Project Summary

Scoping study of Integrated Pest Management (IPM) in Tea Tree oil plantations

August 2020 - 8 January 2021

Background

Pest management is a significant problem and production expense for Australian tea tree growers. Pests include insects, fungi, bacteria, viruses and nematodes. The use of a native species in extensive monoculture systems is challenging and there is evidence that individual pest impacts are increasing in any given season. In addition, the detection of new pests adds an additional layer of complexity to crop production and often requires the need for new management strategies to be undertaken. The number of tools available to control of these pests appear to be decreasing in efficacy and the arrival of new pest threats requires additional support to develop management strategies. Chemical contamination of tea tree oil is also a threat to the Quality Assurance requirements of the industry and needs to be considered in the development of any pest or disease management strategy. The Industry needs integrated pest management (IPM) guidelines that will be incorporated into a broader integrated management package that includes soil fertility, weed management and crop growth optimisation with minimal environmental impact.

Objectives

1. Document and prioritise the current invertebrate pests and diseases threats to production in commercial tea tree plantations across the estate in QLD and NSW.
2. Document the current invertebrate pest and disease management strategies in tea tree plantations and their efficacy.
3. Determine the key limitations to current invertebrate pest and disease management practices.
4. Outline and report to the AgriFutures Tea Tree Oil Program on the research and extension needs and priorities.

Research

This scoping study will collect as much relevant information from various sources to be able to describe current practices, key challenges and future options for the sustainable management of invertebrate pests in tea tree plantations.

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Key activities in the project include:

1. Literature review

A literature review of invertebrate pests and pathogens in tea tree and current management strategies adopted in production.

Grower surveys to determine:

1. If pests and diseases are a major concern and impacting plantation health and what are the current estimated impacts on productivity on each property.
2. What invertebrate pest are impacting on establishment, growth, and productivity.
3. What major disease issues are impacting on establishment, growth, and productivity.
4. What current management practices are being implemented to control any of the pest and disease issues and with what level of success.
5. If there has been a need to change management strategies due to perceived pesticide resistance.

The survey will contact representative growers in all the tree growing regions in NSW and QLD.

Herbicide companies and the Australian Pesticides and Veterinary Medicines Authority (APVMA) will be contacted regarding off-label information about potential pesticides for control of invertebrate pests in other Australian essential oil or ornamental crops.

2. Reporting including:

- Outcomes of the literature review.
- The findings of the industry scoping study.
- Recommendations for sustainable pest & disease management.
- Identification and prioritisation of pests and disease research, development and extension for the tea tree industry.

Expected outcomes and implications

This scoping study will provide an evidence-based foundation for larger projects aimed at addressing recommendations and priorities on pests and disease threats to production and subsequent management requirements.

It is expected that a larger project would include research and extension activities such as:

- Optimising invertebrate pest and disease management techniques.
- Understanding pest and disease biology to improve management – e.g. disease forecasting to optimise chemical use and reduce costs.
- Assessment of new active ingredients for the management of the different groups of invertebrate pest species and diseases including:
    - Field trialling of the active ingredients identified as effected in bioassay.
    - Assessing active ingredients for commercial suitability via residue analysis.
    - Registering suitable active ingredients for permitted use in tea tree plantations.
    - Extending new permitted pesticides through field days and other industry events.
- Review of non-chemical-based activities to reduce pest and disease impacts in plantations including:
    - Biological control.
    - Resistance breeding.
    - Crop management.

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