

CONTROLLING PESTS IN GREEN ROOF SYSTEMS

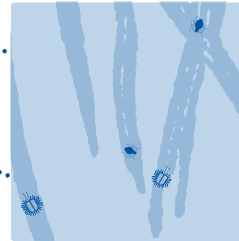


UNIVERSITY OF DELAWARE
COOPERATIVE
EXTENSION

ISSUE

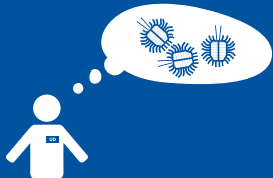


Green roof systems incorporate plant material to reduce energy costs.



But plant options are limited, leading to problems with root-feeding insects that are difficult to control with insecticides.

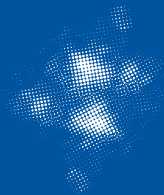
RESPONSE



Cooperative Extension agents conducted experiments, using previous work with mealybugs as a control.

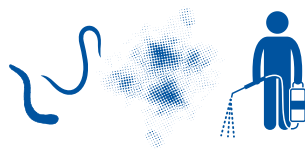


Trials tested entomopathogenic nematodes and fungus (each parasitic to insects) ...



as well as non-neonicotinoid insecticides (those less harmful to pollinators) as a possible management tool.

IMPACTS



The results of these tests showed that all three of the methods tested significantly reduced root mealybug populations.



Extension agents held a workshop to share these results.

25% of participants were previously unaware that biological control could be used to target root mealybugs

35% of participants learned that non-neonicotinoid products could be used manage mealybug populations

15% intended to use these if cost-effective

65% of participants found this study to be useful

30% of participants intended to use this information to control other root-feeding insects.

ISSUE

Green roof systems are roofs that have incorporated plant material to reduce energy costs. Management options for plants grown in these locations are extremely limited; therefore root-feeding insects are often very difficult to control with insecticides. Cooperative Extension agents, Stanton Gill (University of Maryland) and Brian Kunkel (University of Delaware), have been working with nurseries and greenhouses experiencing this particular pest problem.

RESPONSE

Cooperative's Extension's work on the management of root mealybugs began several years ago. Since this work did not completely rely on insecticides, it was used as a control. One of the trials conducted by Gill and Kunkel focused on the use of entomopathogenic nematodes (a parasitic thread worm that kills insects), entomopathogenic fungi (a fungus that can act as a parasite in insects), and growing location to control root-feeding insects. Non-neonicotinoid insecticides (those less harmful to pollinators) were also examined as a possible management tool.

IMPACT

Results found that the entomopathogenic nematode, *Steinernema carpocapsae*, and the entomopathogenic fungus, *Beauveria bassiana*, can significantly reduce root mealybug populations on *Sedum* grown in plug trays in a hoop house. *Sedum* is a genus of flowering leaf succulents also known as stonecrops.

They also indicated that some non-neonicotinoid insecticides also significantly reduced populations of root mealybug. Gill and Kunkel conducted a workshop where they shared these findings, and we discovered that 25% of the attendees were previously unaware that biological control could be used to successfully target root mealybugs. 35% of the attendees said they learned there were non-neonicotinoid products that could be used to successfully manage mealybug populations, and 15% of attendees intended to use them if they proved to be cost-effective.

Sixty-five percent of attendees stated the information generated by the studies was useful and that they appreciated the project's focus on difficult-to-manage pests. 30% of attendees also stated that they may try to use this information to control other labeled root feeding insects.

RECOGNITION

- Marrone Bio and Syngenta provided product for testing.
- The BASF Corporation provided entomopathogenic nematodes.
- BioWorks provided entomopathogenic fungus.
- Emory Knoll provided *Sedum* plugs.