A National Approach to Managing Fruit Fly

Darryl Barbour
National Manager, Fruit Fly Council

NFFC
NATIONAL FRUIT FLY COUNCIL

Improving national biosecurity outcomes through partnerships

Plant Health AUSTRALIA

The National Fruit Fly Strategy

Development of the National Fruit Fly Strategy (2006-2008)

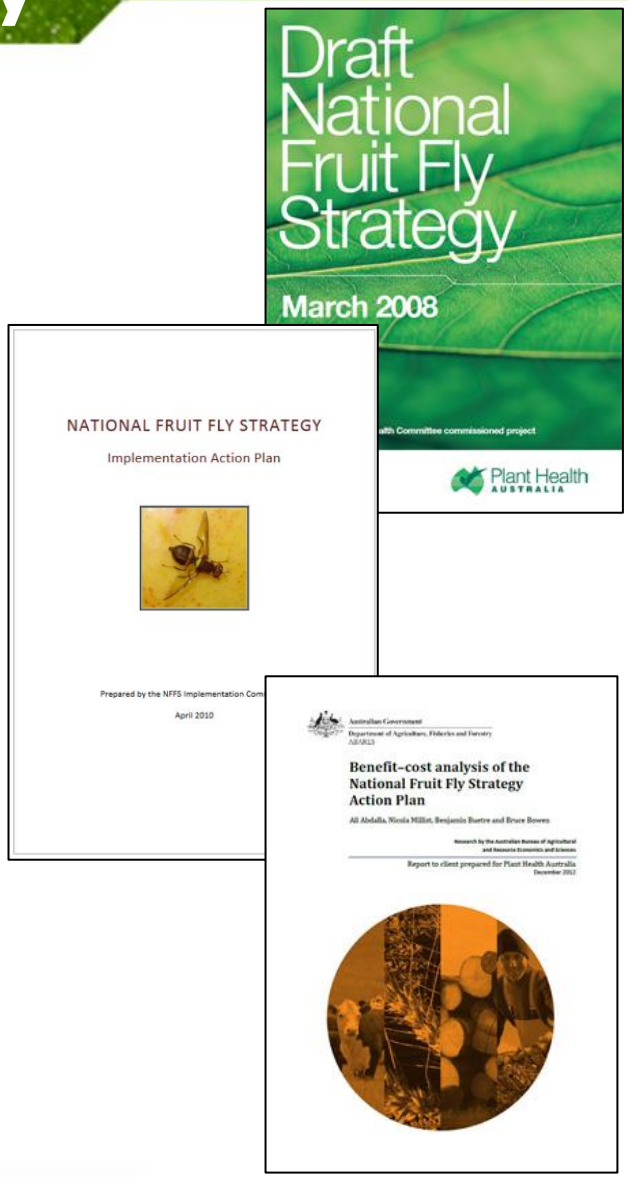
- Market Access and Biosecurity
- Operations
- Legislation and Regulation
- R&D

Implementation Action Plan (2010)

- 15 Project Areas

Benefit-Cost Analysis (2012)

- 20 year outlook / 12:1 – 15:1



National Fruit Fly Council

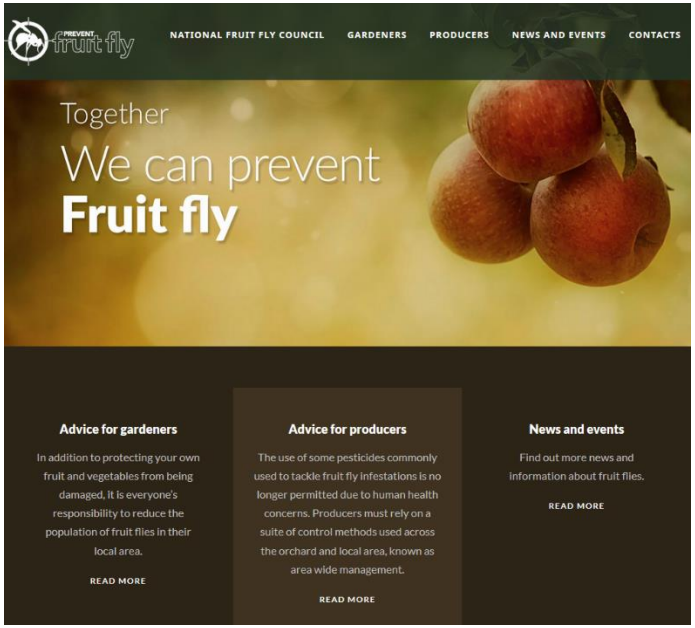
Function

- Oversight of NFFS implementation
- Key projects (Action Plan)
- Propose solutions – integrated management and market access
- Facilitate stakeholder activity

