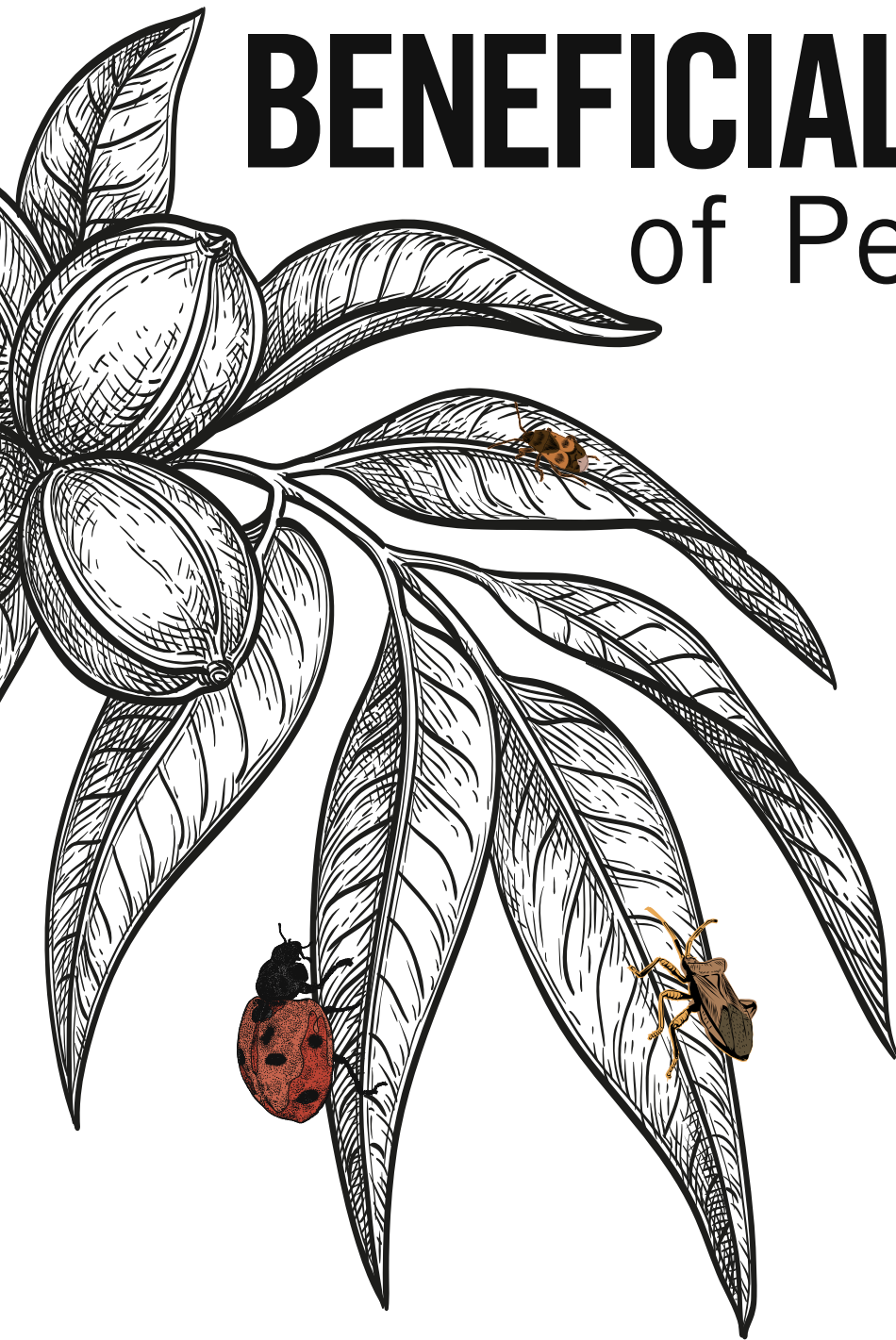


BENEFICIAL INSECTS of Pecan Trees



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Not all insects in a pecan orchard are harmful to pecan growth and development. In fact, the majority of insects are not harmful.

A large proportion of these insects are referred to as “beneficial” because they are predators of harmful insects. Beneficial insects in particular aid in suppressing soft-bodied insects such as yellow and black pecan aphids of pecan. For this reason, unwarranted, broad-spectrum insecticide sprays such as chlorpyrifos or pyrethroids are not recommended. These broad-spectrum insecticides are nonselective, making them particularly harmful to beneficial insects, thereby allowing aphid populations to increase. Aphid populations increase faster primarily because they have a shorter generation time than their natural enemies. The insects presented in this publication are some of the most common beneficial insects found in pecan orchards.

