

Identification of Different Insect Pests of Groundnut and their Management

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SUMMARY

Groundnut is an important legume food crop in all over world. This chapter provides a comprehensive overview of the insect pests that commonly infest groundnut crops, including the leaf miner, hairy caterpillars, tobacco caterpillars, aphids, thrips, white grub, pod sucking bug and termites. It discusses their life cycles, feeding habits, and the damage they cause to groundnut plants. The chapter emphasizes the importance of integrated pest management (IPM) strategies for effective control, highlighting cultural practices, biological control methods, and judicious use of insecticides. It further emphasizes the significance of regular monitoring, early detection, and tailored management approaches to mitigate the impact of these insect pests, ensuring sustainable groundnut production and minimizing yield losses.

INTRODUCTION

Groundnut, also known as peanut or *Arachis hypogaea*, is an important crop worldwide. It belongs to the legume family and is cultivated for its edible seeds, which are rich in oil and protein. Groundnut is grown in various regions across the globe, with major production areas including Asia, Africa, and the Americas. It is a versatile crop used for various purposes, including direct consumption, oil extraction, and as a feed source for livestock. The economic impact of insect pests on groundnut production is substantial. Infestations by pests can result in significant yield reductions, which directly affect the income and livelihoods of farmers. In addition to yield losses, the presence of insect-damaged seeds can affect market prices and trade. Moreover, the cost of insect pest management, including the purchase and application of insecticides or other control measures, adds to the overall production expenses. Understanding the economic consequences of insect pests is crucial for devising effective pest management strategies. Maharashtra is one of the leading States in the country in cultivation of oilseed crops. The important crops grown extensively are groundnut.

The important pests of groundnut are:

Sr. No.	Common Name	Scientific Name	Family	Order
1	leaf miner	<i>Aproaerema modicella</i>	Gelechiidae	Lepidoptera
2	Hairy caterpillars	<i>Amsacta albistriga</i>	Arctiidae	Lepidoptera
3	Tobacco caterpillar	<i>Spodoptera litura</i>	Noctuidae	Lepidoptera
4	Aphid	<i>Aphis craccivora</i>	Aphididae	Hemiptera
5	Thrips	<i>Thrips tabaci</i>	Thripidae	Thysanoptera
6	White grub	<i>Holotrichia serrata</i>	Scarabacidae	Coleoptera
7	Pod sucking bug	<i>Aphanus sordisus</i>	Lygaeidae	Hemiptera
8	Termite	<i>Odontotermes obesus</i>	Termitidae	Isoptera

1. Groundnut leaf miner : *Aproaerema modicella* Gelechidae : Lepidoptera

This pest was found to infest the groundnut crop at Nagpur in the past. However, it has been assuming a serious from in the State, only in recent years.

Marks of Identification :

- The moth is small sized; measuring about 3 to 10 mm in length with wing span of 20 mm.
- The wings are grayish with a pale white dot on each of the fore wings.
- The full grown larva is 6 to mm long, cylindrical, tapering posteriorly and light green in colour with dark head and prothorax.

Life History :

- Adults are found briskly whirling around the plants in field and lay shiny transparent eggs singly on the under surface of leaflets.
- The larvae are pale brown. Fully grown larva measures 6-8 mm. The larval period is 4-17 days.

- They pupate in white silken cocoons within webbed leaflets and the pupae are reddish brown. The pupal period is 5-7 days.
- Adult longevity is 5-6 days. Life cycle is completed in 20-25 days.

Nature of Damage :

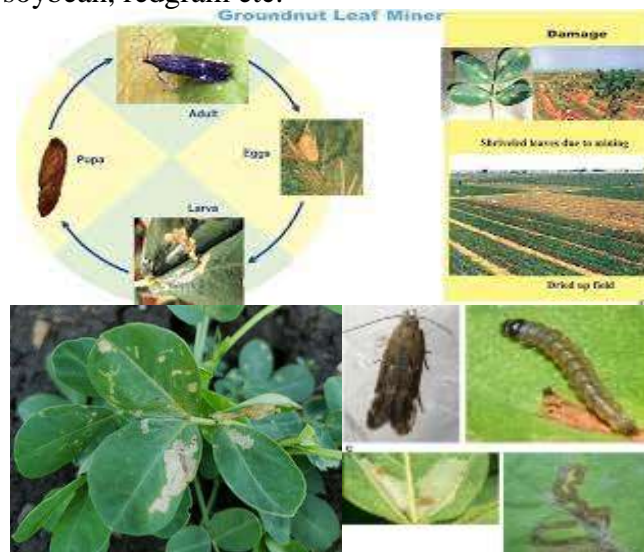
- The larvae mine the upper epidermis of the leaf; the mined leaves show whitish brown streaks.
- Later, they leave the mine and fold the leaves or bring the adjacent leaves together. Damaged leaves dry and the plants wither.
- In cases of severe attack, the yield is adversely affected.