Key areas

- Coordinated RD&E
- Funding and mandate for investment
- Harmonised regulation
- Evidence-based fruit fly control

NFFC
NATIONAL FRUIT FLY COUNCIL



Goals of the NFFC

Australia will have a viable, cost effective and sustainable national approach to fruit fly management that will place us I the forefront of international biosecurity… (NFFS 2008)

- Bring industries, governments and research funders together to identify priority activities
- Monitor progress on fruit fly research and policies
- Identify and seek to address gaps
- Influence and support fruit fly management efforts
- Promote a cooperative approach

Cooperative Management

- Recognising fruit fly as a “community” problem
  - Adjacent commercial properties
  - Peri-urban interface
  - Backyards and amenity hosts
- Identifying and promoting the tools that work within a region
- Promoting the fruit fly control message
- Developing the capacity

What's happening

- Development of the NFFS Action Plan
- SITplus
- Regional Grants Program (Vic DEDJTR)
- Pursuing national eradication of Mediterranean fruit fly
- Incursion simulation exercise (proposed)
- Procedures for Managing Australia's Fruit Flies
- Centre for Fruit Fly Biosecurity Innovation (MQ, QUT, UWS)
- Public awareness materials
- Private investment

Engaging with the Council

- Direct contact with members or the National Manager
- Prevent Fruit Fly website and newsletter
- Regional visits and case studies
- Fruit fly workshop

fruitfly@phau.com.au

Co - funded by the federal government through Horticulture Innovation Australia

SITplus

2 March 2017

Dan Ryan
Program Director, SITplus Partnership

Co - funded by the federal government through Horticulture Innovation Australia

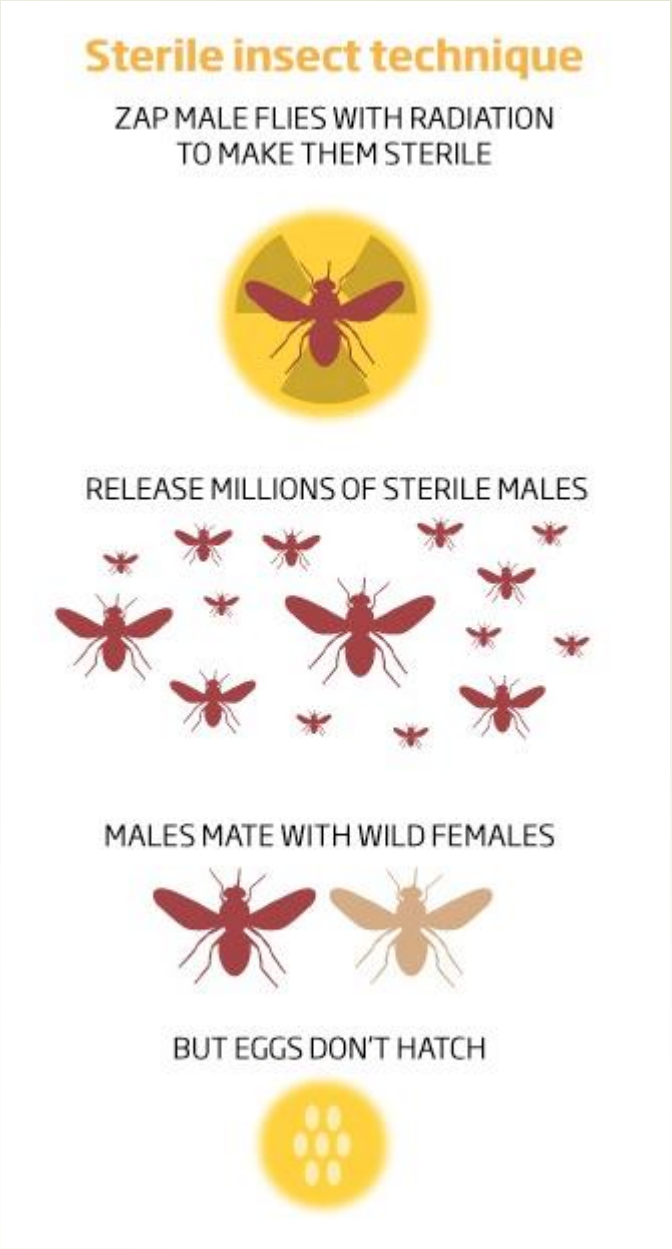
What is SITplus

- Consortium of research organisations and a funding organisation – Hort Innovation
- Not incorporated
- $45 million shared purpose to develop SIT for Queensland Fruit Fly

Co - funded by the federal government through Horticulture Innovation Australia

What is SIT?

