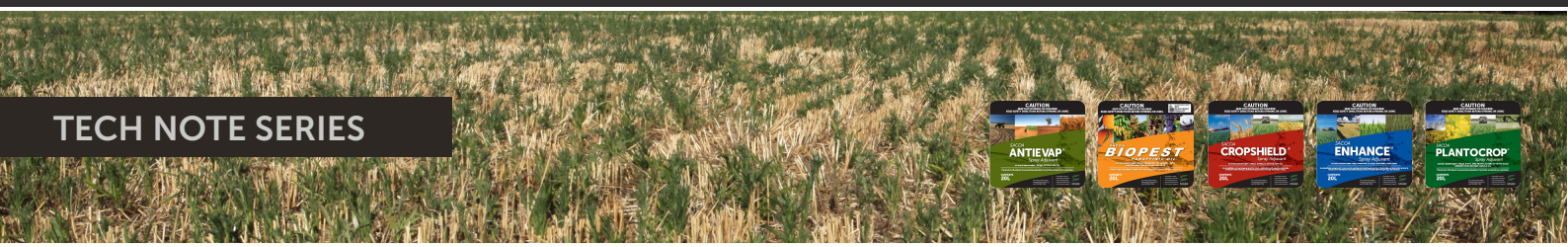
APPLICATION TIPS FOR TARGETING STRESSED WEEDS



TECH NOTE SERIES

KEY POINTS

- Use the correct water rate.
- Use the correct nozzle.
- Use the correct target pressure.
- Spray when weather conditions won't compromise the spray job.
- Consider the coverage, spreading, penetration and droplet-modifying characteristics of an adjuvant when partnering with a herbicide.
- Use tools available to check the boomspray setup.

Dry and cold conditions put weeds under stress which makes them more difficult to kill, particularly when using herbicides that are poorly translocated, like grass selectives.

A number of aspects are important for setting up a boomspray to target stressed weeds – these are aimed at achieving two things;

1. Hitting the target with adequate coverage – by starting out with the boom set up correctly
2. Getting the herbicide into weeds – by matching the adjuvant to the mode of action being used, and ensuring weeds are actively growing prior to spraying

There are a number of tools available to optimise target coverage and herbicide penetration into leaf surfaces. Proper boomspray setup has the biggest impact on coverage, whilst selecting the correct adjuvant and matching it to the mode of action being used has the biggest influence on leaf surface spreading and penetration.

Figure 1: Variable weed control on large and stressed ryegrass in canola.
(Source: SACOA)

BOOM SETUP BASICS - TO OPTIMISE COVERAGE

There are four basic variables that can be managed to get the most out of a boomspray. Water rate, nozzle type, spraying pressure and weather conditions. These will vary for every application but should always be aimed at producing the required spray quality – fine, medium or coarse, to produce the optimum target coverage whilst minimising drift.

A huge variety of boomspray and nozzle types are available.Each manufacturer publishes specific guidelines of pressure, travel speeds etc. to target the required spray quality and water volume. Spending some time calibrating, particularly when changing from summer fallow or knockdown jobs to post emergent spraying is invaluable, particularly to meet APVMA labelling requirements, around spray quality.

Targeting weeds which are not stressed from lack of moisture or immediately following frosts is also important, along with spraying during ideal Delta T conditions.

ADJUVANT SELECTION - MATCHING TO THE MODE OF ACTION AND TARGET

Adjuvants can influence how well a herbicide works mainly by modifying two things;

1. Coverage – through modifying the viscosity of the spraying solution and;
2. Herbicide leaf surface spreading and penetration - by reducing the surface tension of the spray solution and breaking down waxy leaf coatings (see Figure 2).

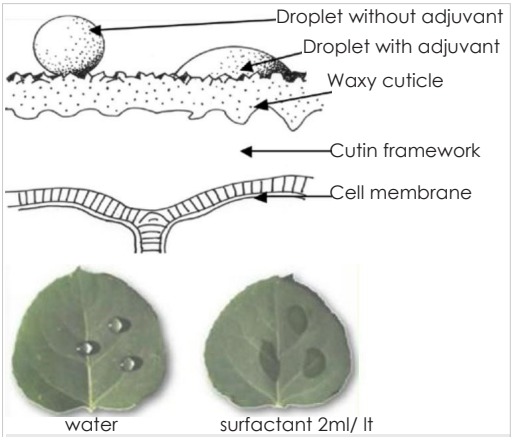


Figure 2: Impact of adjuvants on a leaf surface.
(Source: SACOA)

The four major types of adjuvant - emulsified mineral oils, seed oils soyal phospholipids and non-ionic surfactants and compatibilisers - vary greatly in their properties as droplet modifiers, leaf surface spreading/penetrating agents, improvers of mixing multiple tank component, and improvers of poor water quality (see Table 1).

Calibrating the boomspray with commonly used mixes versus water can be useful to understand how the mixture modifies sprayer output through viscosity changes. As an example, in aerial applications, using a carrier such as *CROPSHIELD®* or *BIOPEST®* can be useful to improve coverage.

