Ensure top chemical results with right adjuvants

There are various adjuvant products available that allow stomatal flooding, either partial or complete. How does this flooding affect chemical efficacy of products that are predominantly contact or surface coverage now being deposited within the leaf?

Adjuvants with stomatal flooding properties fall into the category of super wetter/penetrant. These are not very useful for contact or surface covering (barrier) fungicides that are designed to act on the plant surface.

The first issue is that there is a proportion of the active ingredient that is no longer present at the point of disease contact where these fungicides are normally active, thus efficacy can be reduced. It is always difficult to know how much activity has been reduced, which presents another level of uncertainty in disease control programs.

Secondly, and more importantly, an adjuvant that increases solubility or penetration of fungicides into the grapevine may cause phytotoxic symptoms on the vines. This could take the form of leaf scorching, flower abortion or berry damage. To reduce the risk of damage, only use adjuvants recommended on fungicide labels and obtain expert advice and information from manufacturers before adding to tank mixes.

General information

An adjuvant is a tank addition that modifies or enhances the performance of an active ingredient in a pesticide. Adjuvants can be used in a tank mix to perform a variety of functions, including increase droplet spread, improve pesticide rain-fastness and adhesion, facilitate plant uptake, reduce spray drift and improve spray penetration.

Others can 'fix' water conditions that would otherwise make the water unsuitable for use and facilitate the use of agrochemicals that would be incompatible without it.

It is important to be aware that incorrect or excessive use of adjuvants may reduce pesticide effectiveness or cause phytotoxicity. Always check the pesticide label for instructions and consult the pesticide manufacturer for advice.

Five broad categories are listed and described below

Wetters/spreaders

These adjuvants reduce the surface tension of spray droplets and overcome the natural repellence of plant tissue to water. The purpose is to enable droplets to spread further across the leaf or berry surface, thereby improving coverage.

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Super wetters/penetrants

Designed to dramatically reduce surface tension, these adjuvants were developed to use with systemic and translocatable herbicides, because they enhance the movement of active ingredient into the plant tissue.

No adjuvant will completely compensate for poor coverage or timing of sprays.

Stickers

With the aim of reducing the amount of pesticide lost due to rain, wind or leaf abrasion, these adjuvants increase the adhesion of solid particles to target surfaces.

Buffers or acidifiers

This group is designed to modify the pH of the solution. Acidifiers neutralise alkaline solutions, which is particularly important for pesticides susceptible to alkaline hydrolysis. Buffers stabilise the pH, so that it remains neutral even if water conditions are changed.

Water conditioners

These adjuvants overcome water with a high mineral content (hard water) by binding up the ions, so that they have less effect on the pesticide.

Final word

Many pesticides are formulated with an adjuvant built-in. Therefore, adding more can be a waste of money and may cause problems, such as phytotoxicity or excess run-off.

No adjuvant will completely compensate for poor coverage or timing of sprays.

Check the label and consult the manufacturer before using an adjuvant for the first time or in a new set of circumstances.

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Ask the AWRI is a monthly column, which focusses on viticulture and oenology issues. Many of the topics and questions are sourced from the AWRI Roadshows, as well as the Research to Practice material. If you have any questions you would like to see addressed in this column, email editor@grapeandwine.com.au GW