Press Release

Change in approach as Qfly head south

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GROWERS, industry and governments across Australia are reconsidering how to handle the changing status of Queensland fruit fly Bactrocera tryoni Froggatt (Qfly), which is moving further south into areas previously relying on cold conditions as a natural exclusion barrier.

Last year, scientists (primarily from Macquarie University) reported online on the potential impact of climate change on habitat suitability for Qfly across Australia.

(www.nature.com/articles/s41598-017-13307-1)

The study highlighted:

- Southwest Western Australia; northern regions of Northern Territory; eastern Queensland; and much of south-eastern Australia were already suitable for Qfly.
- Current habitat suitability was likely to remain until at least 2070 and already included southern Victoria and eastern Tasmania (the latter currently free of Qfly breeding populations).
- Long-term vigilance across southern Australia was needed to prevent further range expansion of Qfly.
- Qfly abundance is strongly influenced by climate, particularly summer rainfall, with temperatures below minus 2˚C restricting survival.
- Up to this point, Qfly had been endemic in Queensland and northern and coastal NSW.
- Western Australia and Tasmania are Qfly-free. South Australia is Qfly-free, with one or two incursions per year which are immediately eradicated. These three states maintain considerable exclusion techniques to prevent Qfly entering and establishing in their state.

Revised national code of management?

Given likely continuing climatic changes, the recent incursion of Qfly at several sites in Tasmania potentially provides the impetus for a revised national code of management for all states, including Tasmania.

Each state currently has its own legislation for fruit fly, but now there is likely to be merit in a nationally-agreed set of fruit-fly management principles.

- Previous market-access strategies of large, regional pest-free areas were based on the climatic conditions of the early 1990's, which no longer exist.
- These large pest-free areas are becoming increasingly difficult to maintain as global warming continues to make more southern regions increasingly suitable for Qfly survival.
- Given many changes in pesticide use for Qfly, it is timely for the national code to be reviewed and modernised.
- The current Qfly situation in Tasmania has brought the impact of changing climate into focus. Warming climate and changing rainfall patterns mean 'climatic defence' is not as reliable as it once was, with increasing likelihood of incursions and survival.
- Humans continue to be the riskiest and best long-distance movers of fruit fly in fruit purchased from a shop, roadside stall or backyard fruit which is often poorly managed, but still transported long distances.
- For commercial fruit, increasing fruit-fly pressure is also placing post-harvest treatments under increasing pressure. Most mainland produce sold in Tasmania (for example) is fumigated with methyl bromide before shipping, providing an Interstate Certification Agreement (ICA).

- Tasmania's stringent quarantine inspection, plus surveillance network of hundreds of traps picked up and contained the recent incursion. State-wide freedom is also easier to maintain, compared with parts of a state.

Alternative fruit-fly management strategies

With the difficulty of maintaining regional fruit-fly-free areas, different management strategies need to be explored.

NSW, for example, when it withdrew legislative support for the Fruit Fly Exclusion Zone in 2013, moved towards other FAO International Standards for Phytosanitary Measures (ISPM). These included:

- Individual farms becoming Pest Free Places of Production (PFPP) and several abutting properties working together to become Pest-Free Production Sites (PFPS).
- Producers undertaking area-wide management, using several threat-minimisation practices.
- These may include:
- Border protection with traps and baits around the perimeter of tree crops.
- Crop baiting and other in-crop techniques to eliminate fruit fly that get through the perimeter program.
- Surveillance within the production areas providing early warning of any incursions.

Understanding fruit fly biology the key

A better understanding of Qfly biology and behaviour will help fruit fly managers develop better management strategies.

- Qfly is a tree pest, only flying from tree to tree.
- They fly within a maximum vertical range of 3 metres. Trees in commercial orchards are generally kept within that height range for ease of harvesting and management.
- Several papers suggest fruit flies rarely fly more than half a kilometre in their lifetime, and most flies are intercepted within 150 metres of where they emerge.
- As an arboreal pest, fruit flies use movement corridors such as tree lines and vegetation belts to move across the landscape.
- Qflies also require water to survive and use waterways such as rivers and creeks as movement corridors.
- Buffer zones of pasture, cereal crop or grassland are generally not attractive to fruit flies; flies are unlikely to enter tree crops from these areas.

Trapping and baiting

- Female fruit flies are notoriously hard to trap. This is a worldwide problem.
- Generally, female flies tend to stay near fruit trees, looking for fruit for egg laying.
- Males, on the other hand, are generally seeking a mating site, so are relatively easily trapped using pheromones, and are good indicators of females in the immediate area.
- Qfly like the colour yellow, making it an ideal colour for baits and traps.

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Fruit-fly trap effective against females and males

FRUIT fly traps have a role in border-protection of tree crops, and within-crop mass trapping and killing.

Amgrow Specialty Ag technical support and product development officer Chris Poletto advised growers to consider using organic Cera Traps for early warning of fruit fly incursions. Detections in Cera Traps can signal the start of the fruit-fly season in endemic areas; and be used to attract and mass-trap female and male Queensland and Mediterranean fruit fly.

“Cera Trap design and recommended use is based on knowledge of fruit-fly behaviour. Qfly are attracted to yellow, so Cera Traps have a yellow lid and label to attract them to the trap.

“Cera Trap’s protein hydrolysate liquid has proven highly attractive to both female and male fruit fly, with potentially the most powerful protein-attractant for fruit flies on the Australian market. “Female flies are especially attracted, due to their need for protein for egg-laying. As demonstrated around the world, the capture ratio of females (responsible for fruit stinging and damage) to males in Cera Traps was 4:1 in Australian trials.

“Trials along Australia’s east coast, in Western Australia and Papua New Guinea confirmed that Cera Traps are highly attractive to Queensland fruit fly (Bactrocera tryoni), Mediterranean fruit fly (Ceratitis capitata), Jarvis fruit fly (B. jarvisi), Melon fruit fly (B. cucurbitae), Pumpkin fruit fly (B. decipiens) and Oriental fruit fly (B. dorsalis).”

He said other benefits of Cera Traps included being insecticide-free; non-toxic to bees and beneficial insects; cost-effective; safe for farm workers, the environment and consumers; ready to use and easy to set up; low evaporation rates, with 600mls in each trap lasting 60-120 days; and quick to refill in seconds in the canopy.

“The absence of insecticide makes Cera Traps particularly attractive to growers of biologically-grown fruit and ideal in environments such as hospital and school grounds.”

Recommendations for best results include setting-up traps ahead of the expected fruit-fly season or at least 60 days before fruit ripening (even earlier will catch juvenile flies); 100 traps/ha spaced evenly through the orchard, with additional traps in areas with higher fruit-fly pressure; hanging traps 1.5 to 2 metres high within the canopy on the north side of trees, for the sun to heat and volatilise the protein attractant; and for perimeter baiting to prevent fruit fly entering tree crops, hanging traps on a 400m grid outside the orchard.