

Disease And Pest Management In Sesame

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Sesame, scientifically known as *Sesamum indicum* (L.), belongs to the Pedaliaceae family and is typically grown in tropical and subtropical areas of the world. The crop grows well on drained light to medium textured soils. Acidic or alkaline soils are not suitable for sesame cultivation. It requires about 300-350 mm rainfall with optimum temperature between 25 and 35°C. There will be a remarked reduction in oil content yield if the temperature goes beyond 40°C coupled with hot winds. Sesame seed may be eaten fried, mixed with sugar or in the form of sweetmeats. The sesame seed is a rich source of edible oil and its oil content varies from 40-60%. Sesame oil is used as cooking oil in southern India and is the oldest indigenous oil seed crop with longest history of its cultivation in India. India is still a leading country with maximum (25.8 %) production from the largest (29.8 %) area with highest export (40 %) in the world. Sesame seeds contain three times more calcium than a comparable measure of milk and are a very good source of magnesium and copper. Sesame flour has high protein, high levels of methionine and tryptophan. It is having many industrial, nutraceutical and pharmaceutical uses. Sesame growing farmers, particularly in arid and semiarid areas of the world, face various environmental abiotic (e.g., salinity, drought, heavy metals, low soil fertility, etc.) and biotic (e.g., diseases, pests, etc.) stresses. Sesame suffers from many diseases like macrophomina stem and root rot (Charcoal rot), leaf spots, powdery mildew, phyllody and pests like Leaf roller/ capsule borer, Gall Fly, Bihary Hairy caterpillar and Leaf Hoppers.

Disease And Pest Management

Diseases And Their Management

1. Macrophomina stem and root rot or charcoal rot

Symptoms

- The disease affects the crop at all growth stages particularly at maturity stage.
- In the field the disease appears in patches.
- The disease initially appears as yellowing of lower leaves followed by drooping and defoliation.
- The stem region near the ground shows dark black lesions and later shows shredding.
- The affected matured plants can be easily pulled out leaving the rotten lateral roots in the soil.
- The disease causes premature pod opening, shrivelling and blackening of seeds.
- The rotten root as well as stem tissues contains a huge number of minute black coloured sclerotia.

Favourable conditions

- High day temperature of 30 - 35°C.
- Available soil moisture less than 60%.
- Prolonged drought followed by heavy rainfall.

Management

- Deep ploughing during summer
- Seed treatment with carbendazim @ 1g/kg seed.
- Treat the seeds with *Trichoderma viride* @ 10g/kg.
- Apply farm yard manure or green leaf manure @ 4t/acre or neem cake @ 60 kg/acre.
- Spot drenching with copper oxychloride @ 3g/litre of water.

2. Alternaria Leaf Blight

Symptoms

- Initially small, circular, reddish-brown spots (1-8 mm) appear on leaves which enlarge later and cover

large area with concentric rings.

- The lower surface of the spots is greyish brown in colour.
- Defoliation occurs under severe blighting conditions.
- Dark brown lesions can also be seen on petioles, stem and capsules.
- Infection of capsules results in premature splitting with shrivelled seeds.

Favourable conditions

- Low temperature (20-25°C) and high relative humidity of more than 80%.
- Cloudy weather with intermittent rainfall.

Management

- Treat the seeds with thiram or carbendazim @ 1g/kg.
- Spray carbendazim@1g or mancozeb @ 2.5g/liter of water 2-3 times at 15 days interval.

3. Cercospora leaf spot

Symptoms

- The disease first appears on the leaves as minute water-soaked lesions.
- Later on, the lesion enlarges to form round to irregular spots of 5-15 mm diameter on both the leaf

Surface.

- The spots coalesce to form irregular patches of varying size leading to premature defoliation.
- The infection is also seen on stem and petiole forming spots of varying lengths.
- Dark linear spots also occur on pods causing shedding.

Favourable Conditions

- Low temperature (20-25°C) and high relative humidity of more than 80%.
- Cloudy weather with intermittent rainfall.

Management

- Treat the seeds with mancozeb or thiram at 3g/kg of seed.
- Spray with carbendazim+mancozeb@ 2.5g or propiconazole @1 ml per liter of water.

4. Powdery Mildew

Symptoms

- Initially greyish-white powdery growth appears on the upper surface of lower leaves.
- When several spots coalesce, the entire leaf surface may be covered with powdery coating.
- In severe cases, the infection may be seen on the flowers and young capsules leading to premature

Shedding.

- The severally affected leaves may be twisted and malformed.
- In the advanced stages of infection, the mycelial growth changes to dark or black because of development of cleistothecia.

Favourable conditions

Dry humid weather.

Low relative humidity of less than 70%

Closer Planting

Management

- Remove the infected plant debris and destroy.
- Spray with myclobutanil at 1 g/liter of water
- Spray wettable sulphur at 3g/liter of water 7-10 days after spray of myclobutanil.

5. Phyllody

Symptoms

- The first sign of the symptoms is leaf vein clearing.
- The disease manifests itself mostly during flowering stage, i.e. 50-60 days after sowing.
- The floral parts are transformed into green leafy structures and grow profusely.
- The flower is rendered sterile.
- Phylloid structures have thick and noticeable veins.
- The plant is stunted with reduced internodes and abnormal branching.