SIT explained



SITplus PARTNERSHIP

The Partners

SITplus PARTNERSHIP

MACQUARIE University

NSW GOVERNMENT Department of Primary Industries

Government of South Australia
Primary Industries and Regions SA

SARDI
SOUTH AUSTRALIAN RESEARCH AND DEVELOPMENT INSTITUTE

CSIRO

Plant & Food RESEARCH AUSTRALIA

AGRICULTURE VICTORIA

Horticulture Innovation Australia

Co - funded by the federal government through Horticulture Innovation Australia

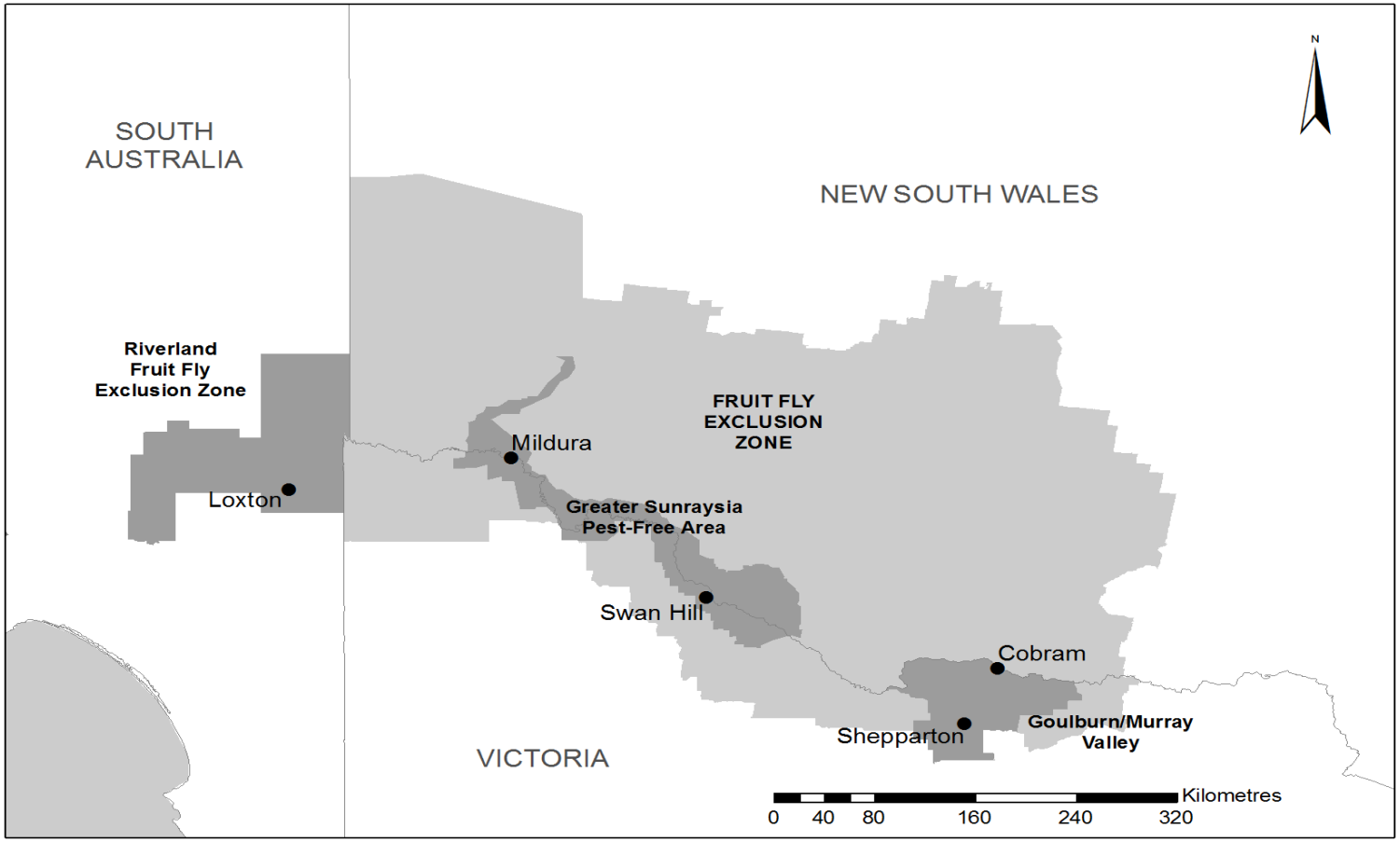
Goals

- Maintain pest free areas of production
- Support areas of low pest prevalence
- Farms with potential for PFPP
- Regain recently lost areas of freedom

