

ENHANCING FUTURE PREPAREDNESS FOR THE VEGETABLE LEAFMINER

This edition of *The Front Line* provides an update on the ongoing strategic levy investment project for the vegetable leafminer. The project involves many research, development and extension activities that will help the Australian vegetable and nursery industries prepare for the pest. AUSVEG Biosecurity Officer Madeleine Quirk speaks to Dr Peter Ridland, an entomologist at the University of Melbourne, to find out more.

Vegetable leafminer on cucumber. Inset: Vegetable leafminer lifecycle. Images courtesy of Elia Pirtle, Cesar.



Project MT16004 – *RD&E Program for control, eradication and preparedness for Vegetable Leafminer (2017-2020)*, a strategic levy investment under the Hort Innovation Vegetable and Nursery Funds, brings together Cesar, the University of Melbourne, Plant Health Australia, the Northern Australia Quarantine Strategy and AUSVEG to undertake a number of activities to prepare for the vegetable leafminer (VLM).

Since 2008, the VLM has been moving down the Torres Strait Islands and in 2015, the pest was detected on the Cape York Peninsula in northern Queensland. MT16004 was developed in recognition of the impact that the VLM could have on Australian vegetable and nursery production industries if it were to move into vegetable production areas.

The project has many facets, including: identifying spread pathways of the VLM to Australia; modelling the spread from Cape York Peninsula; investigating biological and chemical control; developing management guidelines and trapping methods; developing a VLM contingency plan; and communicating updates as they arise throughout the lifetime of the project.

WHAT IS THE VEGETABLE LEAFMINER?

The VLM is one of a small group of agromyzid leafminers that attack a very wide range of host crops, primarily in the Cucurbitaceae, Fabaceae and Solanaceae families. They can also move readily between non-crop and crop plants.

The feeding habits of these pests can be devastating to crops. High levels of mining reduce yield and can also lead to premature defoliation in some crops.

"The adult female fly scrapes circular feeding holes in the plant surface with her ovipositor," University of Melbourne entomologist, and consulting entomologist on the project, Dr Peter Ridland said.

"This damage can facilitate infection by some plant pathogens including bacteria, fungi and viruses," he continued.

Eggs are also laid in some of these feeding holes. Legless larvae hatch and feed internally, forming the characteristic mines in the leaf. However, larvae are generally held in check by generalist parasitoid wasps, which lay their eggs inside other insects or beside other insect larvae, including agromyzid flies.

CURRENT PROJECT FINDINGS AND FUTURE ACTIVITIES

Dr Ridland is reviewing global scientific literature on biological control options for VLM and is compiling a comprehensive overview of research previously conducted in Australia on agromyzids and their parasitoids. In his experience, the review has been important in setting the direction for research in biological control strategies for VLM.

A key finding of the research team has been the recognition that Australia already has a large number of generalist parasitoid species attacking endemic agromyzids and that it will not be necessary to import foreign species as biological control agents for VLM.

"Our challenge will be to utilise existing parasitoid wasps effectively in VLM management while recognising the constraints placed by pest management requirements for other key pests in the crops," Dr Ridland said.

"The second year of the project will see a major emphasis on collecting and rearing parasitoid wasps from a range of agromyzid hosts in the major horticultural areas in eastern Australia.

"We intend to define the distribution of the parasitoid, *Diglyphus isaea*, which to date has only been found in south-eastern Australia."

Dr Ridland and the project team are also very interested in receiving reports of leafmining activity on crop and non-crop plants from growers and consultants.

COULD RESEARCH EFFORTS BE APPLIED TO OTHER LEAFMINER SPECIES?

Dr Ridland added that the information gained from MT16004 on the Australian fauna of generalist leafminer parasitoids will also be directly applicable to two other closely related leafminer species, *L. huidobrensis* and *L. trifolii*. These species are currently found in south-eastern Asia and some nearby Pacific Islands, and both pest species are considered to be more damaging pests than VLM, largely due to the high level of insecticide resistance in the invading populations found in Asia.

INFO R&D

For more information, contact AUSVEG Biosecurity Officer Madeleine Quirk on 03 9882 0277 or madeleine.quirk@ausveg.com.au. Alternatively you can visit the project page on the AUSVEG website at ausveg.com.au/biosecurity-agricultural/biosecurity/mt16004/.

Any unusual plant pest should be reported immediately to the relevant state or territory agriculture agency through the Exotic Plant Pest Hotline (1800 084 881).

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