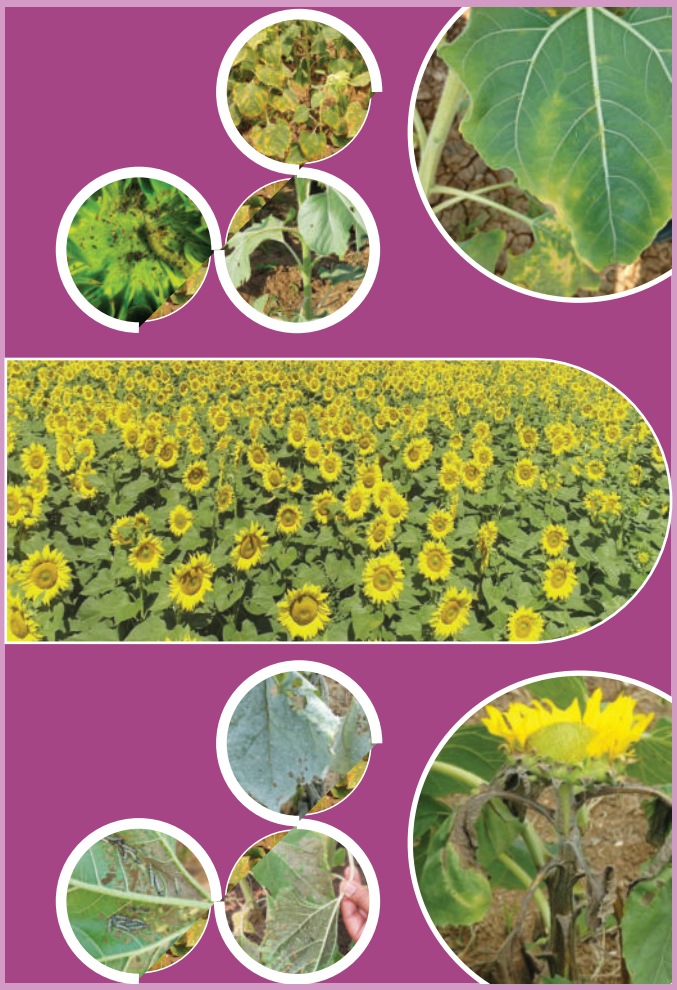
Sunflower
Pests & Diseases and their Management



ICAR- INDIAN INSTITUTE OF OILSEEDS RESEARCH
(Indian Council of Agricultural Research)
Rajendranagar, Hyderabad - 500 030, India

Sunflower
Pests & Diseases and their Management

ICAR-Indian Institute of Oilseeds Research
Rajendranagar, Hyderabad-500 030, Telangana State

Citation

P.S. Srinivas, M. Santha Lakshmi Prasad, K. Sakthivel, G.D.S. Kumar, H.P. Meena, R.K. Mathur and A. Srinivas. Sunflower: Pests & Diseases and their Management, ICAR-Indian Institute of Oilseeds Research, Hyderabad.

Published by

R.K. Mathur
Director
ICAR-Indian Institute of Oilseeds Research
Rajendranagar, Hyderabad

Printed at

Balaji Scan Private Limited
11-2-1145, Beside Matas Temple
Nampally, Hyderabad-500 001, Telangana, INDIA.
Tel: 23303424/25, 9848032644,
Press: 9248007736/37

Insect Pests

Sunflower is grown in all three (rainy, winter and summer) seasons in different agro-ecological zones in India. Seed yield loss of 24-40% is reported due to insect pests and diseases. Economically important insect pests are head borer, *Helicoverpa armigera*; defoliators such as hairy caterpillars, tobacco caterpillar, green semilooper, sucking pests like leafhopper, whitefly and thrips.

1. Head borer (*Helicoverpa armigera*)

- Predominantly occurs in *kharif* season.
- Infestation begins at star bud stage.
- Larvae feed on developing seed and results in yield loss.
- Sometimes, also feeds on leaves.

Management

- Install Ha-pheromone traps @ 10/ha for monitoring.
- Erect bird perches @ 25/hectare for larval predation.
- Foliar spray of *Btk* formulation, DOR Bt-127 SC @ 1500 ml/ha or other commercial *Btk* @ 750 g/ha or Ha-NPV @ 250 LE/ha or insecticide or chlorantraniliprole 18.5 SC @ 150 ml/ha or profenophos 50 EC (1000 ml/ha).

