

## 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 landowners millions of dollars a year in reduced pesticide and plant replacement costs. A variety of beneficial insects, that help keep pest insects and weeds below economically damaging levels, have been established within the state.

### ***Galerucella* sp. -**



In 1996, the beneficial insect lab began rearing and releasing two exotic beetles, both of which are of the **Galerucella** genus. They feed on purple loosestrife, an invasive exotic freshwater wetland plant that displaces native plants essential for food, cover and nesting sites of native wildlife, including the bog turtle. Dispersal of the beetles from release sites to other loosestrife infested wetlands and a reduction in plant populations at most of the release sites has increased to a level where the beetle has established itself in New Jersey.

### ***Cybocephalus* sp. -**

The NJDA has established a beetle, ***Cybocephalus nipponicus***, that feeds on elongate hemlock and euonymus scale.



In addition, **alfalfa weevil, gypsy moth, cereal leaf beetle, and musk thistle**, are being kept below economically damaging levels in part by biological control agents introduced by NJDA.

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 visit our website at:

<http://www.nj.gov/agriculture/divisions/pi/prog/beneficialinsect.html>

OR

<http://www.nj.gov/agriculture/divisions/pi/prog/biological.html>



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## BIOLOGICAL CONTROL OF PLANT PESTS



Phillip Alampi Beneficial Insect Lab

## 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 culture the natural enemies of these pests, in the laboratory, and release them in affected areas.

The NJDA's beneficial insect lab cultures two types of insects, those that survive 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.

## CURRENT PROJECTS



### Hemlock woolly adelgid (HWA) -

HWA is an introduced pest of hemlock that feeds on the sap of the tree causing needle drop. After a stand 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 poor pesticide coverage due to their inaccessibility, poor pesticide coverage due to dense foliage, and 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 U.S. Forest Service (USFS) and the Connecticut Agricultural Experiment Station, initiated a biological control program in 1997. The Department's beneficial insect lab continues to rear predators for release in the northeastern states to help protect natural hemlock stands.

### Mexican bean beetle (MBB) -

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



### Mile-a-minute (MAM) -

Mile-a-Minute weed, *Persicaria perfoliata*, can grow up to six inches per day, with mature plants reaching six feet. It can climb over, and shade out native



plants at the edges of woods, along stream banks, and roadsides. Mile-a-minute can also be a problem in untilled agricultural areas such as Christmas tree farms and reforestation seedling plantations. Mile-a-minute is native to India and Eastern Asia, and was accidentally introduced into Pennsylvania in the late 1930's. With the cooperation of the USFS, APHIS/PPQ and the University of Delaware, the Department rears a tiny weevil, *Rhinoncomimus latipes*, that was imported from China. These weevils feed specifically on mile-a-minute weed, and will continue to be released for establishment in NJ and the northeast.

**Copepods** - 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.

