Berry Growers Field Day

Mark Salter, Berry Industry Development Officer, Fruit Growers Tasmania

Berry growers gathered at the Cressy Research farm on 18 October to hear from a range of speakers on Integrated Pest Management, optimal sprayer setup and the latest chemicals for berries, before relocating to Burlington Berries production areas to see practical demonstrations of IPM and sprayer setup on-farm.

Opening welcome

Opening the workshop was Berry Industry Development Officer, Mark Salter, who provided a snapshot of Fruit Growers Tasmania's recent activities including an update on the Coir recycle and reuse project, progress on the Mitchell plastic recycling plant and the latest on the Varroa mite situation.

Kate Sutherland, Managing Director of Burlington Berries, then welcomed everyone and gave growers some interesting insights into the history of Burlington Berries and the future plans for the business.

Kate spoke about how they purchased the farm 20 years ago, initially to produce seeds for their Upper Murray Seeds business, and then in 2012 they decided to branch out into growing berries, starting with four hectares of strawberries grown in the ground under tunnels.

Today, Burlington Berries grow over 60 hectares of Driscoll's strawberry, raspberry and blackberry varieties in substrate in tunnels. They have recently purchased a second site that, when fully developed, will produce a further 60 hectares of berries in new high tunnels.

Integrated Pest Management (IPM)

Supporting predators with Conservation Biological Control

Jon Finch from the Tasmanian Institute of Agriculture (TIA) spoke on Conservation Biological Control (CBC) which is a broad strategy that uses ecological principles to enhance the activities of predators. Jon explained that growers can implement CBC by providing shelter, nectar, alternate prey and pollen (shortened to the acronym 'SNAP').

Shelter provides natural enemies with nesting, hunting and overwintering sites, as well as protection from predators, adverse weather and sprays

Nectar provides natural beneficials with energy that improves survival, predation and reproduction

Alternate prey maintains natural enemy populations when the density of target pests is low

Pollen supports the nutrition of natural enemies and other beneficials by providing a source of protein and fats. These nutrients are often critical for reproductive development and are sometimes consumed in the absence of prey.

CBC can have a range of other benefits, such as reducing soil erosion, increasing soil moisture, reducing fertiliser run-off, supressing weeds, promoting pollinators and reducing costs.

CBC areas are usually placed outside of the main cropping area, in marginal production areas or awkward/uneconomical areas to harvest. They can also be mixed in with existing plantings, such as between orchard and tree rows. However, implementing CBC plots outside tunnels may be ineffective as natural enemies may struggle to move into the cropping area.

One solution may be to use the leg rows as this allows for:

- Natural enemies to easily move into the crop
- No loss of cropping area
- No need for irrigation
- No impediment people or machinery

To help growers trial CBC on their own properties, Jon gave examples of the most suitable plants to use for attracting beneficials, as well as those plants which are suitable to be used as trap crops for pests. He also underlined that CBC areas take time to become effective (three to five years), so patience is needed.

Stephen Quarrell from TIA presented on mirids in raspberry and blackberry crops. He underlined the importance of this pest for Tasmanian Rubus producers as there are currently limited controls for this pest group. Steve's presentation focused on:

- The damage they can cause
- The three main species of mirids including, Australian Crop mirid, green mirid and brown mirid
- Methods of control

Damage caused by mirids can include deformed fruit, loss of fruit due to feeding on buds and flowers, delayed fruit ripening, reduced yield and contamination.

Steve also spoke on other bugs to look out for including, Rutherglen Bug, Broken Back Bug and Apple Dimpling Bug. He also explained it is important to monitor and scout your crop to identify what species of bugs are in your crop as some may not be pests in raspberries and berries. It is particularly important to start monitoring early in the season.

Steve recommends checking **5 bushes per block each week** for adults and nymphs, tapping flowers and laterals. From time-to-time the spray thresholds will need revision. Also, monitor weeds and farm borders if you have other cropping near your property.

Steve lastly spoke about using pheromones for monitoring and trapping mirids, including, the green mirid sex pheromone, which is already commercially available and the Hort Innovation funded PhD project, also awarded to TIA "*Using pheromones and traps in the management of mirids and vegetable bugs*" (RB21011).

This project aims to:

- Isolate and trial brown mirid pheromones for monitoring
- Optimise green vegetable bug and mirid trap placement

Michele Buntain from TIA conducted an interactive session asking growers to identify which flowering plants around their production site were good or bad. Michele attached photos of the various plants to a wall and asked growers to place red and green dots on them depending if growers thought they were good or bad. After the morning tea break, Michele explained which of the plants were beneficial and which were weeds. Most growers identified correctly the good and bad plants. Michele also explained which plants were more likely to be advantageous for beneficial insects.