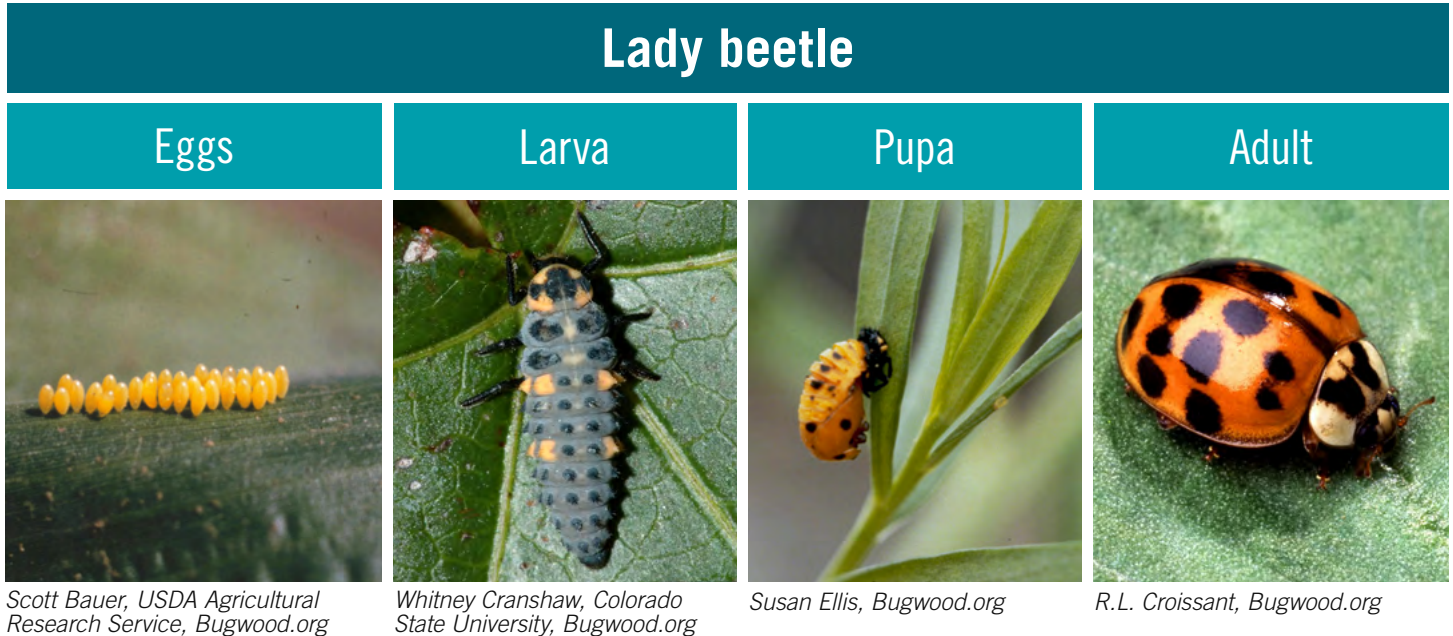


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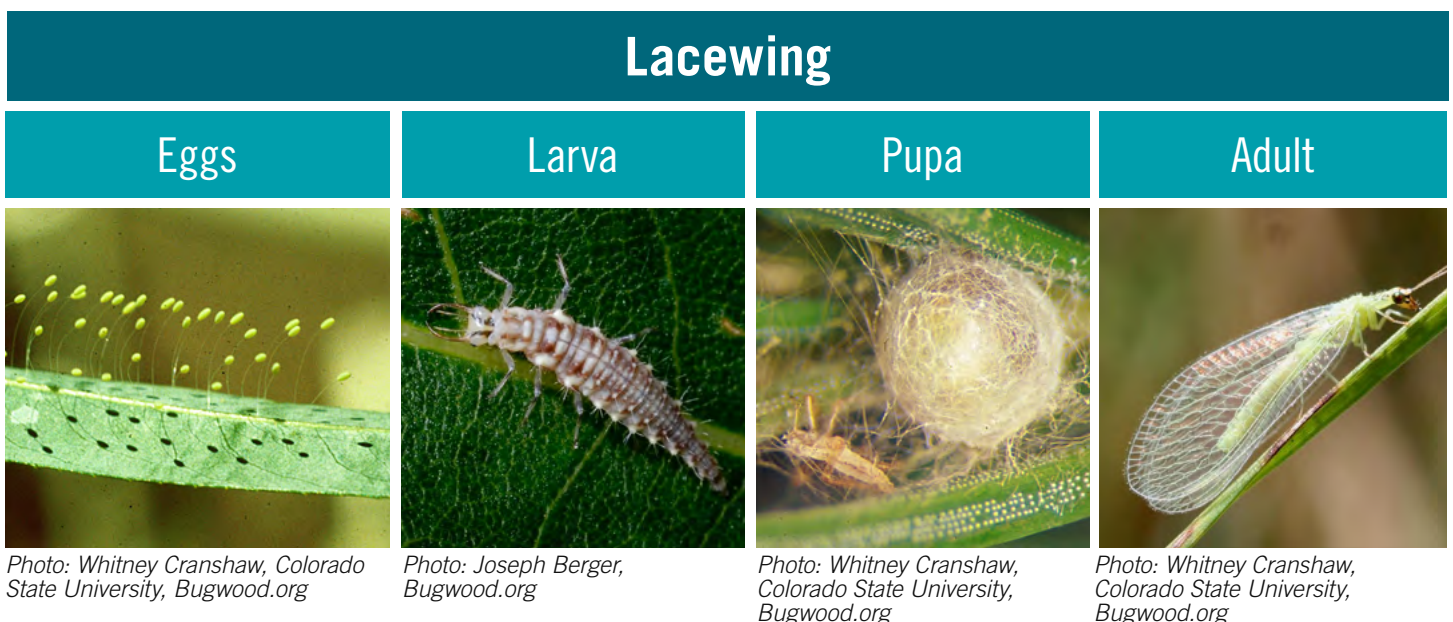
Lady beetles

