Insect Pests Management in Sunflower

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Sunflower is an important oilseed crop in India. The production of this crop is seriously affected by the insect pests, attacking at different stages of crop growth. These losses can be minimized by adopting effective pest management strategies.

Oilseed crops contribute much in our national economy. Among oilseeds, sunflower (Helianthus annus L.) commonly known as 'Surajmukhi' is one of the potential oil yielding crops gaining popularity because of its wider adaptability to different agroclimatic conditions. The production of this crop is quite low despite the release of several high yielding varieties. Among the factors responsible for lower productivity, the crop attacked by large number of insect pests at different stages of crop growth is an alarming feature. To avoid these losses, it is essential that the knowledge about the damage caused by major insect pests and pest management strategies, should be imparted to the farmers. Few major pests and their management practices have been discussed in this article.

**Head borer (Helicoverpa armigera)**

Head borer is a polyphagous insect and a severe pest of sunflower responsible for causing 20-25 per cent loss in yield under normal conditions. However, some times the damage is so severe and loss goes upto 40-70 per cent. The eggs of this insects are laid singly on tender parts of the plant and flower bud. They hatch in 4-6 days. Newly hatched larvae feed on leaves, buds and flowers for a short period of time and after making a hole in the disc may enter in it to feed the developing seed. Grown up larve bore inside the disc by making a hole in the disc may enter in it to feed the developing seed. Grown up larvae bore inside the disc by making apperant tunnels. After devouring the seed in one head the larvae move to the next head resulting in heavy loss of the crop. Third and fourth instar larvae are more noxious than younger ones. The full grown larvae are greenish in colour and about 3.5 cm long.

**Management**

1. Deep ploughing of the field is helpful to kill the hibernating larvae.
2. Install sex pheromone trap in the field @ 20 traps/ha.
3. Release of egg parasitoid, Trichogramma sp @ 50,000 adults/ha at weekly interval keep the head borer at bay.
4. Spray nuclear polyhedrosis virus (HaNPV) @ 350 LE/ha for the control of 1st and 2nd instar larvae.
5. Application of 5% neem seed kernel extract at 10 days interval protect the crop from insect damage.
6. Need based spray of endosulfan 35 EC @ 1.25 litre/ha or monochrotophos 40 EC @ 1.0 litre/ha controls the insect pest effectively.

Hairy caterpillar (Spilosoma oblique)

Hairy caterpillars are polyphagous pest found throughout the year. Among various hairy caterpillars, Bihar hairy caterpillar is major ones causing severe damage to the sunflower crop. They are called hairy caterpillar because they have profused hairy growth on their body in larval stage.

The female lays eggs in cluster on the lower surface of leaves. After hatching, the tiny larvae feed gregariously on the chlorophyll content of the leaf upto second instar. The attacked leaves look like a dirty paper, which can be recognized from a distance. After this stage larvae start dispersing throughout the field and feed voraciously leaving only the veins of the leaves without any green material. The full grown larvae are more harmful. After finishing the foliage of one field they migrate to the adjacent field resulting in complete destruction of the crop.

Management
1. The eggs are laid in cluster, these can be collected and destroyed manually.
2. The leaves on which large numbers of first instar larvae feed gregariously can also be collected and destroyed mechanically.
3. Light trap should be installed in the field and attracted moths should be destroyed.
4. Application of Bacillus thuringiensis (Bt) @ 1.0 Kg/ha has been found effective in controlling hairy caterpillars.
5. Spot application of endosulfan 35 EC @ 1.5 ml/litre of water or chlorpyriphos 20 EC 1.0 ml/litre of water are highly effective for the control of gregarious phase larvae.
6. Digging trench around the field and dusting them with carbary! 10% or methyl parathion 2% dust prevents the migration of caterpillars from one field to another.
7. Need based application of endosulfan 35 EC or quinalpos 25 EC @ 1.5 ml/liter of water should be done in the evening.

Jassids (Amrasca biguttula)

It is another important pest of sunflower. Jassids are small, very active, greenish yellow insects and can be seen in clusters on the lower surface of the leaves, both nymphs and adults suck the plant sap. The damage is characterized by typical yellowish-white spot on the leaves. Under severe infestation the leaf gets curled giving the 'hopper burn' symptoms. Seeds are also shriveled. The oil content reduces resulting drastic reduction in oil yield. Use of higher dose of nitrogen coupled with frequent irrigation make the plant more susceptible to jassid attack.

Management
1. Balanced dose of fertilizers should be applied because excess nitrogen make the plant more susceptible.
2. Green colour card board painted with sticky material should be kept in the field. Flying jassids come in contact with sticky board and die.

3. Release of Chrysoperla sp. @ 2500 eggs or larvae/ha manage the jassid population.

4. Spray of 5% neem seed kernel extract protect the crop from insect damage.

5. Application of oxydemeton methyl 25EC or dimethoate 30 EC @ 1.0 ml/liter of water controls the insect pest effectively.

Cut worm (Agrotis ipsilon)

This is a polyphagous pest causing serious problem in sunflower cultivation during recent years. Greasy brown colour larvae feed on the young roots and basal portion of the plant below the ground and kill the plant by cutting at the base.

**Management**

1. Deep ploughing of the field should be done after harvesting of the crop in order to expose the pupal stage of pest.

2. Treat the seed with chlorpyriphos 20 EC @ 12 ml/kg seed.

3. Treat the soil with Chlorpyriphos 20EC @ 2.5 Litre/Hactare or Carbaryl 10% dust @ 25-30 Kg/Hactare.

4. Dust the crop with malathion 5% or carbaryl 10% dust @ 15-20 kg/ha.

Protection from birds

The birds like parrot, house sparrow and dove cause damage to the crop at the time of seed formation. Some birds also feed on sown seed resulting in poor plant population.

**Management**

1. Use of bird scarer are very important from the starting of seed development stage to harvest.

2. Seed treatment with chlorpyriphos 20 EC @ 12ml/kg seed protect the sown seeds from bird damage.

The loss caused by above discussed insect pest may be minimized by adopting adequate cultural and mechanical practices right from ploughing of the field up to harvesting of the crop. This is cross pollinated crop attracting plenty of pollinators which contribute a lot in seed setting and its quality. Considering the pollination aspect the following points should be kept in mind during chemical control.

1. Eco-friendly management practices should be used.

2. Use of chemicals should be avoided.

3. If chemical insecticide is inevitable then selective chemical should be used.

4. Dust formulation should be avoided.

5. Granular formulation should be used.

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