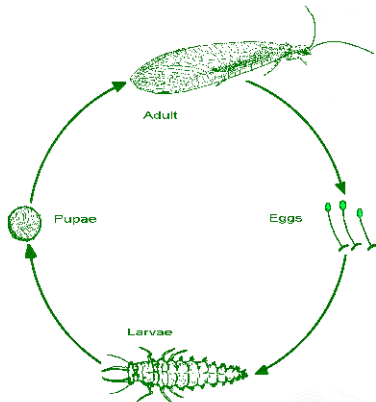


# Use of Beneficial Insects for the Control of Vegetable Pests

Justin Tyson, Rabun County Extension Coordinator

## GREEN LACEWING

The green lacewing (*Chrysoperla rufilabris*) is widely used in various situations to control many different pests. The adult lacewings do not kill pest insects, subsisting instead on foods such as nectar, pollen and honeydew. It is the larvae that are prized for their predatory nature.



### LIFE CYCLE

The adult lacewing lays her eggs on foliage. Each egg is attached to the top of a hair-like filament. After a few days the eggs hatch and a tiny predatory larva emerges ready to eat the pests. Each lacewing larva will consume 200 or more pests or pest eggs a week during their 2- to 3-week developmental period. After this stage, the larvae pupate by spinning a cocoon with silken thread. Approximately 5 days later, adult lacewings emerge to mate and repeat the life cycle.

Each adult female may deposit more than 200 eggs. For best results, habitats should be provided that encourage the adults to remain and reproduce in the release area. Nectar, pollen,

and honeydew stimulate their reproductive process. If these food sources are not available, adults may disperse. An artificial diet called *Wheat* is sometimes used to provide the adults with the necessary nutrition to reproduce. *Wheat* powder mixed with sugar and water is used to help mass-rear the lacewing. Studies by universities and the USDA have shown that spraying field crops with a *Wheat/sugar/water* mixture increases egg-laying considerably. Lacewing adults can survive the winter in protected places but have a difficult time surviving cold winters.

### PREY

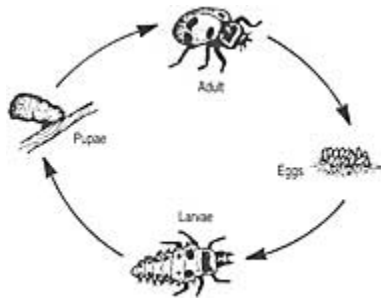
Lacewing larvae feed on many different pest insects. In general, they attack the eggs and the immature stages of most soft-bodied pests such as aphids, thrips, spider mites, whiteflies, mealybugs, leafhoppers, and the eggs and caterpillars of many moths. When targeting caterpillars, lacewing used in conjunction with *Trichogramma* wasps can be very effective. Since *Trichogramma* attack only the egg stage, the lacewing offers a second line of defense feeding on both eggs and young caterpillars.

### BETTER PEST MANAGEMENT PRACTICES

Start early in the season as soon as pest insects are detected. Monitoring is essential. Traps and lures can be very helpful tools for establishing "start dates" and for predicting pest population levels. Initiating natural enemy releases when pest populations are high does not lend itself to successful biological control. The pest must be detected and releases begun when infestations are at a manageable level. Because every situation is different, numbers of lacewings required can vary significantly from site to site. It is therefore important to monitor the beneficial insect and pest populations. It is essential to refrain from using broad spectrum insecticides to conserve naturally occurring predators and parasites. Lacewings should be released every 10 - 15 days until their populations are easily detectable or pests are no longer a threat. Of all available commercial predators, the green lacewing is the most voracious and has the greatest versatility for pests of field crops, orchards, and greenhouses.

## LADY BEETLE

A favorite with home gardeners and large scale growers, the lady beetle, also called ladybug or ladybird beetle, is one of the most popular beneficial insects. Both the adult and the dark gray and orange marked larvae will feed on pests that are not too hard shelled, too fast moving, or too large. Unlike other beneficial insects, ladybugs (*Hippodamia convergens*) are collected as adults in the California foothills where they gather in large quantities during the winter and late summer months. Once collected, they are placed in cloth bags with wood shavings - which provide protection - and are shipped all over the United States.



### LIFE CYCLE

After a few days of feeding, the female ladybug will deposit her eggs in small yellow clusters under a plant leaf or on the stem. The amount of eggs laid depends on the pest population. In most cases, eggs are laid on or near plants infested with large numbers of aphids. After 7 days the tiny eggs hatch into alligator shaped larvae. Within a month the larvae will pupate and one week later young adults will emerge, ready to feed. There are 1-2 generations per year, depending on weather conditions.

### PREY

Lady beetle larvae quickly begin feeding on many soft-bodied pests, mites, and insect eggs soon after hatching. Each larva will eat approximately 400 aphids prior to pupating. Adults will consume more than 5,000 aphids during their lifetime.

### BETTER PEST MANAGEMENT PRACTICES

Ladybugs may fly away soon after release. This can be prevented by late afternoon releases close to sunset, which gives them a chance to settle down overnight. They will also seek other areas when pest levels are too low; lady beetles require a certain amount of food in order to reproduce. If they cannot find enough food in your garden, they will try to find it elsewhere. Release one half pint (approximately 4,500 beetles) to treat a 3,000 sq. ft. growing area. Ants feed on the honeydew that sucking insects (aphids, mealybugs, thrips) produce and will vigorously protect these pests from their natural enemies. If possible, control ants prior to release.

### OTHER COMMERCIALY AVAILABLE BENEFICIAL INSECTS

Common name	Scientific name	Pests controlled
Trichogramma wasps	<i>T. pretosium</i> , <i>T. brassicae</i>	~200 species of moth and butterfly eggs
Praying mantis	<i>Tenodera aridifolia sinensis</i>	Most insects, including other beneficial insects
Predatory mites	<i>Phytoseiulus persimilis</i>	Spider mites (used primarily in greenhouses)
Whitefly wasp	<i>Encarsia formosa</i>	Whiteflies (used primarily in greenhouses)
Mealybug destroyer	<i>Cryptolaemus montrouzieri</i>	Mealybugs, aphids, and soft scales
Beneficial nematodes	Many species	Most soil-inhabiting pest insects
Fly parasites	Many species of wasps	Stable flies and houseflies