

Diversity of cotton pest in agricultural field of Malkapur, Buldhana district Maharashtra (India)

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Abstract

More than 1,000 different kinds of insects and spiders can be found in Malkapur cotton fields, these ever become abundant, and as few as insects pests have ever been recorded causing damage to the cotton plant. Many spiders are also feed on pests, but casual visitors to cotton routs between other habitats. To study the cotton pest our group visits to Malkapur Agricultural field area, find out cotton insects pests and then identified them and with the help of folk knowledge of farmer discussion made to study the damages and population of this cotton pest. Our paper recorded 13 most dangerous cotton pest which damaging the leaves, flower, boll, stem of cotton plant which affect the production and quality of cotton fiber.

Keywords: Cotton pest; spider etc

1. Introduction

The cotton pests are capable of damage to cotton in any year, when they may even rival the major pests in importance. However, their occurrence can be highly variable and their abundance is usually in conjunction with other weed or crop hosts which are in turn favored by the growing conditions in that particular season. Other sporadic pests tend to assume importance only if the major pests do not require control for lengthy periods or when cotton is grown in very isolated localities. While the use of synthetic insecticides has sustained high yields of cotton, many of these chemicals also kill the beneficial insects and spiders as well as the pests. Unfortunately, some pests have developed resistance to many insecticide groups and these still kill the beneficial but allow larger numbers of pests to multiply relatively unharmed. In addition to the problem of resistance, use of insecticides is being increasingly regulated by legislation. This reflects concern over pesticide contamination of food and water for human consumption and the potential effects of pesticides in agricultural areas in the riverine environment and on wildlife. Reducing dependence on broad spectrum insecticides is a clear priority, although in Malkapur it remains impossible to make a consistent profit by growing unsprayed cotton crops. Nonetheless considerable progress has been made. Best Management Practice (BMP) approach, which provides a framework for continuous improvement in management practices. Pest management in cotton is now increasingly applied in an area wide basis with co-ordinated management among groups of growers over large areas. All these developments have seen significant reductions in pesticide applications particularly of disruptive broad-spectrum insecticides. By adopting area wide and IPM approaches, the sustainability of cotton production is enhanced and environmental benefits will result.

2. Material and methods

To study the cotton pest our group visits to Malkapur Agricultural field area, find out cotton insects pests and then identified them and with the help of folk knowledge of farmer discussion made to study the damages and population of this cotton pest.

3. Observation of pest

3.1 Cotton Aphids

The cotton aphid, *Aphis gossypii* Glover is the predominant species causing economic losses to cotton. Chance infestation by winged adults of other species such as the cowpea aphid, *Aphis craccivora* Koch may occur in spring, but nymphs soon die and adults fly off in search of more suitable hosts. The green peach aphid, *Myzus persicae* (Sulzer) is occasionally found in cotton crops early or late in the season and has the potential to become more prominent because it has developed resistance to some carbamate insecticides. The bean root aphid, *Smynthuroides betae* Westwood can affect seedling plants, but its occurrence is rare. Severe aphid damage results in wrinkling, stunting and cupping of leaves. Younger leaves may show a yellow margin and reddened patches may appear on leaves.

3.2 Green peach aphid

The green peach aphid, *Myzus persicae* is often confused with the cotton aphid. Unlike cotton aphid it does not favour hot conditions and though populations often may develop earlier in the cotton season, they usually die out during the hot period of peak summer. The Green peach aphid is widely resistant to a range of organophosphates and carbamate insecticides.

3.3 Green peach aphid threshold

The green peach aphid causes more severe stunting of cotton plants than the cotton aphid. The threshold for control is correspondingly lower, at %25 of plants infested.

3.4 Cowpea aphid

The cowpea aphid looks very similar to the cotton aphid with the exception that the wingless cowpea aphid adults are a shiny black colour, in contrast to the dull coloration of the cotton aphid. Cowpea aphid feed on a wide range of leguminous hosts and often build up numbers in spring on medics and other legume hosts. Cowpea aphid will settle on cotton and will occasionally reproduce, however the population will normally decline after 3-4 weeks.

3.5 Apple dimpling bug

The apple dimpling bug (yellow mirid), *Campylomma liebknechti* (Girault) is about one third the size of the green

mirid. It is an important pest of apples and is known to damage small squares early in squaring on cotton but it is generally regarded more as a predator of heliothis eggs and mites than a pest. The threshold for the apple dimpling bug is generally about 5 times greater than the threshold for the green mirid. If the apple dimpling bug is in high numbers it is worthwhile to monitor the plants fruit set by either checking fruit retention or by using the 'fruiting factor' technique. This will indicate if damage is occurring which may require control.

3.6 Brown mired

The brown mirid, *Creontiades pacificus* (Stal) is slightly larger and similar in appearance to the green mirid, but carries more dark pigments. While the brown mirid can cause similar damage it is usually found in much lower numbers than the green mirid on cotton.

3.7 Brown shield bug

The brown shield bugs or sometimes known as the brown stink bugs, *Dictyotus caenosus* (Westwood) are not commonly found in cotton. The pest may be easily confused with the glossy shield bug, a predator. The main distinguishing features of the brown shield bug are the matt brown surface, shorter head and smaller eyes. The habits of these bugs are not well known but they feed on a range of grasses bean crops and Lucerne but not cotton.

