

# Industry insight: Spray application in horticulture



# Industry observation – Spray application in Horticultural crops in Australia

## Introduction:

**Horticultural Spraying Specialists** is focussed on improving outcomes in horticultural spraying, presenting over 40 workshops to industry groups, grower groups and individual growers since early 2021.

The following observations are taken from data collected from 53 sprayers tested for spray coverage during this period.

This data has been collected in wine grapes, apples, citrus, avocados, cherries, pears, mangoes, almonds, nursery trees and stone-fruit



In terms of area planted, wine grapes are certainly one of the larger horticultural crops in Australia. Thankfully, they lend themselves well to multi-row spray application and future automation opportunities



# Are current methods working?

Are current methods working? Yes.....and no.

Our observations include:

- Most sprayers are fit-for-purpose, some better than others...but some, simply, are not
- Many growers are competent **using** their current spraying equipment, however, many **have not set them up adequately** for the intended purpose
- Most growers **do not** actively measure the spray application results
- Most **do not** check their sprayers regularly for performance and accuracy
- Most do calibrate (or have someone calibrate) their sprayers “every so often”



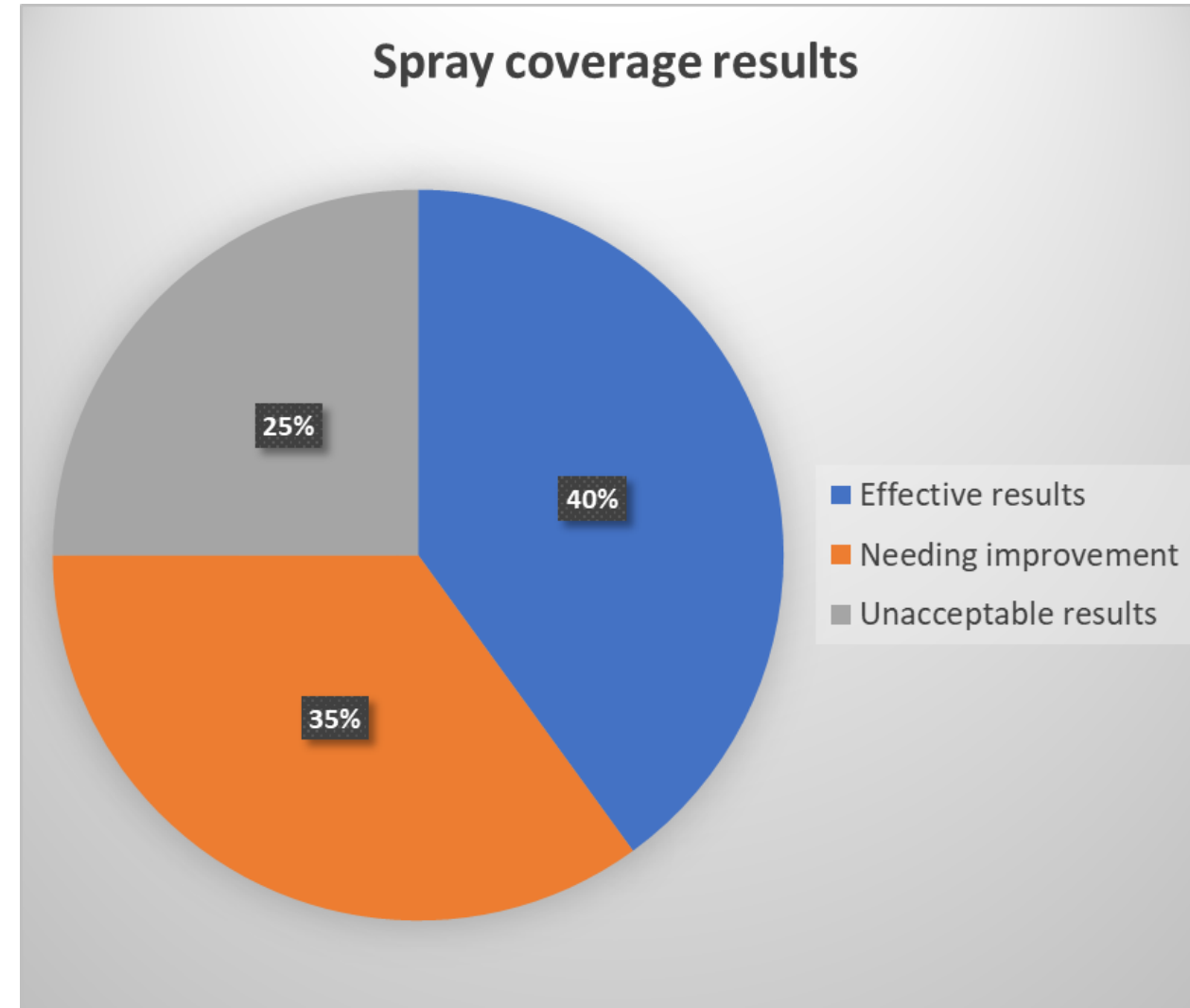
Above – a sprayer totally fit for purpose, but needed some adjustments to maximise spray coverage potential

