



EMERGING INSECT PESTS IN COTTON AND ITS MANAGEMENT



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Cotton is one of the most important and widely grown fiber crops in the world, known as "white gold". Insect pests infesting cotton can cause significant damage to the crop, leading to economic losses. Sucking pests, leaf feeders and bollworms cause serious damage to cotton crop. In addition to regular pest, some of the emerging pests also observed in cotton. Details of the major emerging pests and their management practices were presented.

Tea mosquito bug

Tea mosquito bug (TMB) is one of the recently emerging sucking pest in Cotton. In India, the genus *Helopeltis* has three dominant species, *Helopeltis antonii*, *H. theivora* and *H. bradyi*. Among these, *H. theivora* is the most predominant tea mosquito bug species in cotton.

Damage symptoms

- Both the nymphs and adults suck the sap from the young leaves, succulent stems, buds and bolls by inserting the stylets, while doing so, it injects toxic saliva which causes the breakdown of tissues surrounding the puncture.
- The affected tender leaves also exhibited extensive crinkling and distortion from normal size.
- As a result of injury, squares and immature bolls drop off.
- Light brown to dark coloured scabs were observed on the bolls surface as a result of feeding.
- Severely damaged shoots die back due to the effect of bugs toxic saliva, the subsequent development of numerous auxiliary buds causes a bunched terminal growth.
- Nymphs and adults both make numerous sucking spots on the foliages which become curl and ultimately results in drying of shoots and cause severe loss in crop yield.

Management measures

- Regular monitoring for the occurrence of damage symptoms on cotton and also on alternate host plants present in the surroundings.

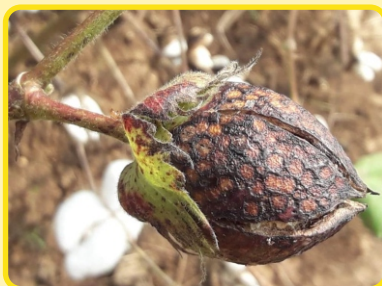
- Avoid the alternate hosts like guava and neem near the cotton field. Management practices should be followed for alternate hosts also.
- Collect and destroy the affected plant parts.
- The predatory fauna of TMB includes a wide number of spiders, reduviid bugs, ants that exist in field especially under unsprayed condition helps to reduce the pest intensity.
- Increase the parasitoid *Telenomus* activity by reducing the insecticide application.
- Under low pest intensity condition application of 3% neem oil is recommended.
- Spraying of *Beauveria bassiana* 5g/l helps to reduce the population.



Female tea mosquito bug



Male tea mosquito bug



Damage symptoms

Whitefly

- The common whitefly species occurred in cotton is *Bemisia tabaci* Gennadius. Whitefly incidence severe in North India and Central India compared to South India.

Damage symptoms

- Both nymphs and adults found on the underside of the leaves. They suck the sap from the leaves leads of yellowing and drying of leaves. Damage can cause the leaves to dry and fall off.
- Damage from direct feeding reduces the photosynthetic activities of the plant and hence reduces the yield.
- Under severe infestation, leaves curl upward, thickened, hampered plant growth and vigour.
- Honey dew excretion from whitefly leads to reduced photosynthetic activity and also contamination of lint which reduce the commercial value of lint.
- Whitefly found to be the vector for transmission of cotton leaf curl disease (CLCuD).
- Whitefly incidence found to be high during summer season. Continuous cultivation of cotton and indiscriminate usage of insecticide especially synthetic pyrethroids leads to high incidence of whitefly.