Adult lady beetles are easily recognized based on their colorful and shiny hard shells. The immature stages of these beetles do not look the same as the adults and are less conspicuous. Many say that the larvae resemble small alligators with six legs and spines along their bodies. Yellow-orange eggs are elongated and laid in groups with the eggs positioned vertically on their ends. The pupae are immobile with their ends glued to the surface of the leaf. Both the larvae and the adults are voracious feeders of aphids, insect eggs, small insects and mites.







Green lacewings

Adults are green and have lace-like patterns on their wings. To identify them, scout for eggs under leaves in the orchard. Green lacewing eggs are laid in stalks either in groups or singly. Their larvae resemble an ant lion. Their piercing-sucking mouthparts are used to hold and pierce prey while feeding. Both the larvae and adults are voracious feeders of aphids and other small insects. A related group of lacewings, brown lacewings, can also be found on pecan trees and offer the same predatory services as green lacewings.





Predatory stink bugs

Perhaps the trickiest predators to distinguish in an orchard are predatory stink bugs because they resemble other plant-feeding stink bugs. Look at their piercing/sucking mouthparts (straw-like stylets) to tell them apart. Predacious stink bugs have broader and thicker stylets (twice the width of the antenna) used for attacking prey. Plant-feeding stink bugs have narrower and thinner stylets (width of antenna and stylet are similar) and the first segment is attached to the head along its length. One of the most common predacious stink bug species is the spined soldier bug, which resembles the plant-feeding brown stink bug except for the distinctly pointy “shoulders.” Predatory stink bugs prey on aphids, insect eggs, and soft-bodied insects including caterpillars.

Stink bug		Spined soldier bug	
Predatory	Plant-feeding	Nymph	Adult
			
<i>Photo: Hanna Royals, Museum Collections: Heteroptera, USDA APHIS PPQ, Bugwood.org</i>	<i>Photo: Lindsey Seastone, Museum Collections: Heteroptera, USDA APHIS PPQ, Bugwood.org</i>	<i>Photo: Andrew Sawyer, UGA</i>	<i>Photo: Andrew Sawyer, UGA</i>

Parasitic wasps of aphids

This group of wasps spends their immature stage inside their aphid hosts. A female wasp lays a single egg inside an aphid host. Once the egg hatches, the larva will feed inside the host, killing the host in the process. Parasitized aphids (mummies) turn black. In Georgia, pecan aphids are most commonly attacked by aphelinid wasps. Yellow pecan aphids and blackmargined aphids parasitized by these wasps turn shiny black and may be misidentified as black pecan aphids. Mummified aphids are glued to the leaves, so check whether the aphid moves when disturbed. Most of the time, black pecan aphids are found feeding on or near yellow or brown spots on the leaves.

Aphelinid wasp	
Wasp attacking an aphid	Parasitized yellow pecan aphid
	
<i>Photo: Kyle Slusher, UGA</i>	<i>Photo: Angel Acebes-Doria, UGA</i>

Minute pirate bugs

These predatory insects are very small, measuring between 1 and 2 millimeters. They have piercing-sucking mouthparts just like predatory stink bugs, and both nymphs and adults are predacious. Minute pirate bugs occur in high numbers on pecan trees feeding on aphids, thrips, insect eggs, mites, and small caterpillars.

Minute pirate bug

Nymph



Photo: Adam Sisson, Iowa State University, Bugwood.org

Adult



Photo: Angel Acebes-Doria, UGA
Detail photo: Phil Sloderbeck, Kansas State University, Bugwood.org

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