

IPM strategy for cluster caterpillar *Spodoptera litura*

Project summary

- Program – PhD
- Location – Kununurra/Broome, WA
- Research area – Horticulture, Crop protection, Insects and Disease

Project description

Issue – Cluster caterpillars have become a significant pest in the North of Western Australia causing economic damage to the table grapes and asparagus industry in Boome. Cluster caterpillars are a significant issue on many crops in the northern parts of WA where the warm climate allows them to reproduce throughout the year. Insecticides offer only limited control of cluster caterpillar populations. Their overuse has led to widespread insecticide resistance and has disrupted natural biological control by negatively impacting beneficial arthropods. Combined with the effects of monocropping, these factors have further intensified the pest problem. To address this, there is a critical need to explore non-insecticidal approaches.

One promising strategy is conservation biological control—enhancing and sustaining natural enemies through the use of suitable refuge or intercrop plants. However, there is a significant knowledge gap in identifying which plant species effectively support beneficial arthropods in this context. Research in this area is essential to reduce reliance on chemical control and to develop more sustainable management strategies for cluster caterpillar.

Research: Selection and evaluation of refuge plants: Plant species known to attract and support beneficial arthropods that act as natural enemies of the cluster caterpillar will be identified and screened for their potential use as intercrops or refuge crops.

Laboratory assays and behavioural studies: Volatile compounds from selected plant species known to repel lepidopteran pests will be isolated and characterized. Behavioural assays will be undertaken to assess the response of cluster caterpillars to these compounds.

Field Evaluation: Promising plant species—both those that repel pests and those that support natural enemies—will be tested under field conditions. These trials will aim to develop and optimize a **push-pull** system to manage cluster caterpillar populations effectively.

This project will be suitable for someone interested in developing an integrated pest management system and working with insect pests and agriculture. The project will require

working in Kununurra and Broome. You will learn how to establish insect colonies, work with microscopy, olfactometer, and undertake insect behavioral studies.

Outcomes – This research will contribute to the development of alternative, ecologically-based pest management strategies against cluster caterpillar.

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