3.8 Bugs in cotton

Although a number of bugs can injure green and maturing bolls, economic damage is unusual in commercial cotton because bugs are controlled incidentally by sprays applied for heliothis and other pests. The piercing/sucking mouthparts of bugs are used to penetrate green boll tissues and withdraw nutrients from the developing seed.

3.9 Broken back bug

The brokenbacked bug, *Taylorilygus pallidulus* (Blanchard) is smaller than the green or brown mirid and is not often found in large numbers in cotton. Little is known about this insect, but it does not seem to be capable of significant damage.

3.10 Cotton looper

The cotton looper, *Anomis flava* (Fabricius) is so named because of the looping movement of its greenish larvae. The small, bluish-green eggs are laid on leaves. The larvae prefer to eat older leaves and defoliation progresses upwards on the plant. As much as 80 percent defoliation of unsprayed cotton has been recorded. The pupae are found in rolled up leaves. Because of sprays applied against heliothis, looper infestations in commercial cotton are uncommon. This species is also generally well controlled by Ingard and Bollgard II cotton varieties.

3.11 Cluster caterpillar

The cluster caterpillar, *Spodoptera litura* (Fabricius) was a serious cotton pest in the Ord River area but not in eastern Australia. Its habits resemble those of cutworms except that eggs and small larvae are always found in groups. The white

eggs are laid under leaves and are covered with fine, brown hairs like scales from the female moth. Young larvae are grey/brown and they skeletonise leaves at night. Larger larvae consume whole leaves and heavy infestations defoliate large areas, destroying squares and flowers as well. Pupation occurs in the soil and the adults have dark brown forewings patterned with grey, white hindwings bordered with grey, and a wingspan of about 35 mm.

3.12 Cotton tipworm, *Crociosema plebejana*

The cotton tipworm, *Crociosema plebejana* Zeller infests a range of malvaceous plants including cotton. Substantial infestations appear to be more frequent in southeast Queensland than in central Queensland or New South Wales cotton producing areas. The larvae tunnel into the terminal destroying the single stem habit of cotton seedlings and causing multiple branching. If this damage occurs in the seedling or early squaring stages of crop growth, it may result in increased vegetative growth (branching) at the expense of early reproductive growth, and crop development can be delayed. If a delay is compounded by other adverse factors (e.g. cool weather) then fibre quality and yield can also be reduced.

3.13 Cotton leaf perforator, *Bucculatrix gossypii* Turner

The cotton leafperforator, *Bucculatrix gossypii* Turner occurs mainly in Queensland but has been recorded on occasions in New South Wales. The young larvae, instars 1 - 3, mine between the upper and lower surfaces of leaves emerging in the fourth instar to feed directly on the leaf. The fourth instar larva forms a thin, silk shelter in which it moults into the final instar. It is this fifth instar which causes the most obvious damage, skeletonising the leaf by feeding on the lower leaf surface leaving numerous windows and small holes. Older larvae (less than 10 mm long) are pale grey with four black spots just behind the head. Pupae are formed in white, ribbed cocoons attached to the leaf. Adults are cream/grey moths with wings which are densely fringed with hairs, particularly the hind wings. Damage is rarely important.

3.14 Cottonseed bugs, *Oxycarenus luctuosus* (Montrouzier)

Adult cottonseed bugs, *Oxycarenus luctuosus* (Montrouzier) can be found sheltering on cotton plants from the late seedling stage onwards but do not feed or reproduce until cotton bolls open and ripe seeds are available. The eggs are laid in open bolls, and the bright red nymphs can be found in clusters among the lint. The only economic damage is from reduction of seed weight in late bolls, which may be by as much as 15 percent and also reduction of seed viability under moist conditions favourable to feeding. Because this damage tends to be only to seeds in late bolls it is not normally considered a pest requiring control measures.

4. Conclusions

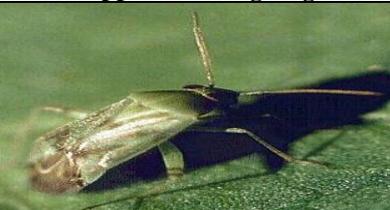
The aim of this guide is to help cotton growers, field consultants and agronomists correctly identify the wide range of pests. Accurate identification is one of the foundations for making sound pest management decisions. When pests are correctly identified, the relevant thresholds can be applied and

appropriate management responses made. For beneficial, correct identification means that their potentially important role in regulating pest populations can be utilized.

5. The tactics include

- The manipulation and management of beneficial insects

- Pest resistant cotton varieties, including insect-protected GM varieties
- Less disruptive, so-called 'soft' insecticides
- various cultural controls
- Habitat manipulation, in which comparison crops are grown to divert pests away from the cotton crop or provide nurseries for beneficial species

		
Cotton Aphid	Green Pesch Aphid	Cowpea Aphid
		
Apple Dimpling Bug	Apple Dimbling Bug	Brown Mirid
		
Brown Shield Bug	Brokenbacked Bug	Cotton Lopper Larv
		
Cluster Larva	Cluster Adult	Tip Worm Adult
		
Cotton Leaf perforator		Cotton Seed Bug

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