# What have we observed in recent tests?

At right is a summary of spray coverage results using the data collected from 53 sprayers tested for spray coverage using water sensitive paper assessment to determine droplet deposition.

## Comments:

- 35% of the sprayers tested would benefit from adjustments to improve results, with 25% of the total tested having **unacceptable** coverage, resulting in pest and disease issues and failure or resistance development risks to the crop protection products being used
- Clearly,  $\frac{1}{4}$  of the sprayers tested were ineffective
- 40% of the sprayers tested produced effective coverage – albeit some with worn nozzles and other small issues to solve



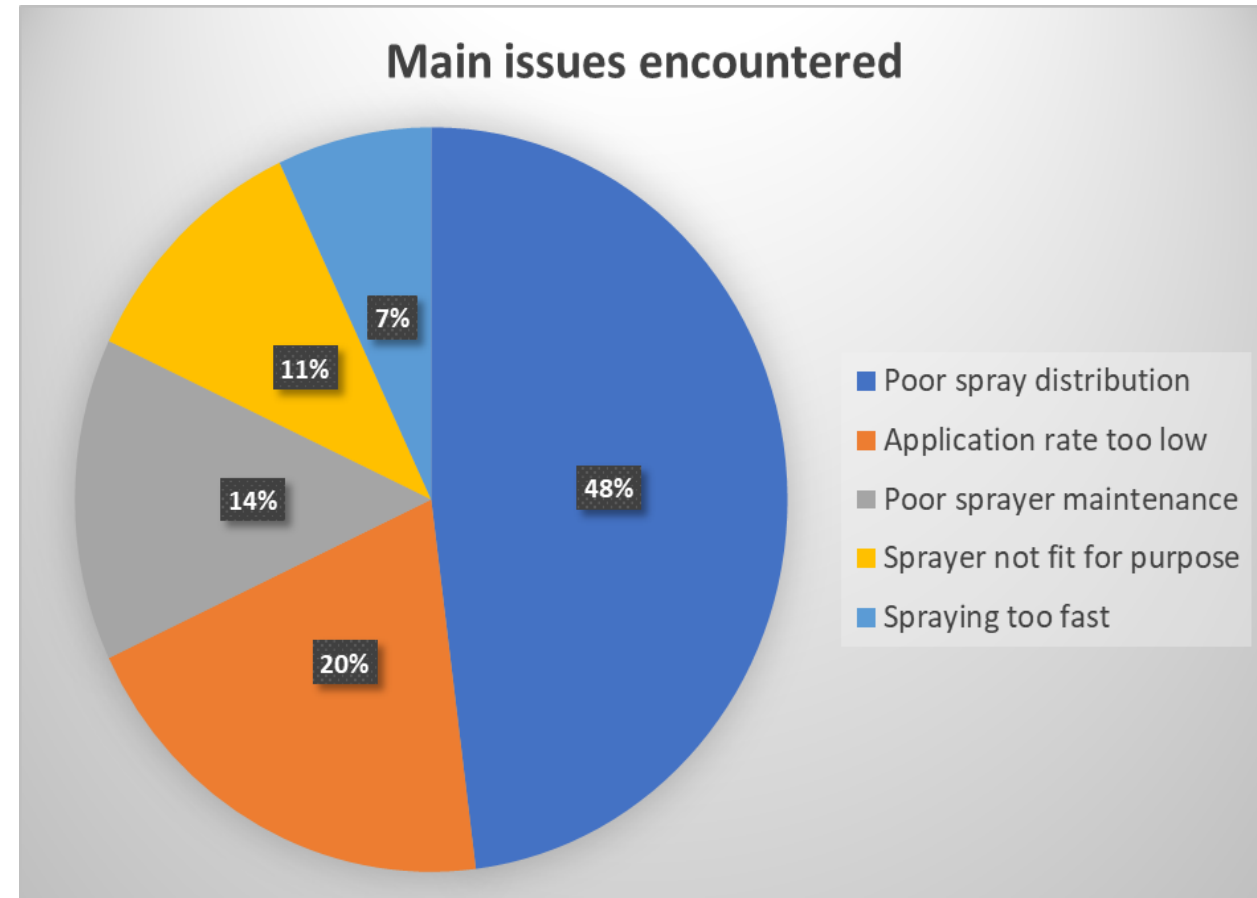
# What are the key issues?