Management Practices :

1. Sow groundnut early and synchronously in rainy and rabi season.
2. Set up light traps between 8 and 11 PM at ground level.
3. Set up light traps between 8 and 11 PM at ground level.
4. As soon as incidence is noticed spray 0.2% carbaryl or 0.05% monocrotophos or 0.05% quinalphos or dusting with malathion 5D, quinalphos 1.5 D or methyl parathion 2D or phosalone 4D @ 20kg/ha. Repeat spraying or dusting at fortnightly interval if necessary.

Host plants :

- Besides groundnut, it infest soybean, redgram etc.



Groundnut leaf miner : *Aproaerema modicella*

2. Red Hairy Caterpillar : *Amsacta albistriga* Arctiidae : Lepidoptera

Economic Importance :

- It is a serious pest under rainfed conditions on pulses in Rajasthan and groundnut in southern part of India. *Amsacta albistriga* is predominant in South India while *A. moorie* dominates northern parts of the country.

Marks of Identification :

- Adults are medium sized moths. In *A. albistriga* forewings are white with brownish streaks all over and yellowish streaks along the anterior margin and hind wings white with black markings.
- A yellow band is found on the head.

Life History :

- On receipt of heavy rains, about a month after sowing in *kharif* season, white moths with black markings on the hind wings emerge out from the soil in the evening hours.
- It lays eggs on the under surface of the leaves. Egg period is 2-3 days.
- A full grown larva measures 5 cm in length, reddish brown hairs all over the body arising on warts. The larval period is 40-50 days.
- With the receipt of showers, the grown up larva pupates in earthen cells at a depth of 10 -20 cm. They pupate mostly along the field bunds and in moist shady areas under the trees in the field and undergo pupal diapause till the next year.

Nature of Damage :

- The larvae feed on the leaves gregariously by scraping the under surface of tender leaflets leaving the upper epidermal layer intact in early stages.

- Later they feed voraciously on the leaves and main stem of plants. They march from field to field gregariously.

- Severely affected field looks as though they are grazed by cattle. Sometimes it results in the total loss of pods.

Management Practices :

- Grow cowpea or red gram as an intercrop to attract adult moths to lay more eggs.
- Set up 3-4 light traps and bonfires immediately at the onset of rains at 4 weeks after sowing in the rainfed season to attract and kill the moths and to know brood emergence.
- Collect and destroy egg masses in the groundnut, cowpea and redgram.
- Dig out a trench around the field to avoid the migration of caterpillars, trap larvae and kill them.
- Use nuclear polyhedrosis virus NPV @ 250 LE/ha.
- For grown up caterpillars - spray dichlorvos 625 ml/ha (or) chlorpyrifos 1250 ml/ha in 375 litres of water.

Host Plants :

- Maize, sorghum, green gram, sesame, pearl millet, finger millet, groundnut, sunhemp, castor, cotton.



Red Hairy Caterpillar : *Amsacta albistriga*

3. Tobacco leaf eating caterpillar : *Spodoptera litura* Noctuidae : Lepidoptera

Economic Importance :

- It is an important pest of groundnut.

Mark of Identification :

- Adult moth is stout with wavy white markings on the brown forewings and white hind wings with a brown patch along its margin.
- Larva is stout, cylindrical, pale brownish with dark markings. The body may have a row of dark spots or transverse and longitudinal grey and yellow bands.

Life History :

- Eggs are laid in groups and covered with hairs on the leaves. The egg period is 4-5 days. When fully grown, measures about 35-40 mm in length.
- The larval period is 14-21 days. It pupates in earthen cells in soil for 15 days.
- Life cycle is completed 30-40 days.

Nature of Damage :

- Neonate, green caterpillars feed on the leaves voraciously and present an appearance to the field as if grazed by cattle.
- Since this pest is nocturnal in habit larvae hide under the plants, cracks and crevices of soil and debris during the day time.
- Faecal pellets are seen on the leaves and on the ground which is the indicator of the pest incidence.

Management Practices:

1. Grow castor as a border (or) intercrop in groundnut fields to serve as indicator (or) trap crop.
2. Set up pheromone trap to monitor, attract and kill the male moths @ 12 nos./ha and change the septa once in 3 weeks.
3. Collect egg masses and destroy.
4. Collect the gregarious larvae and destroy them as soon as the early symptoms of lace-like leaves appear on castor, cowpea and groundnut.
5. Apply NPV @ 250 LE/ha with crude sugar 2.5 kg/ha which is as effective as that of chlorpyrifos at 200 g a.i./ha at 7 days interval.
6. Apply any one of the following insecticides per ha to control early instar larvae (1st to 3rd instar). Carbaryl 10 D 25 kg, carbaryl 50 WP 2 kg, quinolphos 25 EC 750 ml, phenthoate 50 EC 1250 ml and dichlorvos 76 SC 750 ml.

