2021 National Fruit Fly Symposium

DAY 3 (6 MAY) – FRUIT FLY AND PRODUCTION

Key Discussion Points

Grower fruit fly production challenges

- Chemical options usually cover a multitude of pests, including suppressing fruit fly, and is used in conjunction with monitoring, baiting, and orchard hygiene. Beneficial insects, including wasps and predatory mites, are increasingly being used but this can present a problem because the chemicals required in market access protocols kill the beneficials and can cause a flare up of white fly, mites and other things. So, there is often a conflict between going softer and maintaining market access.
- Smart traps for rapid surveillance, indicating presence and quantity of fruit fly in orchards, have allowed for precision of spray regimes, optimisation in spot picking, and maintenance of residue times. For example, these traps have shown a large increase in fruit fly activity around flowering.
- Monitoring is the key - trapping the whole year and looking at longer trends can indicate when there's going to be a higher number of fruit fly in a season. In some regions there are waves of 'really bad fruit fly issues' every five years or so. The frequency is far enough apart that growers forget the management protocols and complacency creeps in.
- There is some frustration with the ICA system, particularly when there are different requirements for different states for the same pest and same commodity.

Current on-farm management tools

- In terms of agrichemicals, the key is gaining and maintaining access to a range of pest management options and this is becoming increasingly problematic due to regulatory and chemical industry changes occurring globally. In Australia, there needs to be greater engagement between industries, researchers, regulators, and registrants to support growers to access these options in the long-term.
- On-farm fruit fly is best managed through an integrated approach involving protein bait sprays, monitoring (trapping and crop inspections), male annihilation technique, and sanitation. This is best supported through area-wide management approaches to manage off-farm risks such as in towns.
- Practical research needed to support on-farm management includes: access to better/replacement toxicants; and crop specific research to fine tune the integrated approaches for critical industries.
- Trapping is the main technique to prove pest freedom – understanding and improving the efficiency, efficacy, and real-time information from traps is therefore crucial. There are opportunities for improvements in: capturing whole-of-community information; determining if sub-detectable populations actually exist; technologies for female traps and smart traps; understanding the impact of urban populations on rural production; and opportunities for winter action on populations.

Research to support production

- When it comes to applied R&D there's often a tension, perceived and real, between short-term applied and practical outcomes versus longer-term and 'blue-sky' research. Hort Innovation seeks to balance this tension through strategic, levy funded (shorter-term) and Hort Frontiers (longer-term) research.

- Hort Frontiers has funded many areas of fruit fly research to support production, including: the SITPlus Qfly program; beneficial insects; parasitoids; viruses; a number of different types of traps, including smart traps; and preparedness around Oriental fruit fly and spotted winged drosophila.
- In terms of parasitoids, work is underway on design and feasibility of a national fruit fly biocontrol program to improve the management of fruit fly using natural enemies.
- Research providers consider a range of fruit fly management components, such as endemic and exotic management, control of existing fruit fly pests on a seasonal basis, future-proofing our industries, and basic and applied research to support production through new ideas and gap-stops. NSW DPI are involved in supporting improvements in SIT, diagnostics, climate change preparedness, and crop management strategies and integrated pest management.

Tools to protect production

- Fruit fly management in Australia is the most complex anywhere in the world. We have a lot of tools to manage fruit fly, but we need to ensure these tools and information are available, integrated with new technologies, and that growers understand what's best for their region, their commodity, and the market they are growing for. A one-stop shop of information would aid producers.

