

Beneficial Insects in Cotton: Predators

► Beneficial insects provide an underappreciated role in pest management. Common beneficial arthropods in production agriculture are often combined into two categories: predators and parasitoids. This guide details some of cotton's most common and important predators.

Big-Eyed Bugs

Target: Small caterpillars and eggs, whiteflies, plant bugs, aphids, and mites.

Method of Attack: Nymphs and adults suck body juices from prey through their beaks.

How to Identify: Oval and somewhat flattened in shape, usually silvery-gray. Have a wide head with prominent, bulging eyes.



Figure 1. Big-eyed bug. (Photo credit: Scott Stewart, University of Tennessee)

Minute Pirate Bugs

Target: Thrips, mites, aphids, whiteflies, and small caterpillars and their eggs.

Method of Attack: Nymphs (or immatures) and adults use their beaks to pierce and suck fluids from insects.

How to Identify: Adults are long, flat, and oval-shaped. They are primarily black with white markings on their wings. Nymphs are similar in shape but smaller and often bright red or orange.



Figure 2. Minute pirate bug. (Photo credit: Brady Higbee, Paramount Farming, Bugwood.org)

Lady Beetles

Target: Primarily aphids, mites, and small caterpillars and their eggs.

Method of Attack: Larvae and adults chew and consume their prey.

How to Identify: There are numerous species of lady beetles, and their appearance will vary. Some adult species are orange or red with black spots, while some are dark with no markings. Most larvae are alligator shaped and colorfully marked. Some larvae, such as the *Scymnus* lady beetle, are waxy and white.



Figure 3. Lady beetle larvae. (Photo credit: Scott Stewart, University of Tennessee)

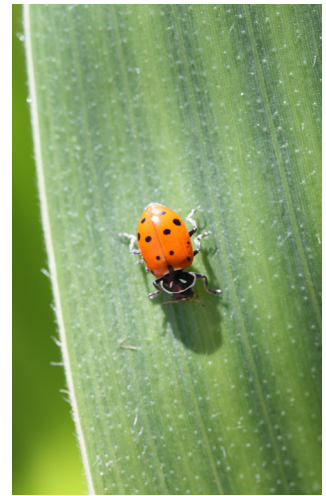


Figure 4. Lady beetle adult. (Photo credit: Scott Stewart, University of Tennessee)

Fire Ants

Target: Small and large caterpillars, bollworm and budworm eggs, fleahoppers, and other insects.

Method of Attack: Search cotton plants at night for prey. Attack worms when they drop to the ground to pupate.

How to Identify: Reddish-brown to black ants with a painful sting.



Figure 5. Fire ants.

Spiders

(Numerous species, including Green Lynx and Crab)

Target: Whiteflies, plant bugs, fleahoppers, caterpillars and their eggs, and aphids.

Method of Attack: Some species are aggressive hunters, and others ambush their prey. Some spiders use webs to trap their prey.

How to Identify: Spiders have eight legs; their size and coloring vary according to species.



Figure 6. Green lynx spider. (Photo credit: Scott Stewart, University of Tennessee)

Green and Brown Lacewings

Target: Mites, aphids, worms, whiteflies, and insect eggs.

Method of Attack: Larvae chew and consume their prey.

How to Identify: Green adult lacewings have slender green bodies, golden eyes, and prominent wings with netlike lacy veins. Brown adult lacewings are similar in appearance but smaller, brown, and appear to be hairy. Larvae are alligator shaped with long sickle-shaped mandibles. Eggs of the green lacewing are laid singly on top of a fine thread attached to stems or leaves.



Figure 7. Lacewing larvae. (Photo credit: Scott Stewart, University of Tennessee)

Damsel Bugs or Nabids

Target: Mites, aphids, fleahoppers, plant bugs, whiteflies, and small worms and their eggs.

Method of Attack: Pierce prey with their long beaks and suck the body juices. They grasp prey with their front legs while feeding.

How to Identify: Adults are long, slender (cigar-shaped) tan-to-brown insects. Their front legs are thick and covered with spines to help catch prey. Damsel bugs have narrow heads and long beaks that can inflict a painful bite.