7. Spray any one of the following per ha to control 4th to 6th instar larvae. Chlorpyrifos 2 L, dichlorvos 1 L, phenthoate 2 L or Diflubenzuron 25 WP 400 g or Methomyl 40 SP 750-850 g in 375-500 L of water/ha.

Host Plants :

- Groundnut, citrus, soybean, cotton, tobacco, castor, pulses, millets, safflower, banana, cabbage, tomato, sweet potato.



Tobacco leaf eating caterpillar : *Spodoptera litura*

4. Aphid : *Aphis craccivora* Aphididae : Hemiptera

Marks of Identification :

- Reddish to dark brown coloured with cornicles in the abdomen.

Nature of Damage :

- Both nymphs and adults suck the sap from the leaflets and tender shoots mostly up to two months after germination.
- It results in wilting of tender shoots during hot weather.
- Leaves mottled with chlorotic or dark green spots and plant growth becomes stunted.
- Sometimes honeydew deposited on the leaves and shoots could be seen which attract the ants.

Management Practices :

1. Spray the infested crop with methyl demeton 25 EC 500 ml or Imidacloprid 17.8 SL 100 -125 ml in 700 L of water per ha. As the strong point of this pest lies in its very quick multiplication the insecticidal treatment has to be repeated as soon as aphid population is found to have built again.
2. Release *Chrysoperla carnea* grubs @ 5000 / ha.
3. Chlorpyrifos 20%EC 1000 ml/ha.

Host Plants :

- Groundnut, beans, safflower, lablab, niger, peas, pulses and some weeds.



Aphid : *Aphis craccivora*

5. Thrips : *Scirtothrips dorsalis* Thripidae : Thysanoptera

Mark of Identification :

- Nymphs and adults dark coloured with fringed wings.

Life History :

- Female thrips lay 40-50 eggs inside the tissues of leaves and shoot.
- Egg period 5 days, nymphal period 7-10 days and adult period is 25-30 days.
- There are several overlapping generations.

Nature of Damage :

- Nymphs and adults suck sap from the surface of the leaflets. This results in white patches on the upper and necrotic patches on the lower surface of the leaves.
- It consists of distortions of the young leaf lets and patchy areas of necrotic tissue that puncture and split as the leaflets grow.
- Injury is normally seen in seedlings.

Management Practices :

- Intercrop lab lab with groundnut 1:4 ratio.
- Spray methyl demeton 25 EC 500 ml or dimethoate 30 EC 500 ml/ ha.

Host Plants :

- Ground nut and other oilseed crops.



Thrips : *Scirtothrips dorsalis*

6. White grub : *Holotrichia consanguinea*, *H. serrata* Melalonthidae : Coleoptera

Economic Importance :

- It is major pest of groundnut crop.

Marks of Identification :

- Adult beetles are stoutly built, dull brown in colour with light brown abdomen, measuring about 25 mm in length.
- Newly hatched grubs are creamy white with dark brown head in colour and scarabae form type. When touches they get curved to form „C“ shape. Full grown grub measures 45 to 50 mm.

Nature of Damage :

- The grubs feed on tender roots. As a result, affected plants which turn yellowish may die ultimately.
- The attacked plants can be easily pulled out from the soil.
- The withering and drying of plants and one direction in row killing plants in series by single grub (damage in line).

Life History :

- The adults emerge from soil at the onset of monsoon and feed on the foliage of Neem, Babul, Ber etc.
- During night eggs are laid in small earthen cells in the soil at depth of 15 to 23 cm. The incubation period is about 8 to 10 days.
- Grub stage lasts for about 5 to 6 months by feeding on the roots underground.
- The duration of pupal stage is about 11 days and a generation is completed in a year.
- The adult beetles formed in November remain in soil next June. Adults are long lived (90 days).