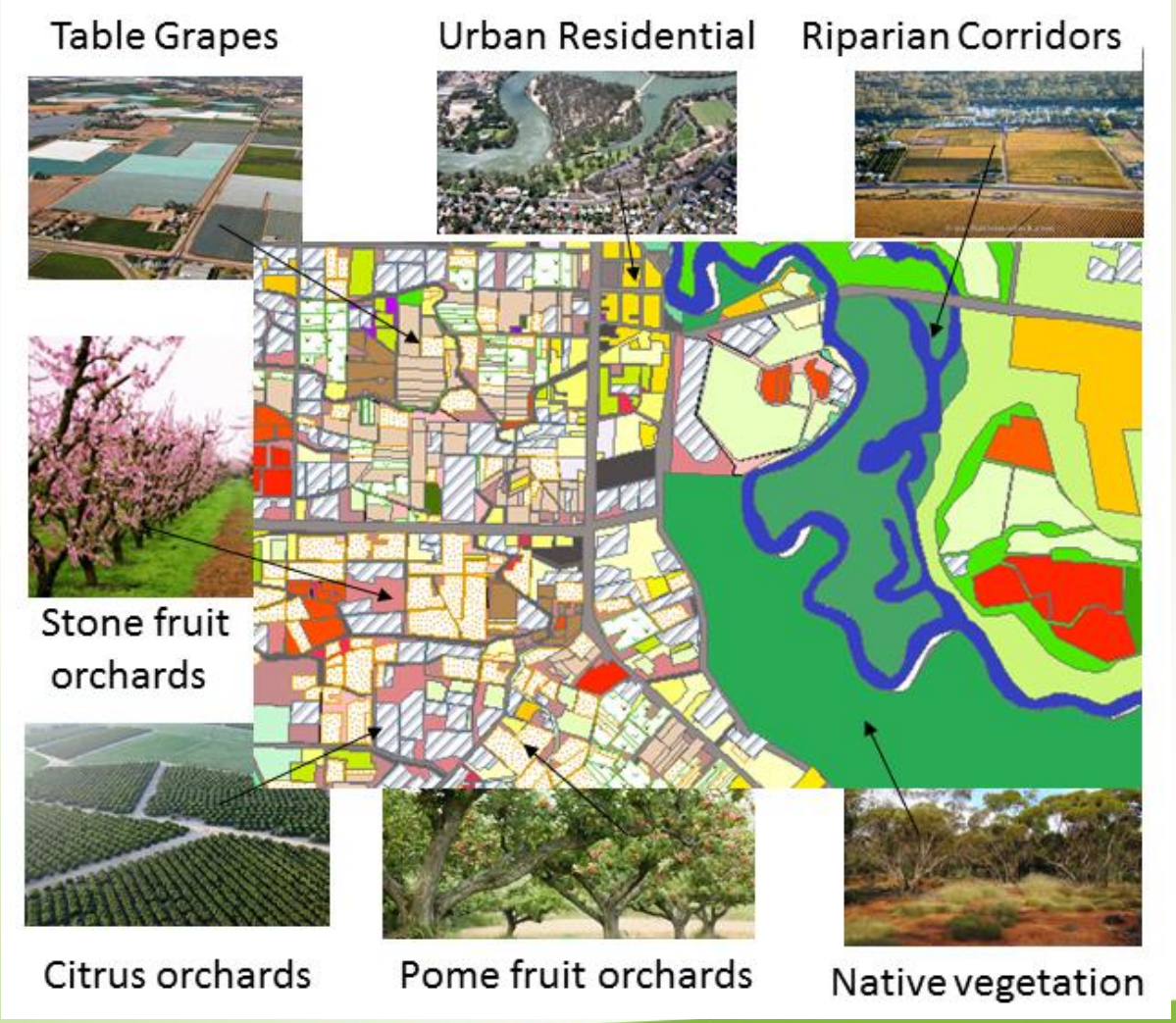
Co - funded by the federal government through Horticulture Innovation Australia

Focus Area

SITplus PARTNERSHIP



Complex production area



Co - funded by the federal government through Horticulture Innovation Australia

Research

- *Male-only fly*
- *Optimised*
  - *production practices*
  - *fly*
  - *logistics*
- *Understanding best release opportunities*
- *Incorporation into AWM*
- *Quality control*
- *Trapping*

Co - funded by the federal government through Horticulture Innovation Australia

Factory

- Constructed
- Staff hired
- Developing production
- Minimum capacity of 50 million flies per week
- Fully operational by year-end
- Male-only to come
- Pics

Co - funded by the federal government through Horticulture Innovation Australia

Release Plans

- Under Development
- Consulting with
  - Local industry groups
  - State Governments
  - Regional Councils
  - Scientists
- Urban focus
  - Remove urban pressure
  - Growers manage their properties

Co - funded by the federal government through Horticulture Innovation Australia

In summary

- Factory constructed
- Factory staff hired
- Factory operations commencing
- 3-year factory pilot funding secured
- Well-designed research program
- Release planning in process
- On track for successful delivery