2. Tobacco caterpillar (*Spodoptera litura*)

- Predominant during *kharif* season.
- Eggs are laid in masses.
- Newly hatched larvae feed gregariously and skeletonise the leaves giving mesh like appearance.
- Later, larvae spread to other plants and feed on leaves
- Sometimes larvae also feed on thalamus.

Management

- Install Sl sex pheromone trap @ 10 traps/ha for monitoring the pest.
- Collect and destroy egg masses and gregarious larvae along with damaged leaves.
- Spray Sl- NPV @ 250 LE/ha or Flubendiamide 39.35 SC @ 150 ml/ha or chlorantraniliprole @ 150 ml/ha or profenofos 50 EC @ 1000 ml/ ha.

Spilosoma obliqua

Euproctis fraterna

3. Hairy caterpillars (*Spilosoma obliqua, Euproctis fraterna*)

- Predominant in *kharif* season.
- Early instars feed gregariously on leaves. Later

stages voraciously feed on leaves and defoliate the plant.

Management

- Collect and destroy egg masses and gregarious stages of the larvae along with damaged leaves.
- Spray 5% neem seed kernel extract or cypermethrin 10 EC @ 750 ml/ha.

4. Green semilooper (*Thysanoplusia orichalcea*)

- As middle legs are absent, larvae make a semiloop while walking.
- Larvae feed on leaves and defoliate the plant.
- Spray Emamectin benzoate 1.9 EC @ 425 ml/ha or chlorantraniliprole @ 150 ml/ha or profenofos 50 EC @ 1000 ml/ha.

5. Thrips (*Frankliniella schultzei*, *Scirtothrips dorsalis*, *Thrips tabaci*, *T. palmi*)

- Predominant in *kharif* season.
- Both nymphs and adults suck sap from leaves and flowers.
- Thrips acts as virus vector for sunflower necrosis disease. Carries and spreads infected parthenium pollen to sunflower plants.

Management

- Seed treatment with imidacloprid 70 WS @ 7 g/kg of seed or thiamethoxam 10 g/kg and foliar spray of neem oil @ 2500 ml/ha or imidacloprid (200 ml/ha) or thiamethoxam (100 g/ha).

6. Leafhopper (*Amrasca biguttula biguttula*)

- Occurs in *kharif* and *rabi* summer seasons. But *rabi* and summer crop suffer more damage.
- Nymphs and adults suck sap from leaves from underside of the leaves.
- Leaves turn yellow from the edges. Later, due to continuous feeding, hopper burn symptoms appear on leaf. Brown patches coalesce and leaves dry.

Management

- Seed treatment with imidacloprid 70 WS @ 7 g/kg seed or thiamethoxam 30 FS @ 10 g/kg seed and foliar spray of imidacloprid 17.8 SL (100 ml/ha)

7. Whitefly (*Bemisia tabaci*)

- Infests the crop in both *kharif* and *rabi* seasons but more predominant in *rabi* season. Mostly adults are noticed on lower surface of the leaves.

- Small specs will develop on leaves due to sucking of the sap and leaves turn yellow.
- Acts as virus vector of sunflower leaf curl disease.

Management

- Seed treatment with imidacloprid 70 WS @ 7 g/kg seed and foliar spray of imidacloprid 17.8 SL @ 100 ml/ha or Diafenthiuron 50 WP @ 500 g/ ha.

Diseases

1. Alternariaster leaf spot/ blight *(Alternariaster helianthi)*

- The fungus produces dark brown to black, circular to oval spots on the leaves, under severe conditions, the spots can also be seen on the stem, sepals and petals.
- The spots are often surrounded by a chlorotic zone with necrotic center.
- The spots later enlarge in size with concentric rings and become irregular in shape.

- Under high atmospheric humidity, several spots coalesce to show bigger irregular lesions leading to drying and defoliation.
- The disease sometimes cause rotting of flower heads and affects the quality of seeds by reducing the germination percentage.

Management

- Early planting in *kharif* during the month of June.
- Intercropping Sunflower + Groundnut (1:5).

- Spacing of 60 x 30 cm.
- Seed treatment - captan @ 3 g/kg or carbendazim @ 2 g/kg.
- Seed treatment with carbendazim + mancozeb (1:3) @ 2 g/kg seed followed by spraying of propiconazole 500 ml\ha at 30 and 45 days after sowing.
- Foliar spray of mancozeb @ 3 g/l or hexaconazole or propiconazole @ 500 ml\ha, 2-3 times at 15 days interval.