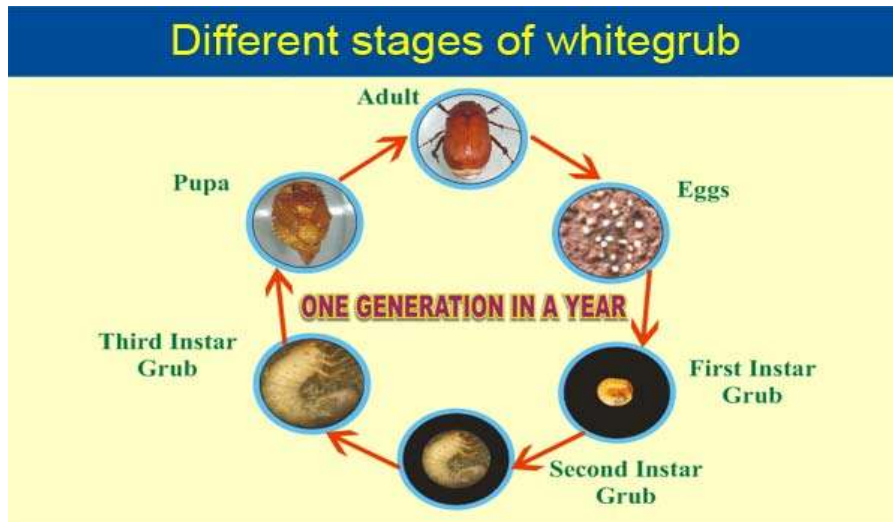
Management Practices :

1. Spray carbarly 0.1 % on the host plants like neem, babul, ber when average number of beetles per tree are 20 or more in the endemic pockets after the onset of monsoon.
2. Apply phorate 10 G or quinalphos 5 G @ 25kg/ha or Carbofuran 3%CG 33.3 kg/ha in the furrows before planting the sugarcane setts and mix thoroughly in the soil.
3. Plough deep at the time of land preparation to expose grub and kill.
4. Set up light traps or bonfires to attract and kill the adults on receipt of summer showers.

Host Plants :

- It is a polyphagous pest. Grubs feed on roots of sugarcane, maize, sorghum, groundnut, paddy, chilli, cotton, tobacco, potato, pulses etc.
- Adult beetles mostly prefer neem, babul, ber and can be found feeding on mango, guava, fig, anar, mandi.





White grub : *Holotrichia consanguinea*, *H. serrate*

7. Pod sucking bug : *Aphanus sordisus* Lygaeidae : Hemiptera

Economic Importance :

- The pest is reported from almost all the groundnut growing area of the state. Although sporadic occurrence it occasionally assumes a serious form.

Marks of Identification :

- The adult bug is yellowish brown in colour with a black head and measures about 9 to 10 mm in length.

Nature Damage :

- Both nymphs and adults suck the juice from the developing seeds. As a result, are shriveled and become rancid giving bitter taste.
- The oil content and germination percentage of infested seed is adversely affected.
- Besides causing damage in the field, if continues to infest pods in threshing yard and even in storage.

Life History :

- Eggs are laid in soil near pods. They hatch in about 9 days.
- The nymphs become adults in 3 to 4 weeks.
- The pest is active from September to April and about 6 to 7 generations are completed in a year.

Management Practices :

1. Set up light traps to attract and kill the bugs.
2. Keep the crop refuse in the field along irrigation channel to attract the bugs which can be killed by dusting.
3. Pest can be controlled by dusting 2% methyl parathion dust or 5% malathion dust or by spraying malathion 0.05%.

Host plants :

- Besides groundnut, it infest pod of seasmum.



Pod sucking bug : *Aphanus sordisus*

8. Termite : *Odontotermes obesus* Termitidae : Isoptera

Economic Importance :

- They are polyphagous insects and cause damage to several cultivated crops. The pest is prevalent throughout the state.

Marks of Identification :

- Termites are social insects.
- Only workers are able to move outside the termitoria and hence they are injurious to crops.

- They are whitish – yellow, flat and bodied insects. They are not able to move in light and therefore, they construct a passage of mud for their movement outside and above the soil.

Nature of Damage :

- It feeds on roots result in wilting of plants in patches.
- It makes bore holes in pods and damages soft tissue in pod (scarification) leaving thicker portion intact.

Termites hover in and around plants and thus the infested plants succumb to death.

Management Practices :**a) Preventive :**

1. Locate the termitoria and destroy the queen.
2. Use well rotten organic manure.
3. Harvest the groundnut as soon as they are matured, early removal of the produce from the field will reduce the chances of termite damage to pods.
4. Application of phorate 10 G or quinalphos 5 G or carbofuran 3 G @ 25 kg/h in the furrow before planting.



Termite : *Odontotermes obesus*

CONCLUSION

Insect pests pose a significant challenge to groundnut production. They can cause substantial damage to the crop, leading to reduced yields, poor seed quality, and economic losses for farmers. Insects feed on different parts of the groundnut plant, including leaves, stems, flowers, and pods, affecting its growth, development, and overall productivity. Effective management of insect pests is essential to minimize yield losses and maximize the profitability of groundnut cultivation.

REFERENCES

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