Co - funded by the federal government through Horticulture Innovation Australia

Thank you

Co - funded by the federal government through Horticulture Innovation Australia

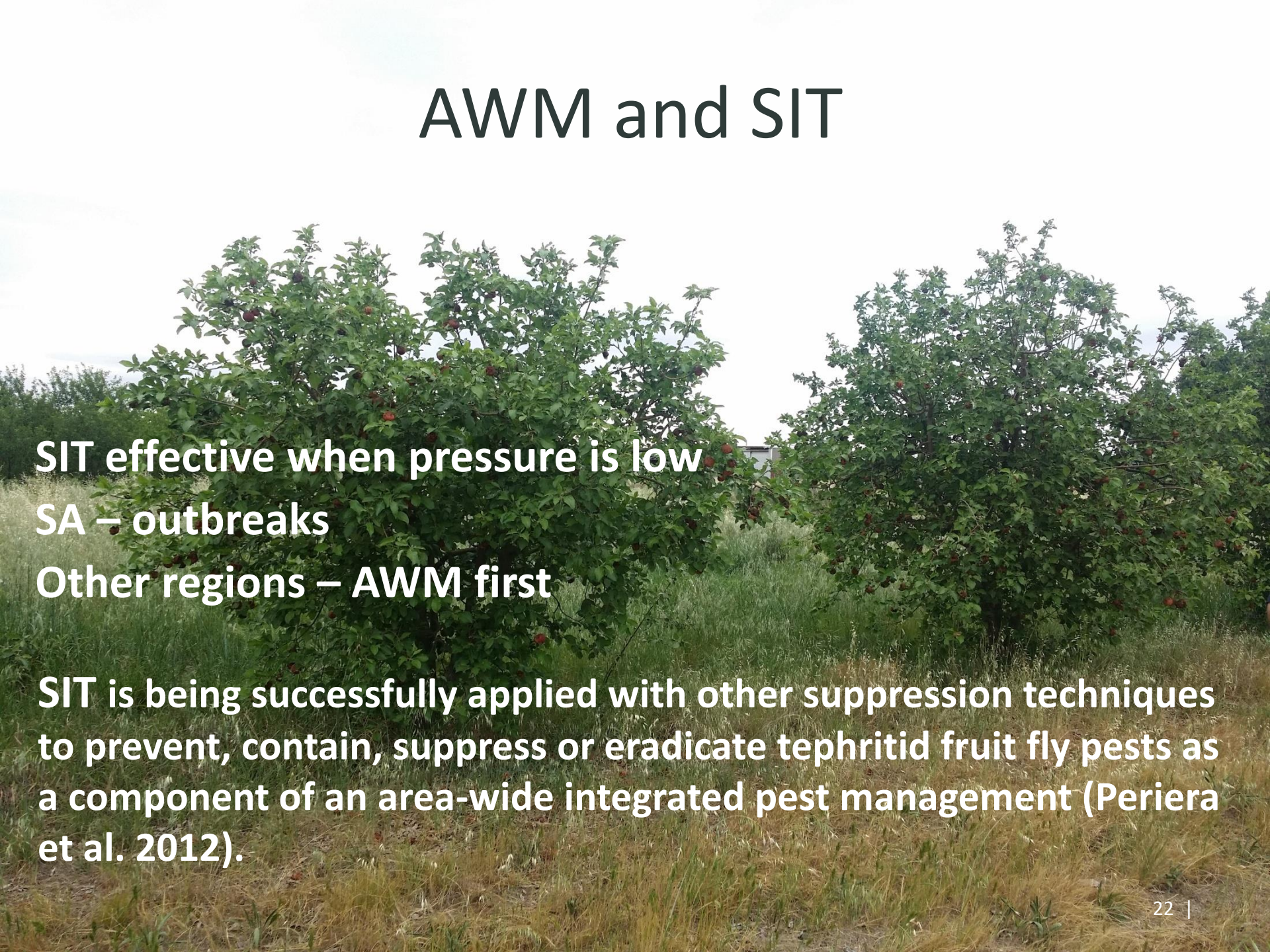
SITplus

AWM and SIT

Dr Penny Measham| AWM Coordinator

March 2017

AWM and SIT



SIT effective when pressure is low

SA – outbreaks

Other regions – AWM first

SIT is being successfully applied with other suppression techniques to prevent, contain, suppress or eradicate tephritid fruit fly pests as a component of an area-wide integrated pest management (Periera et al. 2012).

