



Northeastern IPM Center Partnership Grant Impacts



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Early Season Soil Applications of Entomopathogenic Nematodes in High Tunnel IPM (2021–2022)

Project Director: Anna Wallingford – University of New Hampshire

Author: David Lane – Cornell University

THE NEED



- Pest management is challenging when growing in high tunnels. There are fewer chemical insecticides labeled for use on these crops than for food crops grown outside and high tunnel growers prefer non-chemical management approaches.
- Entomopathogenic nematodes (EPNs) represent a promising tool for biological control of insect pests of HT vegetable crops but information on best practices is lacking as well as regional expertise.



EPNs can contribute to the integrated pest management of a broad range of greenhouse pests, including thrips. Heavy thrips infestations in tomato houses can lead to scarring of fruit that make them unmarketable.

Photos: Anna Wallingford.

EPNs under magnification.
Photo: Anna Wallingford.

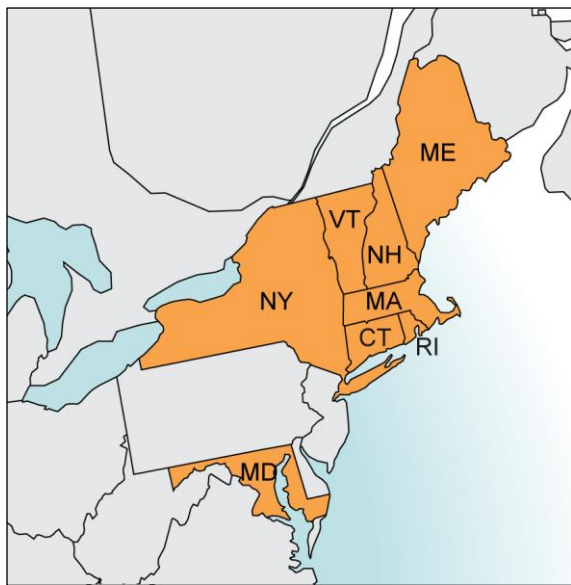
Waxworms (WW) larvae are bought from pet stores or bait shops to assay the “biological control potential” of soil collected from our treated tunnels. Any living EPNs in the soil samples will infect and kill the wax worms, which indicates that there are living EPNs seeking out cutworms and other insects living in the tunnel. This is called a bioassay test.

Photo: Anna Wallingford.

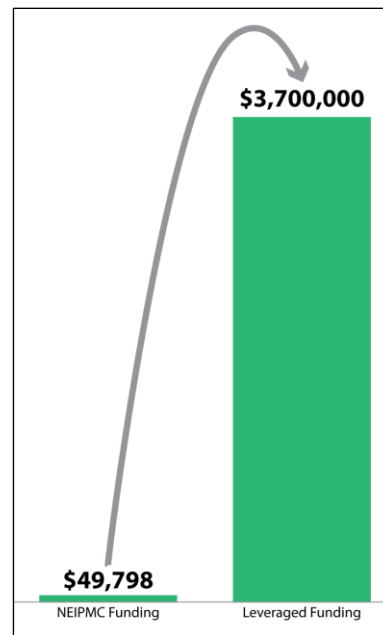


IMPACTS

- \$3.7 Million of additional funding was acquired because of the data or results yielded by this Northeastern IPM Center-funded project. In other words, for every \$1 received from the Northeastern IPM Center, \$74 were awarded to the Project Director for an additional grant entitled, “Optimizing Pest Management in High Tunnels to Increase the Resiliency of Local Food Systems” from the USDA.
- While we typically see roughly 25% of growers indicate that they use biological controls in high tunnel systems, 57% of high tunnel producers affected by cutworms indicated that they planned on adopting biocontrols after learning about EPNs as a potential biological control for cutworms.
- In this study, one tomato farmer lost more than 50% of their tomato transplants due to cutworms. We estimate that a 50% loss over just 2 weeks of production time equates to about \$22,500 lost to cutworm injury (estimating 5000 lbs tomatoes/tunnel/week and a retail price of \$4.50/lb). This does not take into account the additional labor and supplies that were required to replant but this loss would more than justify a pre-emptive application of EPNs at a maximum cost of \$100/tunnel.
- Economic cost-benefit analyses are needed, but for a maximum of \$100/tunnel, early soil applications of entomopathogenic nematodes could be a relatively low-cost investment that increases profitability.



This project reached target audiences throughout the Northeast, including Connecticut, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont.



This project leveraged \$49,798 of Northeastern IPM Center funds into \$3,700,000 additional grant dollars.

WEBSITES

- <https://extension.unh.edu/blog/2021/04/epns-101-introduction-beneficial-nematodes>
- <https://extension.unh.edu/blog/2021/05/epns-101-controlling-crop-pests-epns-epn-life-cycle>