New Horizons

Although, a parasitoid of the tarnished plant bug (TPB) is already established in North Jersey, the Department has initiated a new program involving production of another beneficial insect that attacks TPB. It is anticipated that this new species will extend the range of control of TPB into South Jersey. A cooperative agreement with USDA and Delaware State U. has been initiated to evaluate the efficacy of the new parasitoid.

As part of a cooperative agreement with USFS, the lab has set up field study plots to gather pre-release data in anticipation of receiving beneficial insects for release against a forest understory plant, garlic mustard. The USFS also is partially funding the lab's rearing and release of a beetle that eats the exotic plant mile-a-minute (MAM). MAM is a thorny vine that grows rapidly, covering other plants and trees blocking the sunlight required by these plants to survive.

copepod

The NJDA is working with the NJDEP's Office of Mosquito Control to develop a biological control program designed to reduce mosquito populations by rearing and releasing small crustaceans, called copepods, into mosquito breeding sites such as tires and stagnant ponds

Contact Us

The New Jersey Department of Agriculture is continually searching for and evaluating new biological control programs that could be implemented to help protect the state's crops, ornamental trees and shrubs, forests and other natural resources.

If you would like more information regarding the NJDA's biological control programs, you may call the NJDA's laboratory at (609) 530-4192 or use visit our website at:

www.nj.gov/agriculture/divisions/pi/prog/beneficialinsect.html

or

www.nj.gov/agriculture/divisions/pi/prog/biological.html

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BIOLOGICAL CONTROL OF PLANT PESTS

Hemlock Woolly Adelgid

Mile-a-Minute Weed

Purple Loosestrife

Mexican Bean Beetle

NEW JERSEY
DEPARTMENT OF AGRICULTURE

Overview

One of the New Jersey Department of Agriculture's (NJDA) primary goals is to safeguard New Jersey's resources from injurious pests and diseases. NJDA has been a national leader in the biological control of plant pests since the 1960's. Built in 1985, NJDA's beneficial insect lab in Ewing, Mercer County, is one of the leading, state-of-the-art, beneficial insect raising facilities in the nation.

For biological control, NJDA seeks natural enemies of insects and weeds that damage crops, ornamentals and threaten the state's forests and wetlands. NJDA works closely with federal and other state departments of agriculture and university researchers to alleviate pest problems by developing ways to raise the natural predators of these pests in the laboratory and release them in the areas affected by pests.

The NJDA's beneficial insect lab raises two types of insects, those that live through the winter and reappear in the spring, and those that must be released at the appropriate time each year. Because the beneficial insects help control damaging weeds and insects, they also reduce the amount of pesticides used by farmers and gardeners.

New Jersey Success Stories

Over the years, there have been a number of successful biological control programs in which the NJDA has been a part. Many of these programs are saving farmers and other landowners millions of dollars a year in reduced pesticide costs and plant replacement costs.

The NJDA, in cooperation with the US Department of Agriculture and the NJ Department of Environmental Protection (DEP), has established within the state a variety of beneficial insects that help to keep pest insects and weeds (listed below) under control and below economically damaging levels.

Alfalfa weevil - An early season alfalfa insect pest.

Gypsy Moth - A forest and landscape pest responsible for defoliating thousands of acres of trees.

Cereal Leaf Beetle - A pest of wheat and oats.

Musk thistle - An aggressive invasive weed pest that infests pastures and other uncultivated land.

Euonymus scale - An insect that sucks the sap from ornamental euonymus plants and a few other ornamental species.

Aphids - An insect pest that feeds on the sap of many plants, including agricultural crops.

Elongate Hemlock Scale - The NJDA has established a beetle that feeds on this secondary pest of hemlock.

Cybocephalus sp. nr. nipponicus

Hemlock woolly adelgid (HWA) - An introduced pest of hemlock that feeds on the sap of the tree causing needle drop. After a forest has become heavily infested with HWA, tree mortality may develop in as little as three years. HWA populations are virtually unmanageable in native hemlock forests due to their inaccessibility, poor pesticide coverage due to dense foliage, and because of the potential for drift into water. In an effort to save as many remaining hemlock stands in NJ as possible, the NJDA, in cooperation with the US Forest Service (USFS) and the Connecticut Agricultural Experiment Station, initiated a biological control program in 1997. Under the cooperative agreement, the Department's beneficial insect lab is rearing two ladybugs for release in NJ and other northeastern states to help protect the hemlock stands of the northeast.

Mexican bean beetle - MBB is the major insect pest of soybeans as well as a pest of snap beans and lima beans. The NJDA conducts a successful program, partially funded by the NJ Soybean Board, involving the rearing of a beneficial parasitoid from India that cannot survive NJ winters. This program protects 100,000 acres of NJ soybeans and has reduced the amount of pesticides required to control bean beetle by over 21 tons, saving growers over $450,000 annually. The parasitoid is kept in the lab and released each spring and summer. The program also is responsible for reducing MBB damage and pesticide treatment of snap beans and lima beans.

Purple loosestrife - An invasive exotic freshwater wetland plant, purple loosestrife is displacing native plants essential for food, cover and nesting sites of native wildlife. Plants reproduce by seed and vegatatively. Loosestrife can decrease the water storage capacity of a wetland, reduce the ability of a wetland to attenuate floods and clog drainage channels and irrigation ponds. Control by chemical, mechanical and physical methods is difficult, expensive and usually temporary. In 1996, the beneficial insect lab began rearing and releasing two exotic beetles that feed on loosestrife in Wildlife Management Areas and with financial support from the NJDEP's Nongame Species Program, began releasing the beetles in infested sites on private property to protect bog turtle, an endangered species. Dispersal of the beetles from release sites to other loosestrife infested wetlands and a reduction in plant populations at most of the release sites is increasing.

Galerucella -- Photo by J. Zhang