From the 53 sprayers tested, the five main issues with spray coverage were:

- Poor spray distribution, in terms of nozzle output in relation to the target zone(s)
- Spray application rate too low for effective coverage
- The sprayers were poorly maintained leading to spray coverage issues
- The sprayer was the wrong one for the job, and will never provide effective spray coverage\*
- The operator travels too fast – usually as a result of time pressure/lack of resources

Across all machines that fell short with spray coverage, the majority had worn nozzles. In several cases, more than one issue contributed to the problems.

\*In most cases, this was sprayers in very large trees, where air capacity could not match the canopy dimensions



Almost half the sprayers with spray coverage issues were impacted by not having the right nozzle set up to match the target zones, or sectors of the tree, vine or crop.

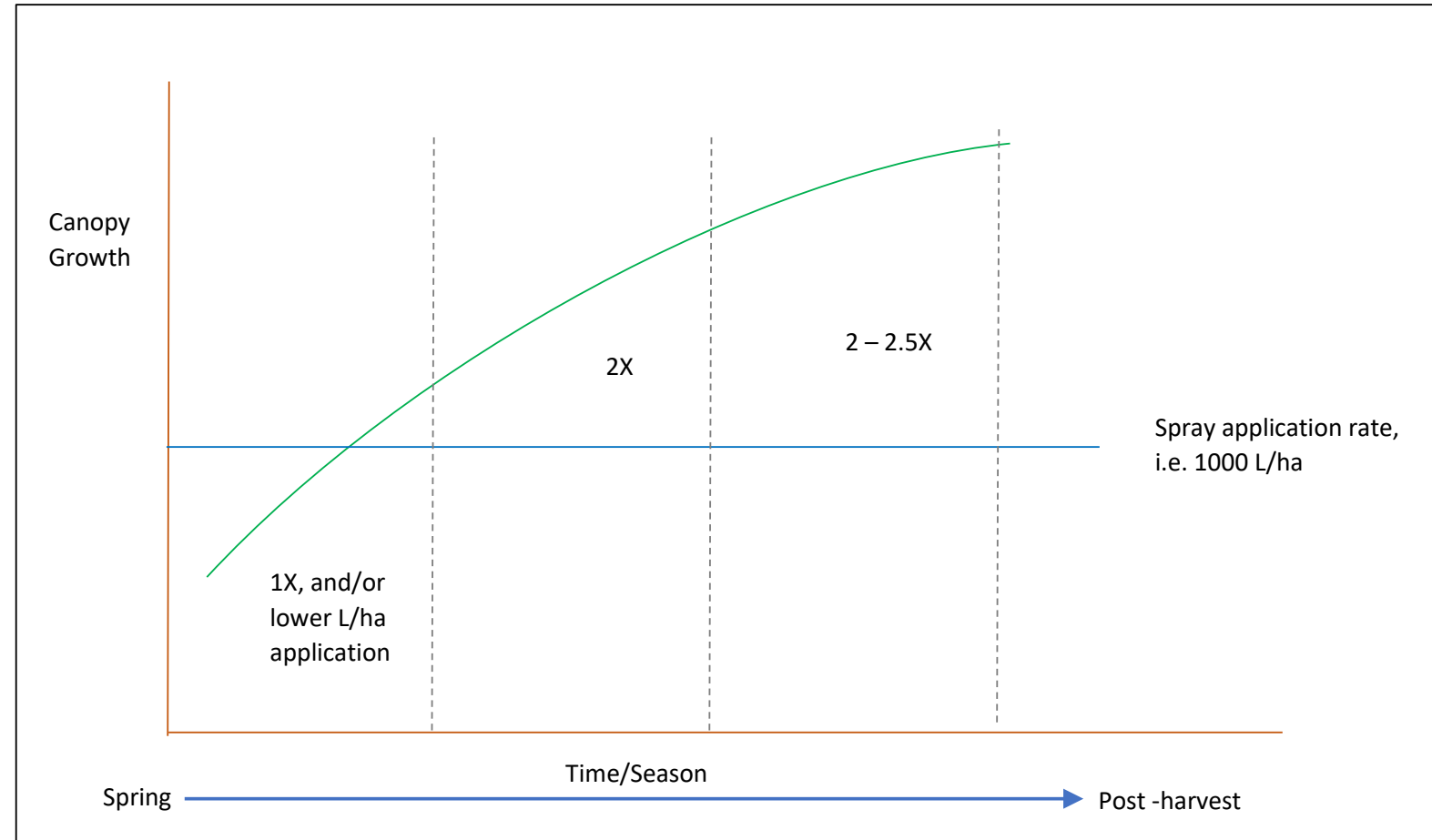


# Misconceptions around application rate

Many growers underestimate, or ignore, the spray volume required as their canopy grows. Key reasons for this:

- Many sprayers are not well set up for nozzle changes to manage application changes
- Growers see this is simply adding to the cost of their applications
- They have gotten away with lower rates...until a “bad season” catches them out
- Many stick to the same rate all season long because it is “convenient” – over-applying early; under-applying later
- Growers have not been taught how to effectively adjust application to match the growth of their trees over the season

New opportunities will present themselves as LiDAR develops & becomes more trusted



Above: a pictorial illustration of what could be done in terms of spray application in large 5m tall stone-fruit trees as the season progresses, using a well set up sprayer, capable of effective spray coverage at 1000 L/ha all season, but managing dose through concentration factor 1 through to 2.5X

# What can we do as an industry?

There are many stakeholders in the industry who can lead educational and information opportunities.

Key pathways are:

