

Diseases of Chick Pea (*Cicer arietinum* L.) and their Management

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Sclerotinia Blight

Sclerotinia sclerotiorum

Symptoms

It comes in the early stage i.e. up to six weeks from sowing. The typical symptoms develop on stem near the ground level. The plant become yellow, then brown and finally die. White cottony growth of the fungus along with small, hard and black coloured sclerotia may be seen within the brown coloured spot found on the stem. Such spot girdle the stem causing drying and death of the plant.

Favorable conditions:-

- High soil moisture, low soil pH and high temperature.
- The presence of unspoiled organic matter on the soil surface and high soil moisture at the time of sowing and seedling stage.

Management:-

- Deep ploughing in summer.
 - Avoid high moisture at the sowing time.
 - Destroy the crop residues of previous crop and weeds before sowing and after harvest.
 - All undecomposed stuff should be removed from the field before land preparation.
- Treat the seeds with a mixture of Carbendazim + Thiram (1:1) @ 2g per Kg of seed.



a. Collar rot

b. Wilt

c. Dry root rot

Wilt:- *Fusarium oxysporum f.sp. ciceris***Symptoms**

The disease occurs at two stages of crop growth, seedling stage. The main symptom on seedling are yellowing and drying of leaves, drooping of petioles and rachis, withering of plants. In the case of adult plants drooping of leaves is observed initially in upper part of plant, and soon observed in whole plant. Vascular browning is clearly seen on the stem and root portion.

Pathogen

The fungus produces hyaline to light brown, septate and profusely branched hyphae. Microconidia are oval to cylindrical, hyaline, Single celled, usually arise on short conidiospores. Chlamydospores are rough walled or smooth, terminal or intercalary, may be produced singly or in chains.

Favorable conditions:-

High soil temperature (above 25C) and high soil moisture.

Disease cycle:-

The disease is seed and soil borne. The primary infection is through chlamydospores in soil, which remain viable up to next crop season. The secondary spread is through irrigation water, cultural operations and equipment.

Management:-

- Crop rotation of three or four year may follow.
- Treat the seeds with Carbendazim or Thiram at 2 g/kg or Carbendazim 1 g+ Thiram 1 g/kg or treat the seeds with Trichoderma viride at 4g/kg (106cfu/g) Pseudomonas fluorescens @ 10g/kg (106cfu/g) of seed.
- Grow resistant cultures like 1CCC 42, H82-2, Avrodhi, Alok Samrat, Pusa-212 and Pusa-2024.

Dry root rot:-**Symptoms**

Typical symptoms of the disease may be manifested by the yellowing on the plant. Yellow leaves fall down within one two days. Infected plants are the appearance of the



disease on the root. Dark brown lesion on root and stem observed. If the plants are pulled out from the soil the finer root remain in the soil and the main root with basal part of the stems may show dry root rot symptoms.

Causal organism: *Rhizoctonia bataticola*

Pathogen

High temperature attached with low soil moisture may be influence the intensity of disease. The fungus produced profused mycelium with sclerotial bodies. Colonies are downy and fast growing that appears dark brown with abundant sclerotial production with smooth margin. Mycelium is septate and branches at right angle. Sclerotia are globose to oval and irregular in shape and dark brown in color.

Disease cycle

The primary source of inoculums is sclerotia found in soil or exist outside or embedded in the tissue occupied during parasitic phase of the fungus is able of living saprophytically on dead organic tissue producing sclerotial bodies.

Management

Field sanitation and 4-5 year crop rotation should be observed. Seed treatment with suitable fungicides.

Ascochyta blight:- *Ascochyta rabiei*

Symptoms

All above ground parts of the plant are infected. On leaf, the lesions are round or elongated, bearing irregularly depressed brown spot and enclosed by a brownish red margin. Similar spots may become visible on the stem and pods. The spots on the stem and pods have pycnidia arranged in concentric circle as tiny black dots. When the lesions girdle the stem, the portion over the point of attack rapidly dies.

Pathogen

The fungus produces hyaline to brown and septate mycelium. Pycnidia are spherical to sub-globose with a prominent ostiole. Pycnidiospores are hyaline, oval to oblong. Straight or slightly curled and single celled, irregularly bicelled, Order Dothidiales class loculoascomycetes of the ascomycotina.

Favorable conditions:-



High rainfall during flowering, Temperature of 20-25°C and Relative humidity of 60%.

Disease cycle:-

The fungus survives in the infected plant debris as pycnidia. The pathogen is also externally and internally seed-borne. The primary spread is from seed borne pycnidia and plant debris in the soil. The secondary spreads is mostly through air-borne pycnidio-pores (conidia).

Management:-

- Remove and destroy the infected plant debris from the field.
- Spray with Carbendazim at 500 g/ha or Chlorothalonil 1kg/ha and Calixin M 900g/ha, hexacap 900g/ha.
- Follow crop rotation with cereals.

Rust:- *Uromyces ciceris-arietini*

Symptoms

The rust appear at the ending of February when plant are 4 month old. The infection appears as minute oval, brown, powdery lesions on both the surface, especially more on lower surface or leaf. The lesions, which are uredosori, cover the entire leaf surface. The rust pustules may appear on petioles, stems and pods.

Pathogen

The uredospores are spherical, brownish yellow in colour, loosely undulated with 4-8 germ pores. The telia appear late (April) and resembled the uredia except they are dark brown. Teliospores are round to oval, brown, single celled with thined tip and the walls are rough, brown and warty.

Management:-

- Destroy weed host.
- Spray Carbendazim 500 g/ha or Propiconazole 1l/ha.

Wet root rot:-

Symptoms

Affected seedlings slowly turn yellow and petioles and leaflets droop. Seedlings do not usually fall down. A distinct dark brown lesion appears above the collar region on the

main stem and can expand to lower branches in older plants. The stem and root below the lesion shows rotting, commonly with pinkish mycelial growth. Sclerotia are not usually seen.

Causal organism: *Rhizoctonia Solani*

Etiology

The mycelium of fungus is multinucleate. Mycelia are profusely branched and branches are acute right angle being constricted at or near the point of origin. Sclerotia are brown. Chlamydospores are produced in chain.

Management

Avoid excessive moisture. Well drained soils and tillage. Seed treatment with captan or thiram or benomyl @ 3 g/kg seed.

Stunt disease – Virus

Symptoms

Infected plants are stunted and bushy with short internodes. The leaflets are smaller with yellow, orange or brown discoloration. Stem also shows brown discoloration. The plants dry prematurely. Phloem browning in the collar region is the most characteristic symptom of the stunt. The virus is transmitted by *Aphis craccivora*.

Management:-

- Rogue out the infected plants from field.
- Spray with Monocrotophos @ 500 ml/ha.