2. Sunflower necrosis

- It affects crop in all seasons and at any stage of the crop.
- Virus causes the disease and spread by thrips.
- Necrotic spots/blotching on leaves, streaks on stem, petiole mottling and curling of leaves, paralytic appearance, twisting, stunted growth, deformation of head and death of plant.

Management

- Clean cultivation, rouging of infected plants.
- Barrier crop 2-3 rows with sorghum/Bajra/Maize.
- Seed treatment with imidacloprid 70 WP @ 5 g/kg followed by insecticidal spray with imidacloprid @ 0.4 ml/l at 15 days interval.

3. Head rot (*Rhizopus arrhizus*)

- Head rot generally affects the crop when there is intermittent rain or drizzling during heading stage.
- Water soaked lesions on the lower surface of the head, which later turn brown, head becomes soft and pulpy.
- Disease aggravated by insects feeding.
- The seeds are converted into black powdery mass.

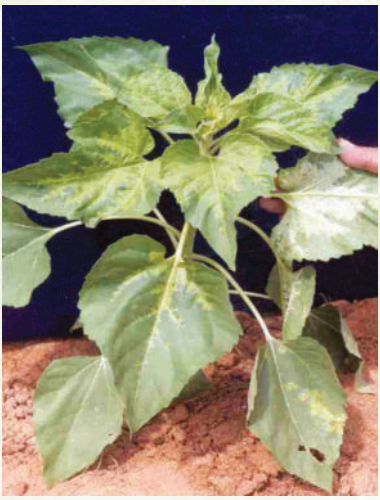
Management

- Seed treatment with carbendazim @ 2 g/kg or mancozeb @ 2.5 g/kg seed.
- Control the caterpillars feeding on the heads.
- Spraying of copper oxychloride @ 1600 g/ha or mancozeb @ 600 g/ha or wettable sulphur @ 3 g/l of water in 10 days interval at flowering stage.

4. Downy mildew (*Plasmopara halstedii*)

- Chlorosis starts through mid-ribs causing ultimately abnormally thick, down ward curled leaves that show prominent yellow and green epiphyllous mottling.
- Lower side of the leaf downy growth is observed.
- Various kinds of symptoms are being produced by the pathogen like damping off, systemic infection, local lesions and basal rot or stem gall, etc.

- In systemic infections plants are severely stunted. Flower heads of affected plants remain sterile and erect.



Management

- Cultural practices of such as 3 year crop rotation, deep ploughing, roughing of mildew infected seedlings during thinning, removal and destruction of infected plants before flowering reduces spread of the disease.
- Seed treatment with metalaxyl (apron 35 SD) @ 6 g/kg followed by foliar spraying of metalaxyl 400g/ha or copper oxy chloride @ 3 g/lit times at 15 days interval provides effective control.

5. Powdery mildew (*Golovinomyces latisporus)*

- Appears primarily as white to grey spots on the upper surface of infected leaves; which increase in size, coalesce, develop to cover the plant area with white powdery growth.
- Cool, dry climate during winter months favours the disease.

- The mildew becomes severe on all aerial parts of the plant under heavy infection during the blooming stage of the plant.

Management

- Application of wettable sulphur @ 1 kg/ha or dinocap (karathane) @ 500 ml/ha or propiconazole or difenoconazole @ 500 ml/ha, three times at 15 days interval effectively controls the disease.

Bird Damage:

When sunflower raised in isolated areas, birds particularly parrots pose serious problem. It is desirable to take up sunflower cultivation in large contiguous

blocks. Crop should be protected from bird damage during the period from seed filling to harvest through effective bird scaring particularly in the morning and evening hours. Tying of bright reflector ribbons above the crop will supplement bird scaring. Andio devices with predator sounds may be useful in scaring birds.

हर कदम, हर डगर
किसानों का हमसफर
भाकृअनुप
ICAR
Agrisearch with a human touch

भाकृअनुप
ICAR
ICAR- INDIAN INSTITUTE OF OILSEEDS RESEARCH
भाकृअनुप
IIOR
Rajendranagar, Hyderabad - 500 030, India
Phone : +91-40-24015222, Fax: +91-40-24017969
e-mail: director.iior@icar.gov.in
Website: http://www.icar-iior.org.in