Figure 8. Damsel bug. (Photo credit: Alton N. Sparks Jr., University of Georgia, Bugwood.org)

Predatory Mites

Target: Plant-feeding spider mites and their eggs, small insects such as thrips and whitefly nymphs, and insect eggs.

Method of Attack: Nymphs and adults suck body juices from prey through beaks.

How to Identify: Predatory mites are pear shaped and larger than plant-feeding mites. They have long legs and move quickly when disturbed. Several species of predatory mites feed on pest arthropods.



Figure 9. Predatory mites. (Photo credit: Jack Kelly Clark, Courtesy of California IPM Program)

Spined Soldier Bugs

Target: Primarily on caterpillars.

Method of Attack: Use their strawlike beaks to pierce and suck body juices from prey.

How to Identify: Often confused with brown stinkbugs, which they closely resemble, but spined soldier bugs have more pronounced shoulder spines. Their beaks are broad (roughly twice the width of their antenna) and stout. Plant-feeding brown stinkbug beaks are about the width of their antenna.



Figure 10. Spined soldier bug. (Photo credit: Phil Sloderbeck, Kansas State University, Bugwood.org)

Hover or Syrphid Flies

Target: Aphids and small caterpillars and their eggs.

Method of Attack: Larvae chew and consume their prey.

How to Identify: Larvae are green-to-brown sluglike maggots with no legs. Their tiny heads are at the small end of their tapered bodies. Adults resemble small bees with bright yellow and black stripes but have a much flatter abdomen than bees.



Figure 11. Syrphid fly larvae. (Photo credit: Scott Stewart, University of Tennessee)



Figure 12. Syrphid fly adult. (Photo credit: Scott Stewart, University of Tennessee)

Six-Spotted Thrips

Target: Plant-feeding spider mites and their eggs.

Method of Attack: Adults and larvae suck body juices from prey.

How to Identify: Slender straw-colored thrips with short antennae. They are named for the six black dots on their wings, which are folded above their abdomens.



Figure 13. Six-spotted thrip. (Photo credit: Jack Kelly Clark, Courtesy of University of California IPM Program)

Assassin Bugs

Target: Wide variety of insects, including large caterpillars.

Method of Attack: Suck body juices from prey through a long beak.

How to Identify: Slender, yellowish-green to red and brown in color with a narrow head and large, strong beak.



Figure 14. Assassin bug.

Collops Beetles

(Especially important in arid regions of the West.)

Target: Important predators of soft-bodied insects such as whiteflies (eggs, nymphs, and adults), small plant bug nymphs, aphids, mites, and caterpillars and their eggs.

Method of Attack: Adults chew and consume their prey.

How to Identify: Adults have patches or stripes of dark, iridescent red and blue on their backs. They are sometimes referred to as red-cross beetles.



Figure 15. Collops beetle. (Photo credit: Jessica Louque, Smithers Viscient, Bugwood.org)

Drapetis Flies

(Especially important in arid regions of the West.)

Target: Adult whiteflies

Method of Attack: Adults are ambush predators. They use their cone-shaped mouthparts to pierce prey and suck out contents.

How to Identify: Adults have cone-shaped mouthparts, shiny black thoraxes, banded abdomens, and shortened antennae with a long bristle at the tip. They are also recognizable by their jittery movements or “dance” as they walk.



Figure 16. *Drapetis* fly. (Photo credit: Peter Ellsworth, University of Arizona)

Descriptions condensed from *Field Guide to Predators, Parasites and Pathogens Attacking Insect and Mite Pests of Cotton: Recognizing the Good Bugs in Cotton* by Allen Knutson and John Ruberson and *Natural Enemies of the Southwest: A Field Guide to the Arthropod Natural Enemies of Southwest Field Crops* by Lydia M. Brown, Peter C. Ellsworth, Garrett B. Hughes, Scott Bundy, Patrick Porter, Vonny M. Barlow, Steven E. Naranjo, David Kerns, Ayman Mostafa, and Alfred Fournier.



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