Off-farm challenges, opportunities and successes

- Many horticultural farms are intermingled with peri-urban properties and border urban townships. This brings a range of pest challenges to horticultural production, particularly from host trees in backyards or public areas that aren't being managed as well as those in production orchards.
- In Sunraysia, there is a spectrum of fruit fly knowledge, concern and commitment in peri-urban communities. The area-wide management program seeks to reduce Qfly populations, including through educating and empowering all sectors of the community so they are self-sufficient in knowing when and how to control Qfly. Successful activities have included tree removal programs, and strong partnerships with local councils, community groups, and businesses (e.g. Scouts, real estate agents).
- In Bundaberg, a Community Awareness program was used to establish and implement activities to strategically increase fruit fly awareness so that they can take action e.g. schools, gardening clubs, Landcare groups, regional councils, and community members. Key learnings from the program include: the need to have a clear understanding of what success looks like; developing communications across all mediums; engaging local councils to seek opportunity for program longevity; engaging stockists / supply chain groups; giving schools sufficient lead time to coordinate resources; and taking people on a journey with you (e.g. giving them the 'why story' and providing feedback on results).
- South Australia has a long history of successfully managing fruit fly outbreaks, noting that this has involved managing people as well as pests. Current outbreak responses in metropolitan Adelaide have been running more than 12 months and involve over 140,000 residences. At the same time, SA have also been managing outbreaks in the Riverland which also impact on growers, and all those along the supply chain. Challenges from managing such extensive responses include: the need to manage community, staff, and industry fatigue; and maintaining focus and commitment to the long-term goals for pest freedom.
- "Smart regulation", consisting of complementary tools where reliance on voluntary approaches is problematic, is an important option that states and regions need to consider for off-farm fruit fly management. This is best deployed on a case-by-case basis, and can work well where governments can support industry self-reliance by providing forms of regulatory back-up.

What we've heard: The Wicked Problems

- The National Fruit Fly Council has had two key focuses in the last twelve months: (i) to better understand the relationship between fruit fly and trade in Australia; and (ii) to engage with a much wider range of stakeholders than we have in the past, particularly from industry sectors and the supply chain.

- Recent activities have included: working with affected peak industry bodies on the relationship between export trade and our east-west distribution of fruit fly; working with state governments on domestic preparedness for fruit fly incursions and management of business continuity; running a series of workshops with growers and grower representatives from across Australia capturing on-farm issues.
- Some important issues have been identified during these processes including the need for: grower support in managing off-farm risks that are outside of their control; progressing trade issues in the domestic fruit fly system; determining the future of SIT in Australia; equipping growers in 'best-practice' on-farm management tools for fruit fly; preparing to minimise business impacts from any changes to current fruit fly arrangements; and investigating options to establish longer-term funding for fruit fly.
- The National Fruit Fly Council is committed to working through these issues with stakeholders and is planning a series of Think Tanks with people most affected by fruit fly to determine potential solutions and next steps, and then progressing these with key decision-makers.

2021 Symposium Wrap-up

- A nationally coordinated, sufficient, consistent, and stable funding model for the implementation of the national fruit fly strategy is critical. That needs a coordinated approach for national, state and on-farm capability. Importantly this requires clarity about who is responsible for what, when and how.
    - For R&D that involves addressing the key levy payer needs in terms of production costs, trade access, and the adoption of R&D technology.
- It is very clear that trade is critical, particularly national trade, and the presence of fruit fly will hamper this. Complacency and apathy must be addressed at all levels. Stakeholders need to genuinely engage at the national level – fruit fly is a shared responsibility, and we need a willingness at a national level to come together and maintain a strong and cohesive position. Doing the same thing over and over will get the same results. For the fruit fly story to be different in Australia we need commitment to fruit fly management, and funding to implement the National Fruit Fly Strategy.
- On-farm production needs to be aligned with biosecurity policies and with market access, consistent with national strategy. This needs a comprehensive gap-analysis to see what needs to be addressed and in what order, and then what funding and action is needed and by whom to strengthen key elements in the system.
- A critical factor is how we deal with changing and increasing fruit fly pest pressure. We need to remain focused on keeping our borders tight, and not lose sight of preparedness for exotic fruit fly detections or outbreaks particularly in northern Australia.
- We need a focused, nationally coordinated approach to the complex problem, and how we're going to priorities this work. We have a sound national strategy. If we fail it won't because the strategy was not a good strategy, it will be because we fail to coordinate, to collaborate, to communicate, and to commit.
- We have the National Fruit Fly Council as the mechanism to help drive this and provide a structured and clear approach to prioritise issues, but we need commitment and collaboration to do it.