- Channel partners and suppliers – especially local, trusted agronomists and resellers<sup>1</sup>
- “Chemical companies” – i.e. Nufarm, Syngenta, Corteva etc – who have a vested interest in ensuring their products are correctly applied<sup>2</sup>
- Industry organisations, such as Citrus Australia and Avocados Australia, who have supported workshops in recent times<sup>3</sup>
- Training and support institutions such as the DPI, SARDI and TAFE – who can introduce more specific materials to their training programs
- Machinery dealers – if they have the desire to go the next step and add value to their spraying machinery portfolio\*

\*Machinery dealers are a golden opportunity for the industry, but to date engagement has been “difficult” – they don’t see application advice as their strength 1,2,3 – Hortspray has had great support to deliver workshops, particularly EE Muir & sons, Serve-Ag, IK Caldwell, their key suppliers, and supporting industry organisations.



Above: on-farm workshops, and/or individual grower visits are still the best way to get key messages across. Not everyone will agree, or listen, but steadily the message becomes action over time. Growers & farmers are practical people. Showing what to do and how to do it is still the most effective strategy to upskill growers



# How to make a difference

Now that the key issues have been identified from the first 18-months of working with growers on their orchards, farms and vineyards, we have a clearer plan. Safeguarding our chemistry and getting more produce into “class A” are important outcomes to strive for.

Quality is the future for growth of our industry – to unlock export, or simply for better returns. Would you like to engage Hortspray to talk to your people? Pick up the phone or jump on the website – [www.hortspray.com](http://www.hortspray.com) – and let’s talk.

Far right:  
Matching nozzle flow to canopy sectors is a simple process, but rarely done on the orchard

Middle: You can’t manage what you don’t first measure

Right: Sadly, an all too common sight – nozzles on a good sprayer that is 12 years old....and never changed

