Reducing reliance on chemical control of fruit fly in blueberries: A Case Study from Smart Berries, Crows Nest, Queensland

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Controlling fruit fly has been a persistent challenge for blueberry cultivators in Queensland and Northern New South Wales. Strawberry farmers transitioning to tabletop cultivation have also encountered this adversary as the elevated plant height makes them more susceptible to fruit fly infestations.

Daniel Adames, previously experienced in citrus, tomatoes, and capsicums, joined the Smart Berries Crows Nest blueberry and raspberry farm in 2020 with a focus on enhancing irrigation systems. Rapidly advancing to the role of Farm Manager, he initiated a range of improvements on the 16-hectare farm, which previously produced both blueberries and raspberries.

Despite the farm's success, challenges like the gradual spread of the Varroa mite and the difficulty of blueberries as a forage source for European honeybees are a cause for concern. To safeguard the bees, the farm collaborates with a vigilant beekeeper to ensure the introduction of healthy colonies.

The primary issue, however, has been Queensland fruit flies (Qfly), leading to substantial annual losses despite the extensive use of the available chemical treatments. Determined to find a sustainable solution, Dan meticulously recorded Qfly incidents, identifying peak periods and planning interventions. The farm also underwent a thorough inspection to eliminate any potential additional food sources for Qfly.

While bird netting already covered most of the farm, it proved ineffective against Qfly. Considering insect netting, Dan received a quote that included substantial labour costs. Capitalising on the diverse skills of the PALM scheme workers, backpackers, and locals, Dan opted for in-house installation. The government's expansion of the Horticultural Netting Program to cover all crops further supported this decision.

The installed nets required careful handling, emphasising the need for fully trained staff and strict adherence to workplace health and safety regulations. Once installed, the focus shifted to eradicating Qfly under the nets using a combination of sticky traps for monitoring and protein baits, resulting in a significant reduction in chemical usage.

With Qfly losses eliminated, chemical usage reduced, and a decline in heliothids and lepidopteran pests, the farm's environment thrived. Beneficial insects like ladybirds and parasitic wasps flourished, managing aphid populations without chemical intervention. To support pollination, custom bee windows were installed under the net, benefiting both farm production and the wellbeing of the bees.

While acknowledging the necessity of chemicals like Dimethoate and Spinetoram, growers are urged to explore alternative fruit fly control options. Netting proves to be part of a promising solution, and although the Horticultural Netting Program is set to close in 2024 with limited funding in some states, others still offer financial support for this effective pest management approach.

Inside the netted orchard showing how the 'bee doors' operate at the edges. Photo credits: Wendy Morris & Daniel Adames

Yellow sticky pad attracts and captures pests and is a useful monitoring tool

In this newly established part of the orchard, the protein bait is applied to a pole at the end of a row

Photo credit: Wendy Morris

About the Horticultural Netting program

The Australian Government's Horticultural Netting Program — Trial Expansion aims at helping primary producers of commercial horticulture crops offset the cost of purchasing and installing horticultural netting to increase crop productivity and reduce the adverse impacts of weather events and animal predation on commercial horticulture crops.

The grant amount available is 50% of the cost of purchasing and installing horticultural netting on existing horticulture produce, or on horticulture produce to be established on areas with crop growing history.

The program will close to applications early 2024 or when funds are allocated. Some states had already fully committed funds at the time of publication.

For more information visit:

www.agriculture.gov.au/agriculture-land/farm-food-drought/hort-policy/hort-netting-program

Reducing Qfly with the ABC approach

A

Attract and kill flies with protein

Why:

- A protein + toxicant attracts and kills flies
- Fruit flies require protein before they can sting fruit

How:

- Mix protein lure with toxicant at the recommended rate
- Apply as a spot or band to the host plants

When:

- Start early and apply weekly until at least 3 weeks after harvest
- Apply more often if you see signs of Qfly damage or increased activity

Note:

- Protein may cause fruit burn - test before use - minimise fruit contact
- Treating larger areas including non-fruiting blocks and surrounds will improve results

B

Reduce male flies with Male Annihilation Technique (MAT)

Why:

- Reducing the male population will help improve fruit fly control

How:

- Place MATs throughout your blocks and in immediate surroundings at 10 – 20 per hectare

When:

- Apply three times per year
- Leave individual MAT out for a full 12 months

Note:

- Use MAT **as well as** protein baiting (not instead of)
- Works best when used over large areas leading to improved control over time

C

Practise good sanitation

Why:

- Surviving flies from last year are major contributors to spring populations
- Minimise fruit fly breeding for best results

How:

- Remove unwanted hosts including feral and neglected trees
- Remove all residual fruit following harvest
- Destroy any fallen fruit if damaged by Qfly

For more resources to assist you with fruit fly management please visit the new Resource Library on the industry website and type 'Fruit Fly' into the Search Box.

With thanks to New South Wales Department of Primary Industries and Bugs for Bugs for the ABC Guide content.