Day 3 - Live Poll Results

1. Which would you like to know more about?

32% Fruit fly research programs and their application

20% Government fruit fly monitoring and pest freedom claims

16% Best practice for on-farm management tools

13% Export trade negotiations for fruit fly produce

10% Domestic trade arrangements

5% Exotic Fruit Flies in the Torres Strait Response Program

4% The National Fruit Fly Council

2. Which would you most like to see progressed?

45% Systems approaches and trade

20% Preparedness to support business continuity if there are fruit fly changes

17% Agrichemical replacements or alternatives

17% SIT to support eradication and suppression

3. Which topic would you most like to see covered in a Think-Tank?

62% A sustainable funding model for national fruit fly management

18% Trading issues in the domestic fruit fly system

5% Area-wide management for fruit fly

5% Future of SIT in Australia

5% On-farm management tools for fruit fly

3% Management of Queensland fruit fly and Mediterranean fruit fly existing together

1% Other

4. Which fruit fly activity would you most like to see funded?

38% Extension for existing and emerging fruit fly research

21% Development of improved on-farm management tools

18% Off-farm fruit fly risk management

12% Eradication of Medfly from Western Australia

11% SIT for Queensland fruit fly

Day 3 - Questions and Answers

1. **Would it work if you used basal splat bait spraying on mango trees rather than bait spray as a cover spray? *(as answered by Dale Williams, Grower, Bowen Qld)***

Yes to some extent. Trial work undertaken by Queensland Department of Agriculture and Fisheries some years ago showed a measurable reduction in monitoring traps after application of bait to trunk/branch rather than leaf.

In recent years we have seen a large increase in Queensland fruit fly (Qfly) activity and our monitoring indicated that with the increased pressure this baiting method was not as effective. We have had to cover spray with Dimethoate to maintain effective control, hence we have ceased bait spraying until such time as a non-phytotoxic bait is available and can be applied to the tree canopy which is the preferred and protocol approved method of bait application.

2. **Do you use weather monitoring to determine if Fruit Fly is going to be a problem in any particular period / year? If so, what modelling might you use? *(as answered by Dale Williams, Grower, Bowen Qld)***

Yes, we have access to a weather station on farm and have this year started to relate temperature to Qfly activity. Qfly is endemic to our area and is active throughout the year, however we have noticed Qfly activity does change with cooler temperatures, which do slow the start of fruit fly activity. We are monitoring activity with real time smart traps so we are gathering a reliable picture of peak activity times and population which will help inform our control decisions.

3. **What's the worst/most ineffective measure you are audited against in the ICAs? *(as answered by Dale Williams, Grower, Bowen Qld)***

The worst aspect of the audit process is where the protocol is ambiguous and open to varying interpretation, which at times can lead to problems in not meeting the auditors expectation (e.g. methods for checking pH levels in a dipping process).

Alignment of protocols between States that apply to a common pest and commodity is very important and I believe assists both producers and auditors in meeting their requirements with less frustration and potential errors. Where an ICA protocol audit is purely an exercise in meeting a protocol requirement, without being a relevant pest control activity, it causes producers great frustration.

4. **Vito Mancini mentioned fruit fly being more a market access issue for his enterprise than a production issue. I would assume for Dale William's enterprise, fruit fly is a significant production issue as well. Can you confirm this is due to geographical / regional differences with respect Qfly population pressure? *(as answered by Dale Williams, Grower, Bowen Qld)***

It is both a market and production issue, but I would say primarily market access. The Bowen area does have significant Qfly activity but not as prevalent as some other areas of Queensland. Bowen is primarily a horticultural growing area. Historically the chemicals used to control the multitude of horticultural pests also control Qfly, hence it has not been a major problem.

Hard green mango is not a preferential host of Qfly and there are also varietal differences in susceptibility due to skin thickness/hardness. Problems can be encountered late in the season if ripening fruit is present in orchard, this then becomes a production issue as there is minimal control opportunity at this time.