Management measures

- Avoid spraying of any chemical insecticides during initial crop growth stage as Bt-cotton seeds are treated with insecticides which gives protection upto 30-45 days after sowing. For Non-Bt cotton varieties, treat the seeds with Imidacloprid 70% WS @ 7g/kg seeds.
- Install yellow sticky traps@ 20 / ha for monitoring and mass trapping of whitefly.
- Apply neem oil at initial stage of crop or up to 60 days after sowing.
- If whitefly crosses ETL, spray any one of the following insecticides. Buprofezin 25 % SC @ 30 ml or Diafenthiuron 50 % WP @ 24 g or Spiromesifen 22.9% EC @ 20ml or Pyroproxifen 10%EC @ 40 ml or Dinotefuran 20% SG @ 5g in 10 litres of water.
- Apply recommended insecticides at correct dose. It is important to thoroughly cover all plant parts.
- Rotate insecticides with different modes of action. It will help to delay the development of resistance against insecticides.

- Avoid using synthetic pyrethroids or organophosphate before 120 days after sowing or any insecticide mixtures. These insecticides are known to cause and aggravate the resurgence of whitefly when used indiscriminately.



Bemisia tabaci



cotton leaf curl disease

Mirid Bugs

- Three species of mirid bugs found attacking cotton. They are *Creontiades biseratense* Distant, *Campylomma livida* Reuter and *Hyalopeplus lineifer* Walker. In recent years, mirid bug attained the status from minor pests to major pest.

Damage symptoms

- Both nymphs and adults cause damage to cotton by suck the sap from flower buds and tender bolls. It causes heavy shedding of flowers, small squares and immature bolls.
- Feeding damage on anthers results in failure of fertilisation and caused deformed bolls viz., parrot beaked bolls.
- Feeding by these insects results staining of lint which reduce the quality of the lint and germination of seeds.

Management measures

- Bund Crop of cotton with cowpea, soyabean and black gram to encourage the predator population this helps to reduce the sucking pests population.
- In emergency conditions (population > ETL), spray any one of the following insecticides recommended for sucking pests. Flonicamid 50 WG @ 6 g or Dinotefuron 20% SG 5g or Thiamethoxam 25%WG 25g or Diafenthuiuron 50%SC 24g in 10 liters of water.



Hyalopeplus lineifer



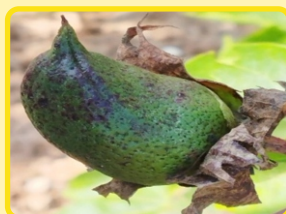
Creontiades biseratense



Campylomma livida



Damage symptoms



Parrot beaked boll

Thrips

In recent years thrips which were considered to be minor pests in cotton have reached the status of major pests.

Damage Symptoms

- Scrapping and sucking sap from leaf epidermis leads to curling of leaf margins and shriveling of leaves.
- Ragged edges can be seen on the damaged terminal buds.
- Upper side of the older leaves will become brown, silvery patches occur at lower side of the leaves.
- Damaged leaf shows curling, wrinkling and drying, older crop look rusty appearance from a distance.
- Thrips have been reported to transmit the leaf streak virus in cotton.
- High temperature and low rainfall favour the multiplication of thrips population.



Thrips and its damage symptoms

Management practices

- Application of high dose of nitrogen fertilizer will invite thrips infestation. Water stress will lead to the susceptibility of crops to thrips damage. So, adequate irrigation throughout the growing season is a crucial factor in minimizing the thrips damage.
- The intercropping system of Cotton + Pulses (Cowpea/Blackgram/Green gram) is recommended to encourage the colonisation of the bioagents fauna like lady bird beetle, Chrysoperla and syphid flies.
- Spray of *Beauveria bassiana* @ 5gram/lit of water at initial infestation will be very effective.
- Spray of 5% neem seed kernel extract (25kg/ha) or crude neem oil or pungam oil spray @ 1% (5lit/ha) suppresses thrips population during pre squaring crop stage.
- Blue sticky traps are preferred for monitoring thrips population and mass trapping.
- Foliar spray of any one of the following insecticides in 10 litres of water were recommended viz, Buprofezin 25% SC @ 30 ml or Diafenthiuron 50%WP @ 24 g or Dinotefuran 20% SG@ 5 g or Dimethoate 30%EC @ 25 ml or Flonicamid 50WG @ 6 g or Thiamethoxam 25%WG @ 8 g during severe infestation.



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