

COTTON INSECTS AND MITES

An Aid to Identification and Control



1. THRIPS INJURY TO SEEDLING COTTON



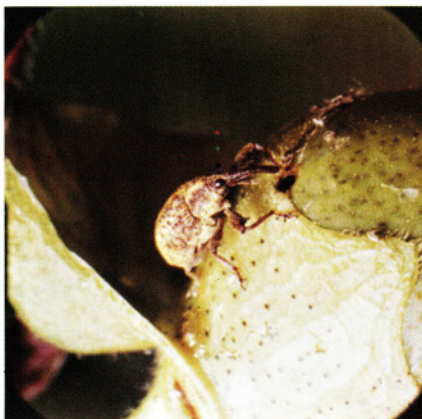
2. COTTON APHID DAMAGE TO LEAVES
(Inset—Aphids and Predator)



3. TWO-SPOTTED SPIDER MITE DAMAGE TO LEAF
(Inset—Color Phases of Mites)



4. LOOPERS AND DAMAGED LEAF
(Diseased Looper on Left)



5. ADULT BOLL WEEVIL



6. Upper—BOLL WEEVIL PUNCTURES
Lower—LARVA, Left; PUPA, Right



7. BOLLWORM ATTACKING BOLL



8. Upper—BOLLWORM EGG
Lower—BOLLWORM MOTHS



9. TYPICAL BOLLWORM DAMAGE

Cotton Insects and Mites

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1. Thrips are tiny, winged insects that injure plants in feeding on their juices. Several species attack cotton plants. They complete a generation in about two weeks, and produce many generations in a year. Both larvae and adults damage cotton plants. These insects injure cotton seedlings, and may also injure older plants. They attack leaves and terminal buds. Severely infested young plants may die, and the stand may be destroyed or reduced to the point where the crop must be replanted. Thrips injury to leaf tissue in terminal buds results in ragged, crinkled leaves that curl upward (aphid injury would cause leaves to turn downward). The terminal buds may be killed; when this occurs, new buds develop, and the plant becomes distorted and excessively branched. The abundance of thrips, extent of their damage, and need for their control vary greatly in different years and areas.

2. The cotton aphid, also called the cotton louse, occurs wherever cotton is grown. The adult cotton aphid is a soft-bodied, sucking insect that ranges in color from light yellow to dark green or almost black. They give birth to living young. Reproduction is continuous and there are no distinct generations. This insect damages cotton by sucking juices from the plants. When heavy infestations occur on seedling cotton the leaves curl or crinkle; plants become stunted and may die. Heavy infestations in mid-season make the leaves turn yellow and shed; this causes square and small bolls to shed. Late season infestation makes leaves shed, causing premature opening of bolls and immature development of fiber. Also, honeydew secretions from the aphids drop on the fiber, making it sticky. Often, a fungus develops in the honeydew deposits, causing the plants to appear black or sooty. Fiber picked from such plants is stained, sticky, and of low quality. In Missouri the cotton aphid is often controlled by its natural enemies. It seldom increases to damaging numbers unless its natural enemies are killed or retarded. Note: inset shows a lady beetle larva preying on aphid colony.

3. Spider mites, commonly called red spiders, attack many plants. Several species attack cotton. The mites are tiny, barely visible to the naked eye. Some are red, but many are green, orange, or straw colored. Spider mites are kept under control by weather, beneficial insects that kill the mites, and other species of mites that prey on them. Outbreaks are most likely to occur following application of pesticide that destroys the beneficial insects and mites. Spider mites may complete as many as 16 generations in a year. Generally, they reproduce from eggs but live birth is known to occur. They attack cotton in any stage of growth, but usually are most injurious from July 1 to early September. Infestations are most noticeable during periods of hot dry weather. They are detected by inspecting the under-surfaces of leaves of plants in different parts of the field, particularly in areas that were infested in previous years. Their feeding causes plant parts to become blotched or stippled, and causes leaves to become discolored and drop prematurely. Heavy infestation causes cotton to open prematurely thus a lower quality of cotton is produced.

4. Several loopers are known to attack cotton. The cabbage looper and cotton leafworm are the two most commonly found in Missouri. The cabbage looper is most often reported and overwinters locally.

The cotton leafworm occurs rarely and migrates from South America. It usually occurs late in the growing season. Both insects are commonly controlled by virus and fungus disease organisms. In their development there is four stages: egg, larva (looper), pupa, and adult (moth). Only the larvae are destructive. They are difficult to control with insecticides. Their primary damage is caused by droppings staining the open cotton causing a lower quality of lint.

5-6. The boll weevil has four stages in its life cycle: egg, larvae, pupa and adult. Under favorable conditions it completes the cycle in 2 1/2 to 3 weeks. High temperatures and humidity speed the cycle; low temperatures slow down development. As many as seven generations may develop in the extreme southern part of the Cotton Belt. The adult boll weevil is 1/8 to 1/3 inch long. It ranges in color from tan to dark gray, or sometimes to dark brown. Starting in early spring, the female lays eggs in cotton squares. Late in the season, eggs are laid both in squares and in young bolls. Eggs hatch in 3 to 5 days. The larvae feed 7 to 12 days inside the squares or bolls, then change into pupae. The pupae stage lasts 3 to 5 days. Adults develop from pupae and cut their way out of the squares or bolls. After feeding 3 to 7 days, and mating, females begin laying eggs. The cycle is repeated until the cotton plants are killed by cold weather. By means of jaws at the end of its snout, an adult boll weevil eats into a square or boll. Two types of punctures result: *Feeding* punctures are made both by males and females. *Egg* punctures are made by females as places in which to lay eggs, and are deeper than feeding punctures. Both types of punctures cause damage. Often a square is punctured, the bracts flare; the square turns yellow and usually drops to the ground. Many punctured small bolls drop to the ground. Punctured large bolls usually remain on the plant, but if they have egg punctures, they will be damaged by the weevils developing in the locks where the eggs were laid. Weevil infested locks produce no cotton or they produce a little that is of inferior quality.

7-8-9. The bollworm feeds on cotton squares and bolls; it reduces yield and sometimes destroys the crop. In its development, it has four stages: egg, larva (caterpillar), pupa, and adult (moth). Only the larvae are destructive. Between spring and early fall, this insect produces 4 to 6 generations. On cotton, moths usually lay eggs on the tender, growing tips of plants and on the top sides of leaves. Sometimes, they lay eggs on squares, bolls, and stems. Eggs are white, ribbed, and dome shaped; they are about half the size of a pinhead. Larvae hatch from eggs in 3 to 5 days. Color of the larvae varies; it may be pale green, rose, brown, or almost black. Full grown larvae are 1 to 1 1/2 inches long. For a day or two after hatching larvae feed on the nearest tender growth. Then, larvae on terminal buds of the cotton plant move downward; those on fruiting branches move toward the center of the plant. The larvae eat out the squares, and tunnel into and eat the contents of the bolls. Mature larvae enter the ground and change into pupae, from which moths emerge. There are two different bollworms on cotton: the corn earworm *Heliothis zea* or common bollworm pictured in the left side of Figure 8 and the Tobacco Budworm *Heliothis virescens* pictured on the right side of Figure 8. In Missouri the *Heliothis zea* is the predominate species, but a small percentage of an infestation can be tobacco budworm.