5. **Flowering activity…. is this Qfly overwintering now emerging from winter? Is this a control strategy?** ***(as answered by Dale Williams, Grower, Bowen Qld)***

Winter in Bowen is not really a factor - while cold mornings do delay Qfly activity, our monitoring indicates that they become active as the day warms. We believe flowering attracts the Qfly that is active in the surrounding bushland. While we cannot spray due to the presence of pollinators, it does identify an opportunity to increase the numbers of lethal baits placed around and throughout the orchard. This may also present an opportunity to apply bait spray to the tree canopy, but this would be dependent on the phytotoxic impact on the flower.

6. **Many horticultural crops are now grown under protection. What does the industry need to do to ensure chemical use options for both exotic and endemic fruit flies, now and in the future?** ***(the response below was provided in a similar question posed on Day 2 – Fruit Fly and Trade)***

Increasing global regulation of the agrichemical industry, along with other structural changes in the industry, has made the exploration and introduction of new chemistry challenging. As a result, the focus from most sectors is to look towards alternative technologies such as biopesticides, biological control agents, and even the potential for genetic modification.

Investment in new R&D technologies for chemical products to control horticultural pests is generally driven by individual industries. This is challenging both because the Australian market is quite small in global agrichemical R&D terms to attract significant investments, and because regulatory approvals and registrations are costly and time consuming.

There are a range of different initiatives seeking to alleviate various agrichemical issues in Australia, including a Harmonised Agvet Chemical Control of Use Task Group, a Review of AgVet Chemicals Regulatory System, and collaborative agvet and industry forums on the issue. In terms of fruit fly specific solutions, however, it is clear that greater collaboration by industries and governments is needed to drive the development of agrichemical and alternative control options.

The NFFC is aware of this dilemma and is looking to engage with these stakeholders on steps and commitment needed to progress solutions in the coming months.

7. **What's the minimum requirement for crop scouting? Can it be consistent between export protocols and domestic ICAs eg: weekly 10 trees per block with cut and inspect of symptomatic fruit 6 weeks pre harvest?**

Consistency between export protocols and domestic ICAs is the gold standard but it is not always achievable due to specific phytosanitary requirements of different trading partners. This question is more appropriately directed to the Australian Fruit Fly Technical Advisory Committee - a forum made up of entomologists and fruit fly technical experts who provide advice to governments on technical fruit fly issues.

8. **Wouldn't fallen fruit that hasn't been stung potentially provide an easy protein source for Qfly if allowed to rot with mould/bacteria?** ***(as answered by Dan Papacek, Bugs for Bugs)***

Yes, it could be a protein source but these fruit flies are reluctant to 'go to ground' as they are more an arboreal animal. It is true that insects will take advantage of what is available for their diet according to their needs but if the fruit fly population is being well managed there shouldn't really be adult flies about in any case.

9. **Surely mass trapping will have a future to replace baiting?**

Unfortunately there is no silver bullet to managing fruit fly populations and an integrated pest management approach is recommended. Western Australia have advised that comparisons between mass trapping and baiting have indicated that you need to do both and this is consistent with advice from other sources (e.g. Prevent Fruit Fly website, ChemCert, etc).

10. **For mapping population trends and informing management - How important is trapping in urban/native areas close to production? Maybe local government and community groups should be invited to participate in a coordinated national approach to fruit fly.** ***(as answered by Narelle Beattie, Coordinator of the Sunraysia Fruit Fly Governance Group)***

The mapping of populations trends and hot spots within the urban and peri-urban environments surrounding production areas is critical to allow a targeted area wide management program to be implemented. It also allows the most effective and efficient use of resources within these areas.

Methodology for mapping of population trends varies across regions and a coordinated and standardised national approach would provide significant rigour to the information. The use of community collected data would be valuable for education and engagement activities within a region, however the accuracy would need to be considered especially in relation to any publication of data that could be accessed by international trading partners.

