

Non-Insect-Pests of Soybean and Their Management

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Insects belong to Insecta class having six legs but some of the pests are not insects but they belong to different class such as mites, birds, crabs, millipedes, nematodes and mammals. They also damage the crop considerably. Soybean is also infested by these non-insect-pests and causes economic losses to crop. Mites' infestation in central region of India is increasing day by day due to climate change, improved agronomic practices, changing in crop pattern and indiscriminate use of pesticides. Wild animals are also causing soybean crop due to destructions of forests. Other non-insect-pests of soybean are rats, slugs and millipedes.

Red spider mite or okra mite, *Tetranychus telarius*:

Mites belong to Arachnida class of of Arthropoda. It is red in colour, microscopic and wingless. They have eight legs and three nymphal instars i.e. protonymph, deutonymph and tritonymph. Both nymph and adult is damaging stage. They suck the cell sap from lower surface of leaves as a result of this whitish very small spot appeared on upper surface of leaf. They can be seen on lower surface of leaf with their silken webs. In sever infestation plants are wilted and may die. Mite infestations are more in drought conditions and spread in windward direction. The estimated losses due to mites may be upto 13% in yield.

Management:

- Spray of Ethion 50 EC 1.5 liter/ha.
- Do not cultivate okra near soybean because it act as alternate host crop for mite.



Fig. 1: Mite damage symptoms in soybean

Rats:

There are 11 types of rats are found in India but two species namely, *Mus musculus* and *Rattus meltda* are found mostly infesting soybean. Rats daily consume food equal to about 10 per cent of their body weight and destroy 20 times the amount they actually consume. At seedling stage of soybean, it eats seedlings of soybean and cutting of seedlings by their sharp teeth and carries them in their burrows for feeding later on. They damage mostly early maturing varieties because pods first appeared. First, they dislodge the lower pods and eat seeds by gnawing their sharp teeth and also carry them to their burrows for feeding. Their damage can be seen by observing of a lot of fallen and gnawed pods at ground. They can damage soybean crop about 1-2 quintal/ha.

Management:

- Fumigation with aluminium phosphide tablets @ 2 tablets of 0.6 gram per burrow. After putting of tablets, it should be tightly packed with tight soil.
- Poison baiting with zinc phosphide (1 part zinc phosphide mixed with 19 parts whole or cracked grain with vegetable oil and spread in field uniformly after 15–20-meter distance) after one or two night of prebaiting without the poison. Two hundred grams of poison will be required for once hectare treatment. Bromadiolone anticoagulant may be used in place of zinc phosphide for poison baiting (20 gm 0.25% Bromadiolone powder mix with 20 gm vegetable oil and 20 gm powdered sugar in 1 kg any cereal flour.
- Readymade poison baits are also available in markets and also effective to manage the rats.
- Use of rat traps.
- Clean cultivation.



Fig. 1: rats damage symptoms in soybean

Slug, *Deroceras reticulatum*:

Slugs belong to Mollusca phylum and Gastropoda class. The attack of slugs is more in soybean where some crops have been taken in irrigated condition. They live in moist and feed on crop in night and in severe infestation plant may die and yield is reduced considerably.

Management:

- Poison baiting with 4% metaldehyde @ 5kg/ha or spray 40 kg slaked lime dissolved in 250 liter of water or spray of quinalphos/methomyl. It should be done after evening.
- Broadcasting of wood ash at root zone
- Use of kerosine oil

Millipede, *Streptogonopus jerdani*:

Millipede is grayish colour having two pairs of legs in each segment. It eats mainly decaying materials of crops but sometimes in favourable conditions it becomes pest of crop. In 1995 in Sehore district and in 2003 Rajgarh district of Madhya Pradesh its outbreak was occurred.

Management:

- Clean cultivation and poison baiting with any recommended insecticides for soybean
- Spray of quinalphos/methomyl/trizophos in recommended dose.

Birds:

Birds like pigeons and parrots eat sowed and germinating seeds of soybean and reduced the total plant standings and even sometime resowing is needed.

Management:

- Poison baiting by grain with insecticides.
- Destruction of nests to prevent further breeding and shelter and shooting with guns.
- Use of bird scarers.
- Catch with net traps

Wild animals and dogs:

Wild animals like nilgai, sambhar, antelope and chital eat the young soybean crop and also destroy the crop by moving and shelter and domestic dogs destroy the crop from sowing to harvesting by moving, recreation and breeding.

Management:

- Strong fencing around the field

- Shooting with guns
- Noise repellent/air gun fires/beating empty metal tins.

