

Sprayer setup & managing spray drift

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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 onto 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. Get expert advice from your sprayer supplier or agronomist about which are the right nozzles for your task.

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 is a growing issue for all horticulture industries from both a regulatory and public awareness perspective. There are 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 in Queensland causing up to \$100 million worth of damage.

Read more at 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 onto neighbouring vegetation or crops. Some 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.

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

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!

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

AREA COVERED (ha)

$$\frac{\text{Tank Volume (L)}}{\text{Spray Application Rate (L/ha)}}$$

example: 3000 Litres $\div$ 900 (L/ha) = 3.33 hectares

TANK VOLUME OF MIXTURE REQUIRED (Litres)

$$\text{Area (ha)} \times \text{Spray Application Rate (L/ha) or (Kg/ha)}$$

example: 3.25 (ha) $\times$ 900 (L/ha) = 2,925 Litres

CHEMICALS REQUIRED (Litres or Kg)

$$\frac{\text{Tank Volume (L)} \times \text{Recommended Chemical Rate (L or Kg per 100 L)}}{100}$$

example: 1500 (L) $\times$ 3 $\div$ 100 = 45 Litres

IMPORTANT

Be sure to mix only enough spray mixture to cover the area required. Avoid wastage and problems of needless chemical disposal.