A management approach effective for pests that are mobile, polyphagous and multivoltine such as Queensland Fruit Fly

Benefits of AWM

Prevents major outbreaks
Cost effective
Integrate with existing management
Existing practices more effective
Reduced chemical use
Allows pooling of resources
Long-term solution for a region
Effective use of technology (SIT)
Systems approach - market access

Challenges of AWM

High level of cooperation
Relationship management
Management intensive
Area bound
Community engagement
Funding

Regional context?

R&D – Qfly movement

Experiments at different spatial scales:

- The effect of density on the population dynamics of Qfly
- Overwintering strategies and mortality
- Movement patterns across different crops and resources,

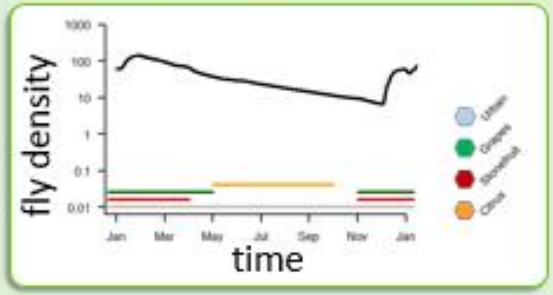
  e.g. food, shelter, oviposition sites

R&D – Qfly movement and management

1 We use information about the ecology and behaviour of Qfly (reproduction, mortality, movement),

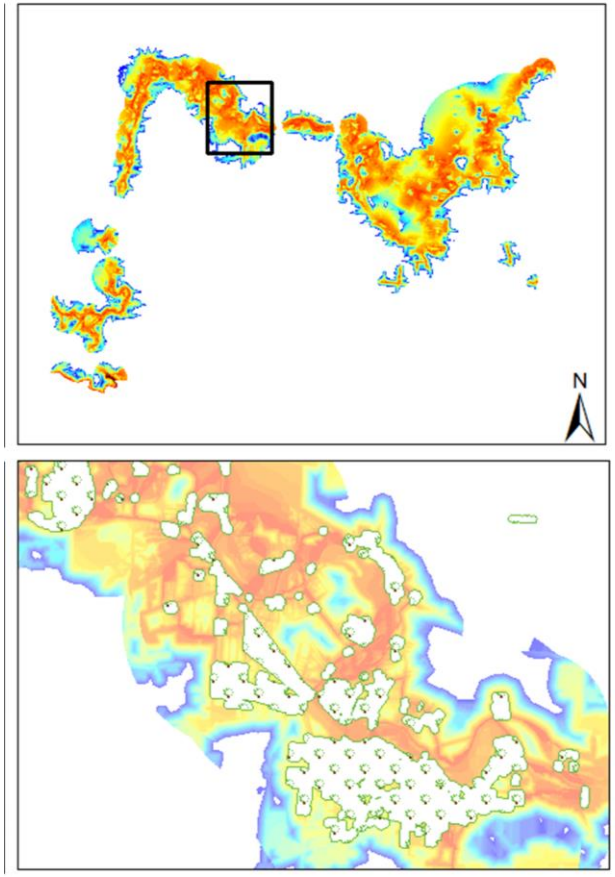
2 combine it with information about the hosts (e.g. seasonality) and their distribution in the landscape

3 to create landscape-specific population time-series.



4 Then, we use scenario-based modelling to compare the effectiveness of different management options.

R&D – Qfly regional habitat

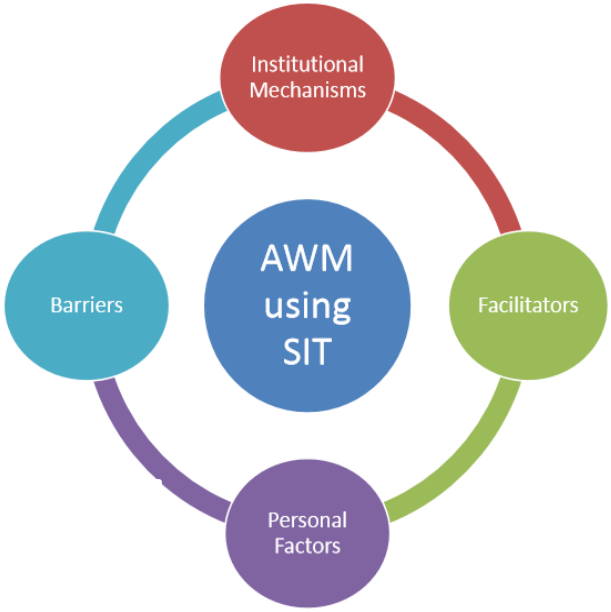


We have been able to model:

- The size of a habitat patch
- How it is connected to other patches
- How this changes seasonally

- Leading to the production of risk maps

R&D - community



Social research*

- Four themes
- AWM capability evident
- High overall acceptance of both AWM and SIT

