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Queensland Government



Know-how for Horticulture™



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# A multi target approach to fruitspotting bug management

**Bio**  
Resources



# Project components

- **Collation of past research**
- **Chemical control options**
- **Development of monitoring and trap cropping**
  - Trap crops
  - Pheromones
- **Biological control options**
- **IPM case studies**
- **Area Wide Management (AWM)**
- **Industry Adoption**



# Collation of past research

Responsibility: Alana Danne (PhD student (University of Queensland))

- Collation of past research and practices to develop a data base
- Research and practices of fruitspotting bug management, related insects and technologies important for the program.





# Chemical control

Responsibility: Dr. Ruth Huwer and Craig Maddox (NSW DPI)

- **New compounds from chemical industry**
  - New compounds are being investigated.
  - A new promising looking chemical compound that has been tested in the laboratory is now being tested in the field trial at the CTH Alstonville.
- **Biopesticides need to be considered**
  - We are collaborating with Dr. Robert Mensah and are investigating two biopesticides
  - 1 pathogen and 1 plant extract have been tested for GVB and have shown to control nymphs with soft cuticles.



# Monitoring and trap cropping

## ***1. Trap cropping***

Responsibility: Dr. Ruth Huwer and Craig Maddox (NSW DPI)

- Developing a new monitoring strategy by using trap crops as a monitoring tool.
- Monitoring protocols need to be developed in consultation with crop consultants.
- There are 22 trap hedges with different fruitspotting bug host plants in place on commercial farms in New South Wales and Queensland including 3 in avocado orchards.

# Monitoring and trap cropping (cont.)

- The floral sequence hedge at Alstonville
  - The hedge including avocado, macadamia, longan, pecan, coffee, custard apple, guava and *Murraya paniculata* indicates the early presence of bugs with the resulting crops showing significant damage (>50% ) on avocado and guava



# Monitoring and trap cropping (cont.)

## 2. Pheromone traps

Responsibility: Dr. Harry Fay, (DEEDI)

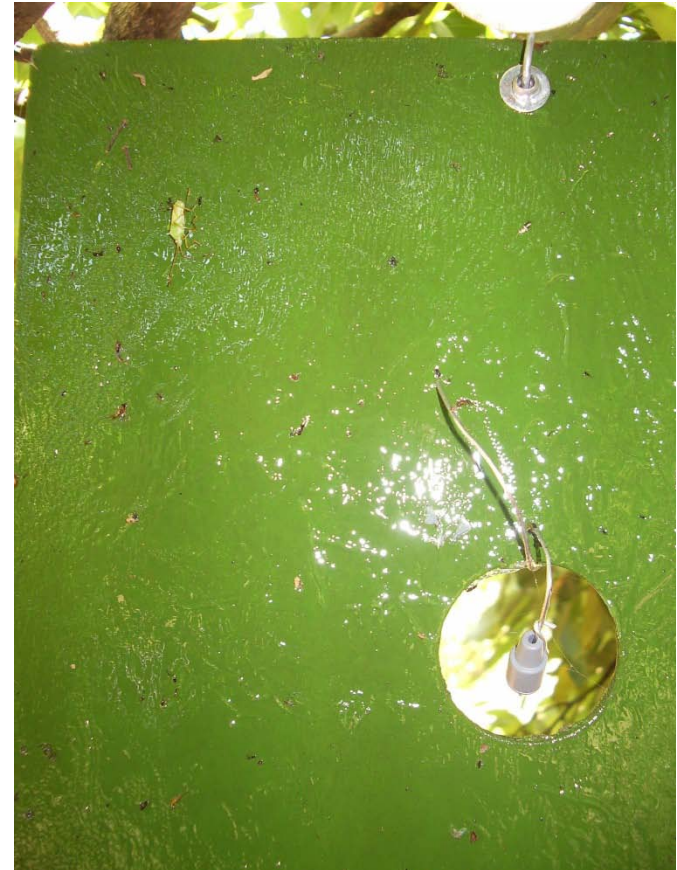
- Pheromone compounds for *Amblypelta* spp. have been identified and now need to be fine tuned and tested.
- The following 4 aspects need to be considered in this study:
  - Adjustment of pheromone compounds
  - Field evaluation of pheromones for both *Amblypelta* spp.
  - Design optimal trapping device
  - Evaluate trapping device for both *Amblypelta* spp. in the field in QLD and NSW





# Monitoring and trap cropping (cont.)

- Research on pheromones was reinvigorated in 2009.
- The previously unknown component of the male sex pheromone of *Amblypelta l. lutescens* was identified.
- Field trials to test the attractiveness of lures with 3 and 4 components commenced in north Queensland in late 2009.
- 2 lure combinations caught approximately 5x the number of FSB than untreated panels





# Monitoring and trap cropping (cont.)

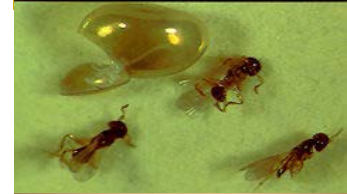
- Subsequent trials have examined different ratios of 3-components in the pheromone, different purity levels of one component and pheromone release rates.
- The components of the pheromone of *A. nitida* are believed to be known and will soon be re-evaluated through more detailed chemical analysis.

# Biological control

## ***1. Ecology and initial evaluation of various biological control agents***

Responsibility: Dr. Ruth Huwer and Craig Maddox (NSW DPI)

- Searching for biological control agents in QLD and NSW
- Ecology of biological control agents if unknown (including live-cycle, investigation of flora of their environment).
- Evaluation of biological control agents in QLD and NSW
- PhD project Alana Danne will cover aspects of biological control including impact of cover crops



# Biological control (cont.)

## ***2. Mass-rearing for FSB and Anastatus and release strategies***

Responsibility: Richard Llewellyn (BioResources)

- Mass-rearing of fruitspotting bugs for testing and rearing of biological control agents
- Mass-rearing of biological control agents
- Release strategies
- Evaluation of biological control agents in QLD and NSW.





# Biological control (cont.)

- Rearing system for *A. l. lutescens* (banana spotting bug) developed
- Rearing *A. nitida* (fruitspotting bug) has been less successful.
- Egg parasitoid *Anastatus* sp.,
- Mass rearing *Anastatus* sp. in China for the control of lychee stink bug on eggs of the Chinese oak silkmoth *Antheraea pernyi*

# IPM case studies

Responsibility: Pest consultants and Jeremy Bright (NSW DPI)

- Case studies on commercial farms will be established at a later stage of the project (possibly for year 3)
  - Validation of small scale research results
  - Validation of practicality of strategies for commercial farms
  - Important demonstration tool to strengthen adoption of management strategies

# Area Wide Management (AWM)

Responsibility: Consultants

- The AWM will be established in year 4 of the project.
  - Consultant groups have met and will be involved in this component of the program
- The new developed control strategies will be integrated and tested at farm level and regionally via an Area Wide Management (AWM) approach.
  - Coordinated monitoring
  - Coordinated data sharing
  - Coordinated management strategy



# Industry Adoption

Responsibility: Mark Hickey (NSW DPI)

- Adoption strategy and extension plan developed following consultation with all industries to ensure industry consultation, input and information
- A communication plan is being developed and several articles have been submitted to introduce the project to relevant industries
- Team includes DEEDI and NSW DPI experts

# Conclusion

- The ecology of FSB is fairly complex
- A good understanding of FSB ecology is needed to achieve sustainable control
  - A number of tools need to be combined to maximise success of control and adoption



# Acknowledgements:



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## Numbers of Pest consultants



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