Developing a Systems Approach to Pest Management on Greenhouse Vegetable Crops: Mirid Predator Selection

LEAD RESEARCHER

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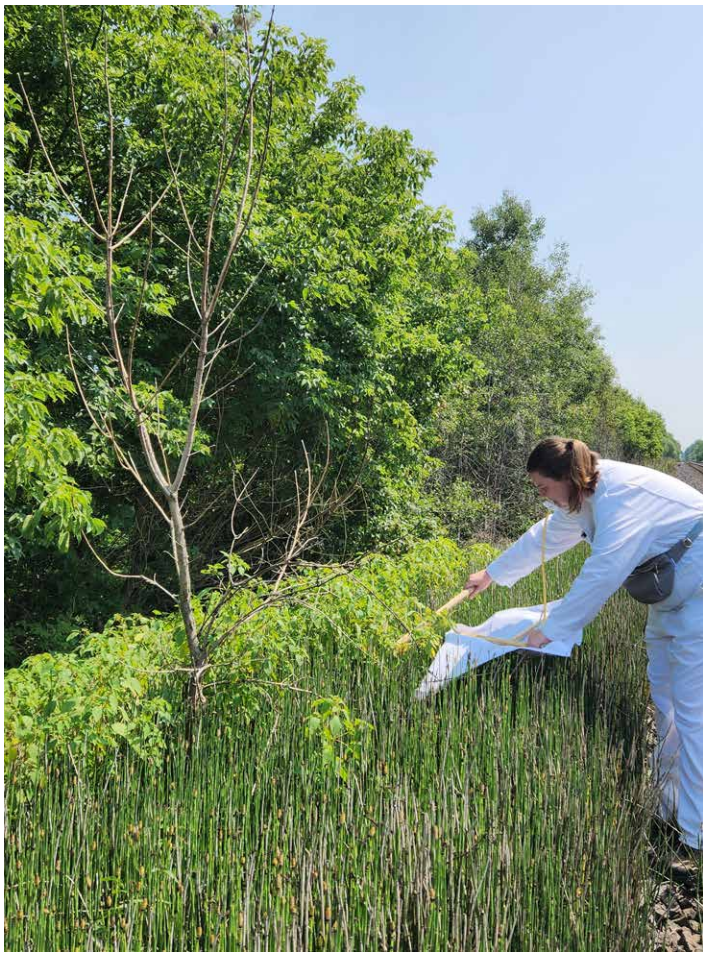
To find new integrated pest-management strategies to protect greenhouse vegetable crops, a research team is studying three native North American mirid species: *D. discrepans*, *D. famelicus*, and *Macrolophus tenuicornis*, and one adventive species *Nesidiocoris tenuis*.

This year, colonies for three mirid species were initiated and two were bred. Over 60 lab assays were conducted to assess the zoophytophagy capacity of these predators. A greenhouse trial tested oviposition preferences and suitability of four host plant types for the four mirid species, finding promising preliminary trends. New details on host plant dynamics were found that could influence future integrated pest management programs with mirid bugs in greenhouses. There were also new mirid specimens collected from six locations in Ontario, increasing the genetic pool for future selections.

Starting this fall, there will be documentation of genetic differences among mirid colonies based on geographic origins and species done. This research will build on the Canadian National Collection's research, with further work happening next summer. This winter, breeding efforts will continue with the formation of new Isofemale lines from mirid colony sources. Phytophagy and zoophagy tests, as well as host plant suitability comparison trials, will be done.



Carly Demers, a PhD student working on the Developing a systems approach to pest management on greenhouse vegetable crops: mirid predator selection research activity, collects mirid species.
Photo: Roselyne Labbé

KEY TAKEAWAYS:

- Collection sites are spread across Ontario and Quebec with research happening at two sites including the Agriculture and Agri-Food Canada Harrow Research and Development Centre in Ontario, and the Centre de Recherche Agroalimentaire de Mirabel in Quebec.
- To improve the success of applying selectively bred mirid species in commercial settings, commercial greenhouse trials will be conducted.
- Work is being done to create colonies of mirid predators with high pest predatory capacities and low plant damage. Laboratory bioassays are reviewing predation and plant damage — individuals with better traits in future generations are being chosen. Over six generations, selected strains will be compared to unselected ones identifying those with improved pest predation and reduced plant injury.