Jake Byrne from Biological Services outlined his company's services which include the supply of a range of beneficial insects. Jake also explained the principles of IPM; *a philosophy/strategy of pest control that integrates all available tactics to reduce pest populations to an acceptable level.*

All available controls can be classified as:

- Cultural controls
- Biological controls
- Chemical controls

Jake also highlighted the importance of knowing when to introduce beneficials, and when to spray to look after your beneficial insects.

Tackling two spotted mites

Michael Gangi from EE Muir focused his presentation on two-spotted mite which is an important pest in berries. His presentation included pest images and how to identify them through the various stages of growth.

Mite Fast Facts:

- **Life Cycle Stages:** egg, larva, nymph and adult
- **Eggs:** globular and transparent, becoming opaque prior to hatching
- **Larvae:** the larvae that hatch only have six legs. After a period of moulting, the nymph develops eight legs and the two distinct dots form later in the cycle
- **Location:** eggs, nymphs and adults are mostly found on the underside of the leaves. This is due to cooler conditions and a less waxy leaf cuticle to penetrate

  In dense populations they can be found on the calyx of the fruit and webbing can occur in extreme conditions (particularly Rubus)
- **Life Cycle Timing:** in hot dry conditions, the l ife cycle can be completed in under two weeks
- **Feeding:** the nymphs and adults pierce the cells of the leaf tissue and suck out the contents. This can give a distinct 'speckling' look
- **Females:** the development of the overwintering females (diapause) is initiated by short day lengths and cool temperatures. The females will appear orange/red in colour

IPM plays an important part in controlling two spotted mites. Predatory mites include:

- *Phytoseiulus persimilis*
- *Neoseiulus californicus*

Michael noted that there are also various chemicals available to both Rubus and strawberry growers, but most have some toxicity for beneficials, so care is needed in their use.

Fundamentals of Integrated Pest Management

Paul Horne from IPM Technologies' presentation focused on cultural practices, thresholds and monitoring to help look after beneficial insects. Paul stressed the importance of having a food source when beneficial insects are first introduced and underlined the need to monitor what pests are in your crop and use chemicals sparingly, and emphasised the importance of using chemicals that are not toxic to beneficials.

Paul also discussed the life span of some of the important chemicals used in berry crops and the impact they have on beneficials, explaining that some chemicals can persist in crops that are grown under cover, and it is important to note this when introducing beneficials.

Chemical options and sprayer management

Sprayer setup key to targeted spray use

Dave Farmer from Croplands explained to growers the importance of having the correct sprayer setup. He started with nozzle selection, which is a critical part of the spray application process. Dave explained the three main points to determine the best spray quality:

1. The target you are trying to kill
2. The type of chemical you are using, i.e. Systemic or contact
3. How big is the risk posed by drift?

To help address these three points, air induction nozzles are proving a better option for growers, particularly for better crop coverage as well as offering minimal spray drift. Dave also focused part of his presentation on calibration, highlighting how important it is to know exactly what volume of spray is being applied to the crop.

Brenden Green from Nufarm finished the morning session by outlining some of the latest chemicals for berries. Brenden spoke on the recent introduction of Intervene® as an effective fungicide for berries which is now accredited as an organic product.

IPM in the field – Burlington Berries

After lunch, attendees travelled to the Burlington Berries production site at Burlington Road to look at how IPM is adopted in the field.

Burlington Berries' Manager Laurie Adams welcomed everyone to the farm and gave a brief overview of their berry production.

Burlington Berries agronomist Catherine Nitz gave some good examples of how IPM works in the field. There was also time for a general question and answer session before traveling to Burlington's new site further north.

Sprayer demonstration – Burlington Berries

Laurie welcomed everyone to Burlington Berries' new production site explaining the benefits of its isolation and protection from wind, minimising the risk of both wind and pest damage.

Dave Farmer continued his sprayer setup presentation in the field featuring Burlington Berries' new 2000L Croplands Quantum™ over row tabletop sprayer.

Dave explained the benefits of the new rig, which includes eight adjustable multi-directional fan heads giving it the ability to target the crop more effectively. Also being able to reduce the application rate to 450L/ha helps minimise spray drift and make chemical use more efficient. Growers were then able to view the sprayer in action in one of the strawberry tunnels.

> The event proved to be a great success with over 60 people attending. Many thanks to Burlington Berries and the presenters, plus a special thank you to Nufarm and TIA for their generous sponsorship of the event.

Jake Byrne from Biological Services
Photos credit: Fruit Growers Tasmania

Attendees were given a tour of both Burlington Berries sites
Photos credit: Fruit Growers Tasmania

Dave Farmer from Croplands gave a 'classroom' presentation followed by a practical demonstration of the importance of having the correct sprayer setup. Photos credit: Fruit Growers Tasmania

Stephen Quarrell from TIA highlighting the importance of mirid pests for Tasmanian Rubus producers.
Photos credit: Fruit Growers Tasmania

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