CONCLUSIONS

- Four emergent themes influence uptake of AWM using SIT: barriers, facilitators, institutions, personal factors
- Participants reported high overall acceptance for area wide management of QLD fruit fly
- Many growers felt they were already carrying out the required activities to some extent, but understanding of AWM principles varied significantly among growers and stakeholders
- Acceptance for SIT was high but knowledge was limited; general belief that SIT could be a very valuable PM tool

R&D – costs and funding mechanism

The cost of on-farm control is relatively low

compared to the benefits from reduced production loss

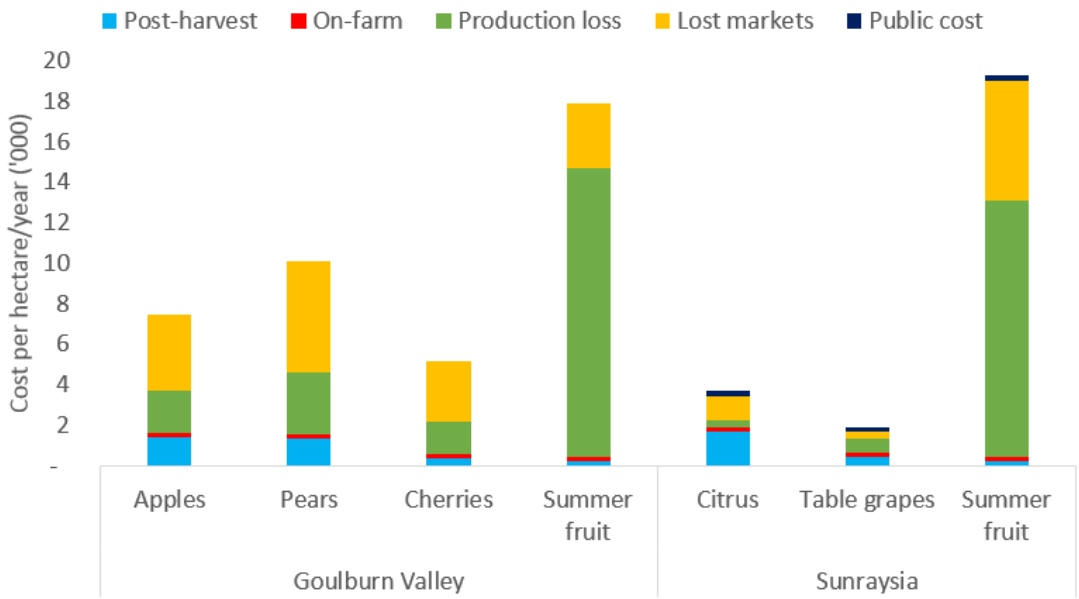
Maintaining control supports market access

and protects grower incomes

*Economics survey

To determine value

Long-term viability



What's next?
(What's in it for you?)

- Regionally specific information about AWM & SIT
- Guidelines for SIT incorporation into AWM
- Communities have an informed basis of current technology to consider SIT as part of AWM

- Challenges overcome, benefits realised

Inclusive approach

Stakeholders

Identify and include appropriate stakeholders. Address the needs of end-users, foster ownership of the process and the outcomes.
Comprehensive stakeholder analysis, community engagement plans.

Extension

Extension supported by consultation, activities are targeted and relevant.
An AWM capability matrix has identified knowledge gaps, resulting in well attended and useful extension activities.

Communication

Communication facilitated through regular consultation, focus groups, workshops, surveys, research and stakeholder committee meetings.
Utilise a communications plan and a variety of communication channels.

Champions

Active advocates for research.
Regional champions, from different backgrounds and roles
A strong stakeholder committee of growers, local, state and federal government representatives.

Apple and Pear Australia Limited (APAL) > Orchards > Pests and diseases > Area wide manage

Area wide management for Qfly

Posted on April 7, 2016

By Dr Penny Measham

To help control one of horticulture's bigge
Queensland fruit fly, a horticulture-wide re
program is underway to advance sterile ins
technology, but this technology will be most
adopted alongside Area Wide Management.
Measham reminds us what Area Wide Manag
and how it can be implemented now.

We are all eagerly awaiting the arrival of sterile i
technology (SIT) because a comprehensive SIT p
is widely acknowledged as having the capacity to
improve and maintain market access. While this re
progresses, the time for a concerted effort to imple
Area Wide Management (AWM) is now.

Adaptive Area Wide Management of Qfly using SIT
2016 #1
Area Wide Management – what is it?

SITplus PARTNERSHIP

The advent of sterile insect technology (SIT) is something we are all eagerly awaiting; the need for a comprehensive SIT program to improve and maintain market access has been acknowledged and is being supported through a coordinated research program. While this research progresses, the time for a concerted effort in Area Wide Management (AWM) is now!

