

# Tasmania: Berry Sprayer Field Day

Mark Salter, Berry Industry Development Officer, Fruit Growers Tasmania & Dave Farmer, Croplands

With Blueberry rust declared endemic in Tasmania and mandatory control restrictions on Blueberry rust now lifted, a number of organic or low-input growers are having to use sprayers and develop protective spray programs for the first time. To help these growers get up to speed on sprayer technology, Fruit Growers Tasmania, Berries Australia, and the Tasmanian Institute of Agriculture held an Orchard sprayer field day on 23 November 2022 at Millers Orchard in Hillwood, Tasmania.

Attendees had the opportunity to discuss the relative strengths and drawbacks of different sprayer types, with three demonstration units also available for attendees to see in action; a Carraro™ sprayer designed for smaller berry growers, a small self-propelled MM® tunnel sprayer, as well as a larger 1500L Cropliner™ (Airblast) sprayer towed by a Kubota tractor.

Stuart Farrell from Sprayer Solutions demonstrated the Carraro™ unit which has its own petrol driven power plant and can be towed along by an ATV, whilst David Lindley from TASMAC demonstrated the MM® self-propelled unit which is primarily designed to spray the leg rows in poly tunnels but would be ideal for smaller growers.

Both the smaller spray units were demonstrated in the field giving growers an idea on their coverage and general performance. Note: Only water was used in the demonstrations.

Presenting on the day was Dave Farmer from Croplands, who travels the country advising growers on how to maximise the effectiveness of spray units for their specific crop. In his presentation, Dave talked attendees through how to match sprayer setup to the crop, how to calibrate the sprayer and check for suitable spray coverage and how to manage spray drift.

## Sprayer setup

When setting up a sprayer, matching the sprayer setup to the crop is very important to ensure most of the spray hits the target crop without being forced through the crop and on to surrounding crops or vegetation. To achieve this, growers should choose the correct nozzles for the job and focus on fan speed to supply the optimal air velocity and volume. This is particularly important for berries, as excessive air velocity may damage the crop.



**Dave Palmer from TASMAC demonstrating the MM® self-propelled unit.** Photo credit: Fruit Growers Tasmania



**Stuart Farrell (Sprayer Solutions) demonstrating the Carraro unit towed along by an ATV.**  
Photo credit: Fruit Growers Tasmania



**The self-propelled MM® tunnel sprayer unit that may suit small berry operations.**  
Photo credit: Fruit Growers Tasmania

# CALCULATING WATER + CHEMICAL QUANTITIES

Before spraying it is necessary to calculate the exact quantities of water + chemical needed to spray the required area of orchard.

## CHEMICALS REQUIRED (Litres or Kg) PER HA

$$\frac{\text{Tank Volume (L)} \times \text{Recommended Chemical Rate (L/ha) or (Kg/ha)}}{\text{Spray Application Rate (L/ha)}}$$

### EXAMPLE

$$3000 \text{ Litres} \times 5 \text{ (L/ha)} \div 900 \text{ (L/ha)} = 21.4 \text{ Litres or (Kg)}$$

## AREA COVERED (HA)

Tank Volume (Litres)

Spray Application Rate (L/ha)

### EXAMPLE

$$3000 \text{ Litres} \div 900 \text{ (L/ha)} = 3.33 \text{ hectares}$$

## TANK VOLUME OF MIXTURE REQUIRED (Litres)

Area (ha) x Spray Application Rate (L/ha) or (Kg/ha)

### EXAMPLE

$$3.25 \text{ (ha)} \times 900 \text{ (L/ha)} = 2,925 \text{ Litres}$$

## CHEMICALS REQUIRED (Litres or Kg)

Tank Volume (Litres) x Recommended Chemical Rate (L or Kg per 100 Litres)

100

### EXAMPLE

$$1500 \text{ (L)} \times 3 \div 100 = 45 \text{ Litres}$$

## IMPORTANT

BE SURE TO MIX ONLY ENOUGH SPRAY MIXTURE TO COVER THE AREA REQUIRED.  
AVOID WASTAGE AND PROBLEMS OF NEEDLESS CHEMICAL DISPOSAL.

Graphic produced with thanks to Croplands. Find out more [www.croplands.com/au](http://www.croplands.com/au)

## Calibration

Once set up, growers should calibrate the sprayer to their production area. Regular calibration checking is also a requirement for any of the food safety certification schemes.

The typical calibration process is completed in 4 steps:

### Step 1

#### Clean the unit

- Ensure there is no residual chemical in the tank
- Check that the nozzles are clean, not blocked and set correctly

### Step 2

#### Check speed

- Half fill the tank with water
- Measure out 50 or 100m and time how long it takes to travel that distance
- Include uphill and downhill if you have a sloping block
- Calculate the km/min travelled by the machine

### Step 3

#### Calculate total sprayer output

- Run both sides of the sprayer at normal pressure
- With 2 people + 2 jugs + timer + calculator, use the jug to capture output in 1 minute from each nozzle and combine to calculate the total L/min from the whole unit
- Ensure that you use the correct PPE to protect eyes, ears and skin

### Step 4

#### Calculate L/ha output

- Using row width, total L/minute from the output calculation in Step 3 and speed from Step 2 you can calculate the L/ha output

## Managing Drift

Spray drift was highlighted as a growing issue for the industry from both a regulatory and public awareness perspective. Dave provided numerous examples of spray drift reaching adjoining farms and property resulting in costly fines, and product becoming contaminated and unable to be marketed.

Late in 2022, a large-scale spray drift event hit up to 30,000 hectares of cotton on the eastern Darling Downs causing up to \$100 million worth of damage.

Read more at <https://ab.co/3jwjD5H>

Spray drift can be caused by spraying when winds are too high or by having fine or very fine sized droplets that can be carried beyond the target crop and on to neighbouring vegetation or crops. Dave noted that key factors contributing to the formation of these droplets are pressure, nozzle type, the use of some adjuvants and simply not having machines set up correctly.

He also spoke about the benefits of air induction nozzles which are designed to deliver droplets to the target and not into the atmosphere.

### Key considerations for managing spray drift include:

- Calibrate your spray unit and assess coverage before the start of the season
- Increase droplet size and use low drift nozzles
- Reconsider the use of wetters and particularly avoid non-ionic surfactants
- Keep detailed spray records and critical weather data particularly wind speed and direction at the times you are spraying

As Dave pointed out, keeping accurate records of spraying and accompanying weather data is not just a requirement for your food safety compliance program, its more and more possible that you may need to be able to produce your records for scrutiny if you end up in a legal battle from a spray drift issue.

**Thank you to Croplands and Nufarm for your support of this Field Day.**