

## Technical Note

# Off Target Sprays – Chemical and Cost Wastage

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On a recent trip to South Africa to the citrus growing area of the north eastern part of the country, I understood it was common practice to spray at water volumes between 8,000 – 12,000 litres per hectare.

Whilst this article refers to citrus, the principles apply to all crops.

Trials conducted by Curvingham & Harden in 1998/99, established that mature citrus trees can retain sprays to a maximum of 2,300 litres per hectare before run-off. This district practice exceeded that threshold. This was not only wasteful but would lead to reduced disease control, due to most of the chemical being off target.

How many of our growers are spraying to the point past run-off?

This (of course) can be a source of under performance of a chemical. Yes, the grower did use “x” rate according to the label, but half of it was off target and therefore of no value.

Whilst the above example uses Citrus, the principle applies to every crop has its specific threshold.

There is a tendency to use less water and less chemical with higher and higher expectation. Some claims from chemical companies are fueling this higher expectation.

This trend will lead to disappointment and financial loss. It is up to the grower to determine what’s best given their individual circumstances.

How many machines are calibrated on a regular basis during a growing season?



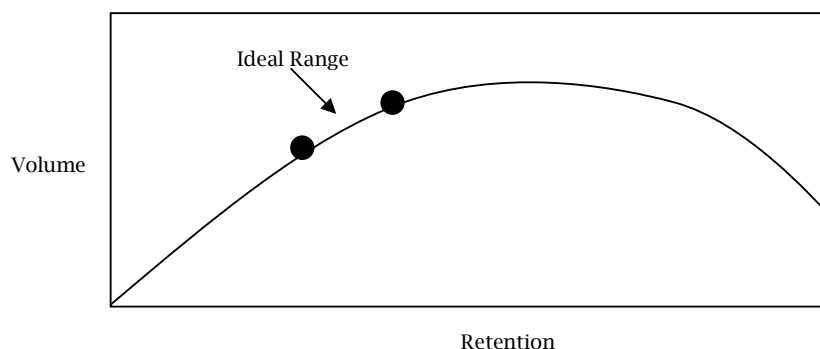
There are distinct differences in the capacity of fruit and leaf surfaces to retain spray mixtures.

For example:

- Mature versus Young Leaves: mature leaf surfaces retain higher quantities than younger leaf surfaces.
- Cuticles of the upper and lower leaves differ significantly. This may well contribute to differences in spray deposition and retention capacity (Riederel and Schneider, 1990 - 2001).
- Varietal Differences: 'Valencia Late' Oranges have higher retention capacity than 'Eureka' Lemon Fruit.

Trials conducted by G. C. Schutte et-al and titled "The Effect of Run-off on Spray Deposition and Control of Alternaria Brown Spot of Mandarins" (see Melpat website for detail).

1. Fruit quality improved as spray volume increased but only until the point of run-off was reached, thereafter deposition quality and quality of biological activity decreased.
2. Biological efficacy increases with higher rates of active to a point thereafter no additional benefit (this assumes "all 'things' being equal" - including water rate and quality of water, spray application, etc.). The Law of Diminishing Returns applies.
3. There was an increase in deposition as spray volumes increased until the Apex of Curve was reached. With further increase in spray volume, the amount of deposition on leaves decreased to the effect of run-off.



In the trials it was possible to predict levels of infection based on deposition characteristics. It was also determined that a better quality of spray deposition was required to protect the lower leaves than the upper leaves, indicating the lower leaf surfaces are more susceptible to infection than the upper leaf surfaces. How many crops are sprayed from the top down with poor under-leaf deposition?

Spray volumes should be altered with a change in crop size/ type of crop / variety.

How many growers include this practice in their crop management.

[We acknowledge the research presented by G.C. Schutte et al.]

Kind regards

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