Urban and peri-urban areas are very conducive for fruit fly establishment because of climatic suitability and host availability in those areas. Trappings, therefore, is vital for early detection of invasive exotic fruit fly species which will be initially established in urban and per-urban environments closer to import pathways including major ports. Early detection enables effective eradication before they become established and widely spread in production areas. Port of entry fruit fly trapping program implemented through the National Plant Health Surveillance Program covers most of these high risk urban and peri-urban areas surrounding major import pathways.

Fruit fly surveillance data collected through various fruit fly trapping programs will be collated in AUSPestCheck, a national surveillance database managed by Plant Health Australia, to determine fruit fly status and support trade and market access.

11. **For national use of smart traps for surveillance, how important is it that they are able to distinguish between sterile insects and wild flies?**

The ability to distinguish between SIT and wild flies has not yet been incorporated into smart traps. Where SIT programs are in place, any flies caught in a smart trap that is part of a national surveillance network will need to be identified as an SIT or wild fly using the currently approved methods. In the future, implementation of smart traps into a national surveillance network will have to consider what management practices are being used in the area.

12. **In order to permit sterile Qflies to be more broadly used, are increases in the number of mass-rearing, rearing out facilities being considered?**

There is a benefit-cost for rolling out Qfly SIT broadly and using more SIT facilities is being considered as part of a review into the SITPlus Qfly program. In order for Qfly SIT to be used more widely, an expansion of facilities (whether expanding Port Augusta or using facilities in other regions to supplement) is almost certainly needed.

13. **Don't they release SIT in California to manage their pest free area?**

The sterile insect technique is used in the USA, and many other countries, for eradication of certain fruit fly species when outbreaks occur. In addition, preventive release of SIT Medflies is conducted in some parts of California. The release of SIT flies in this program is limited to those areas deemed to be at higher risk of incursions, which are the urban areas of some locations in Los Angeles, Orange, San Bernardino, and Riverside counties.

14. **We have heard that exports of fruit fly affected produce is growing, and that there are multiple tools used to manage fruit fly. Is there a need for continued funding of support for the implementation of area wide management on a local and regional basis?**

Area-wide management is a proven management approach for pests around the world but to work properly, it requires input from the whole community and dedicated coordination at a regional level. Hort Innovation's project on Adaptive area-wide management for Qfly using SIT provides a wide range of relevant resources for commercial and back-yard growers on area-wide management as a tool.

In May 2021 the Victorian government announced new funding for Qfly area-wide management for key horticulture regions: Greater Sunraysia, Yarra Valley and Goulburn Murray Valley. Around $5.3M will be available in grants over four years for area-wide management programs comprising the employment of three Fruit Fly Regional Coordinators and on-ground activities to manage Qfly in these regions.

15. **Regarding a standard monitoring system in market access protocols, the Queensland Fruit fly code of practice standard for horticulture areas of 1km grid is too coarse, and even the town grid of 400m is. What should be the trapping density (and corrective action triggers) for a block-based protocol?**

The Australian Fruit Fly Technical Advisory Committee (AFFTAC) is currently reviewing Australia's fruit fly Codes of Practice (developed in the 1990's) and are currently in the process of modernising these into National Fruit Fly Management Protocols. This question is therefore more appropriately directed to AFFTAC which is made up of entomologists and fruit fly technical experts.

16. **Does the removal of fruit tree program consider the potential loss of heirloom fruit tree varieties?** ***(as answered by Narelle Beattie, Coordinator of the Sunraysia Fruit Fly Governance Group)***

Unfortunately, fruit fly does not discriminate when it attacks fruit and heirloom varieties can be susceptible to infestation as much as other varieties. In our area, gardeners are supported to managing their trees if they can however, many gardeners (including those that have heirloom varieties) are now unable to physically take care of the trees, often due to substantial growth since planting.

It should also be noted that this tree removal program is only available within a small area of Victoria, so it is recognised that many heirloom varieties may be growing elsewhere within the country.