### CONTROL:-

- Avoid growing in infested soil.
- Follow crop rotation excluding solanaceous crop.
- Treat the soil with DD @ 90 gallons/ha.

## 8) ROOT KNOT NEMATODES (*Meloidogyne incognita* or *M. javanica*)

- Affected plants are stunted, sickly and may show premature or sudden dying.
- Tiny galls are formed on tubers.

### CONTROL:-

- Soil solarization should be done.
- Use fumigant such as Telone-II, Paladin, chloropicrin.