



CROP PEST:

Leafhopper

Cicadellidae

DESCRIPTION:

Leafhoppers get their name from their tendency to take short, 'hoppy' flights when disturbed or sense danger. They feed on a variety of hosts and consist of many different species. They are easily seen, often resting on foliage, and often cause little or no damage. However, when they do find a crop they savor, they can cause significant feeding damage. Stippling (white spots), yellowing leaf edges, curled or mottled young leaves, and dark excrement left on the underside of the leaves are all examples of leafhopper damage. This damage alone could be attributed to a number of different pests, leafhoppers molt several times during their nymphal stage leaving papery castings. Pests and casts are typically found on the underside of the leaves where they are more likely to find shade and higher humidity environments. If you have any identification doubts, a leafhopper's unique flight ability can help you make a definitive diagnosis when scouting.



Photo Courtesy of University of Kentucky

TARGET CROP:

Leafhoppers have been known to affect a variety of crops such as wine grapes, hops, potatoes, mint, and cannabis.

LIFE CYCLE:

Adult leafhoppers overwinter in areas where there is ample plant debris, established weed patches and other areas where there is little chance of disturbance. In the spring, adults (generally up to a half-inch long) emerge and lay up to 6 eggs per day in plant stems and veins. It generally takes a week for eggs to hatch and about two weeks for the nymphs to complete their molting process and become adults. Multiple, overlapping generations can occur each year.

BENEFICIAL INSECT CONTROL:

Orius insidiosus— aka pirate bugs, an effective generalist beetle predator that feeds on nymph stages of leafhoppers. They are great fliers, which enables them to travel and seek out prey. They need a food source in order to establish a population, which can be achieved with adequate pollen, ephestia eggs, and/or by introducing a healthy banker plant system.

Introduction Rates and Release Information

Generally, one *Orius* per 10 square foot canopy will provide sufficient coverage. Release the adults by gently shaking them onto individual plants or by opening the containers in the greenhouse and allowing the insects to disperse.

Chrysoperla rufilabris— aka green lacewings, are a generalist predator that feeds on leafhoppers. Each larva can devour 200 or more pests and eggs a week for about 3 weeks. At that time, the larvae pupate and become adult lacewings, which emerge to lay eggs on the foliage. Adults can lay more than 200 eggs

during their lifetime. Since leafhoppers also lay their eggs on stems and leaves, when lacewings hatch it is a convenient place for larvae to start feeding.

Introduction Rates and Release Information

Knowing how to apply green lacewings can be tricky since we provide so many different life-stage options. If using larvae, for a light infestation release 2 to 5 per 10 square feet, biweekly or as needed. For moderate infestation release 4 to 8 per 10 square feet biweekly or as needed. And for large infestations release 1 per 1 square foot biweekly or as needed. If using adults, divide rate by four. If you are applying eggs, multiply rate by five.

INSECTICIDE OPTIONS:

Products that contain Neem oil have proven useful. Also, products such as BotaniGard ES, and Marrone Bio Innovations' Venerate XC and Grandevo can be used when populations are low and just beginning to build.

Other product labels that target leafhoppers include:

Molt-X

FURTHER CONSIDERATIONS:

Building biodiversity into the system by attracting naturally occurring predators can help tremendously. A variety of helpful "banker plants" include *Lobularia maritima* (sweet alyssum) and the Ornamental Pepper variety "Purple Flash" have both proven to be great banker plants to attract *Orius insidiosus*. They provide a food source while supporting their establishment in a crop. When choosing a *Lobularia spp.* variety, any hybrid variety can be used, however, the white and more fragrant varieties are often recommended and less expensive.

CULTURAL CONTROL TIPS:

Removing excessive yard debris and weed patches can disturb habitat leafhoppers depend on to overwinter.