Favourable Conditions

- The disease is transmitted through leaf hoppers.
- Dry weather, moderate temperature (25°C).
- Low humidity (65%), minimum rainfall (0.6mm) during the vegetative to flowering stage of the crop.

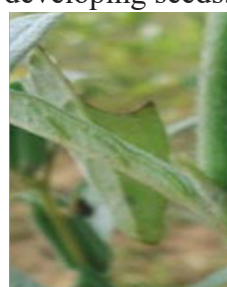
Management

- Remove all the reservoir and weed hosts like Parthenium and Croton.
- Avoid growing cotton, groundnut and grain legumes near sesame.
- Rogue out the infected plants periodically.
- Spray imidacloprid @ 0.3 ml or Dimethoate @ 2 ml/liter of water to control the leaf hoppers.

Insect Pests And Their Management

2. Leaf Roller/ Capsule Borer (*Antigastra Catalaunalis Duponchel*):

- It feeds on all parts of sesame, except the roots.
- The larva starts attacking sesame plants from seedling stage when the crop is 10 to 15 days old.
- In early stage of plant growth the caterpillar roll together a few top leaves and feed inside.
- In very early stages of plant growth, the infested plant die without producing any branch and the infested plants fail to grow further.
- In the flowering stage of the crop the larvae bore in to the flower bud and flowers are also often webbed.
- The infested buds and flowers fail to produce capsule and drop off.
- The caterpillars also bore in to the capsules and feed on developing seeds.



Damaged Plants Due To Leaf Webber And Capsule Borer

Management

- Collect and destroy the larvae from the leaf webs during the initial stages of plant growth.
- Erect bird perches @ 40-50/ha to facilitate predation of larvae.
- Spray neem seed kernels extract (NSKE) 5% or neem oil @ 5 ml/l or Chlorpyrifos 2.5 ml/l or chlorantraniliprole 18.5SC @ 0.4 ml/l

3. Gall Fly (*Asphondylia sesami*)

- This insect pest's occurrence is observed between September and November, coinciding with the crop's transition from flowering to capsule development.
- The female fly lays their eggs in the ovaries of the flowers and the gall begins to develop before the petals wither or become twisted and stunted and do not develop into flowers or capsules.
- The irritation caused by the feeding of the larvae resulting in the flower abortion or developing abnormal/malformed gall. The infested buds wither and fall on the ground.

Adult of gall Fly

Affected capsule

Pupa of gall Fly



Management

- The infested buds should be removed and destroyed to reduce further incidence of the pest
- Spraying of Acephate 1.5 g/l of water

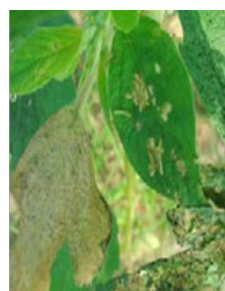
4. Bihary Hairy caterpillar

- Two hairy caterpillars viz., *Spilosoma obliqua* walk and *Amsacta moorei* Butt. have been reported to damage the sesame crop.
- The incidence of these hairy caterpillars takes place at the onset of monsoon and they are active from July to October.
- The newly hatched larvae remain in congregation for few days, mostly on leaves and defoliate the plants leaving the papery white skeletonised leaf.
- Mature caterpillars migrate to other plants and feed voraciously leaving only the stem.
- The attacked plants become weak and consequently less number of capsules are formed

Larvae of Bihar

Hairy Caterpillar

Damaged Leaves



- Collect and destroy infested plant parts, egg masses and young larvae during gregarious phase.
- Erect bird perches @ 40-50/ha to facilitate predation of larvae.
- Install one light trap per hectare to catch the adults.
- Neem seed kernels extract (NSKE) 5% or Chlorpyrifos 2.5 ml/l or Acephate 75SP @ 1.5 g/l

5. Leaf Hoppers (*Orosius albicinctus* Dist.)

- Leaf hopper is a serious pest of sesame and is known to transmit phyllody disease. Infestation of the pest lead to curling of leaf edges, leaves turn red or brown and then dries up and drop.
- The jassid or leafhopper is a serious pest of sesame and is known to transmit phyllody disease. The pest remains active from vegetative to capsule stage.



Leaf Hopper



Phyllody Affected Plant

Management

- Seed treatment with Imidacloprid 70WS @ 5 g/kg or thiamethoxam 25WG @ 5 g/kg seed.
- Spray neem seed kernels extract (NSKE) 5% or oxydemeton methyl 25EC @ 1.5ml/li.

6. Aphids

- The infestation starts from 25 days after sowing.
- Nymphs and adults suck the sap from under surface of leaves which results in Crinkling and curling of leaves.
- Leaves appear shiny and sticky due to honeydew excreted by the insects.
- Later sooty mold grows on honey dew and leaves have a black coating.

Management



- Seed treatment with Imidacloprid 70WS @ 5 g/kg or thiamethoxam 25WG @ 5 g/kg seed.
- Spray Acephate 1.5 gr/l or Imidacloprid 0.3 ml/l



Macrophomina Stem And Root Rot



Phyllody



Alternaria Leaf Spot



Leaf Hopper



Leaf Webber And Capsule Borer