AWM is considered vital for control of fruit fly, and enhances the success of SIT. AWM has been used successfully for other fruit flies around the world (Chile, Israel, Mexico South Africa). Queensland fruit fly (Qfly) presents a unique opportunity for the horticulture sector in Australia to work together on an AWM approach.

What?

Essentially AWM is a pest management strategy employed across a well-defined local area or region, including all fly habitats within that area, in order to reduce the total Qfly population. A reduced population in all habitats reduces the likelihood of Qfly moving into farms and orchards from habitats such as backyard gardens and/or native hosts. This means that any strategies used on-farm should become more effective, and over time contribute to lower pest populations.

Ensuring all habitats within an area are appropriately managed is not an easy task; AWM requires that any and all control methods are synchronised and coordinated. This coordination could be across neighbouring orchards, across an urban setting, or across both production and urban settings. It requires commitment and participation from all community members; gardeners, growers, government.

Why?

AWM is seen as a sustainable pest control approach; one that is not entirely reliant on chemicals. With the loss of key chemical controls for Qfly such as dimethoate and fenthion, AWM poses a good alternative solution. Qfly can breed and achieve large populations off-farm which can often go unnoticed, or unmanaged. In fact AWM is an appropriate choice for Qfly; it matches the biology of the fly.

- mobile – treating all areas reduces the likelihood of flies moving from neighbouring land back into production areas.
- polyphagous (laying eggs into a large number of different plants) – treating all areas includes all potential host plants that support Qfly populations, including native hosts
- multivoltine (producing multiple generations within a season) – treating all areas includes populations at all different stages

When?

AWM is a long-term approach and needs to be considered a year-round approach; as per management of Qfly on-farm. The methods or treatments used in AWM can be the same as those used on-farm, depending on the acceptance of those methods by the regional community. Treatments used on-farm such as hygiene, baiting trapping and monitoring can be used off-farm as part of an integrated AWM program.

Hygiene, such as removal or control of breeding habitats in an urban space is a challenge in AWM. Trapping provides a good option in urban areas as traps are contained and require little maintenance. Finding the best suite of strategies for your area takes time and planning; AWM needs to be well considered and the sooner these factors are considered the sooner an effective AWM approach can start.

SITplus is supported by Horticulture Innovation Australia and CSIRO through funding from the Australian Government Department of Agriculture and Water Resources as part of its Rural R&D for Profit Programme. The project is part of the SITplus initiative, and the project partners include Wine Australia, Queensland University of Technology, South Australia Research & Development Institute, Primary Industries & Regions SA, New South Wales Department of Primary

Australian Stonefruit Grower
Issue 1 | 16
May 2016

Australian CHERRIES
CHERRY GROWERS AUSTRALIA INC
Summer 2016 - No 22

quarterly journal for the Au

The Vine

Citrus Australia

Riverland Biosecurity - Area Wide Management workshops

The increasing biosecurity pressures on Australian horticulture will be highlighted at two upcoming biosecurity workshops to be held in the Riverland. The workshops will identify the efforts being made on and across the border to help maintain the Riverland's area freedom to keep SA pest free. The event will provide an opportunity to learn from other growers about the impact of difficult pests such as Queensland fruit fly.

The workshops will be held in Loxton on Thursday, September 1 from 1:30-4pm at the Loxton Research Centre and at Waikerie on Friday, September 2 at the Waikerie Hotel Motel from 10am-2:30pm.

Please RSVP to Dr Penny Measham, Area Wide Management coordinator, SITplus Horticulture Innovation Australia at penny.measham@horticulture.com.au

Thanks to;
AMAZING research team;
Dr. Nancy Schellhorn
Hazel Parry, Aditi Mankad, Barton Loechel, Justine Murray, Florian Scharzmueller, Katharina Merkel, Tony Clarke, Stuart Whitten, Mia Tam, John Kandulu, Tim Capon, Sorada Tapsuwan

FANTASTIC Stakeholder Committee;
Craig Hull, Kathy Ophelkeller, Steve Burdette, Vince DeMaria, Trevor Norton, Peter Hall, Adam Upton, Merran Socha, Tammy Galvin, Maurizio Rochetti, Sharon Harvey, Brenda Kranz, Dan Ryan

Horticulture Innovation Australia

CSIRO

Australian Government
Department of Agriculture and Water Resources

The 'Adaptive area wide management of Qfly using SIT' research project is funded by the Department of Agriculture and Water Resources with co-investment from CSIRO and Hort Innovation. The project is part of the SITplus initiative.

Wine Australia
Bio Bee
State Government Victoria Department of Economic Development, Jobs, Transport & Resources
NSW Government Department of Primary Industries
Government of South Australia Primary Industries and Regions SA
SARDI South Australian Research and Development Institute
QUT