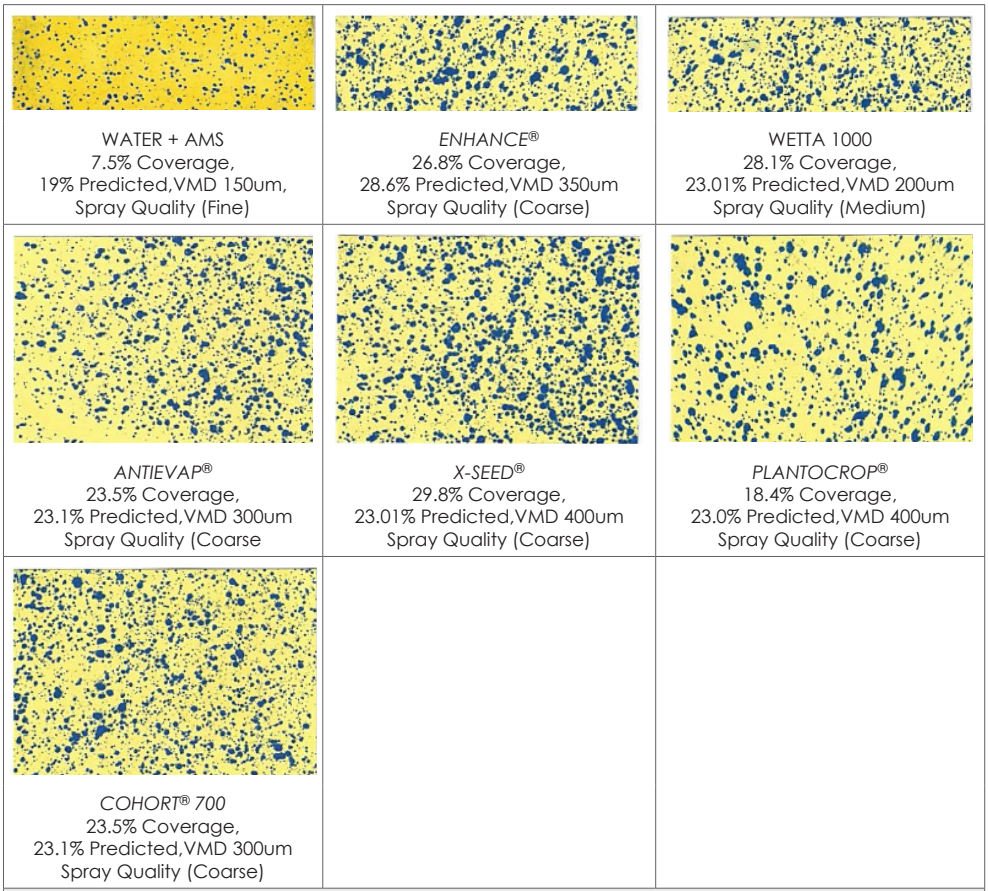
In a demonstration trial conducted by Agvivo in 2014, the addition of a high viscosity product such as *BIOPEST®* resulted in an equivalent improvement in coverage to an additional 10L/Ha of water.

BIOPEST® also has insecticidal properties, particularly on developing aphid populations, and as such can make an ideal tank mix partner for herbicide applications.

The effect of adjuvant type on spray quality was also evaluated in a range of summer fallow trials. As clearly seen on water sensitive paper – non-ionic surfactant products produce finer, more readily driftable droplets than (*PLANTOCROP®*) or emulsified mineral oils (*ANTIEVAP®* and *ENHANCE®*) (see Figure 3).

Adjuvant Type	Surface penetration	Surface spreading	Droplet Size Increase	Crop Safety	Tank Mixing
Seed Oil *PLANTOCROP®*	★★★★	★★	★★★★	★★	★★★
Mineral Oil *ENHANCE®*	★★★	★★★★	★★★★	★★★★	★★★
Surfactant *WETTA 1000*	★	★★★★	negative	★★★★	★★★★
Compatibiliser *AMS*	★	★	★	★★★★	★★★★
Soyal Phospholipids *COHORT 700®*	★★	★★★	★★	★★	★★★★

Table 1: Relative properties of various adjuvant types.



WATER + AMS
7.5% Coverage,
19% Predicted,VMD 150um,
Spray Quality (Fine)

ENHANCE®
26.8% Coverage,
28.6% Predicted,VMD 350um
Spray Quality (Coarse)

WETTA 1000
28.1% Coverage,
23.01% Predicted,VMD 200um
Spray Quality (Medium)

ANTIEVAP®
23.5% Coverage,
23.1% Predicted,VMD 300um
Spray Quality (Coarse

X-SEED®
29.8% Coverage,
23.01% Predicted,VMD 400um
Spray Quality (Coarse)

PLANTOCROP®
18.4% Coverage,
23.0% Predicted,VMD 400um
Spray Quality (Coarse)

COHORT® 700
23.5% Coverage,
23.1% Predicted,VMD 300um
Spray Quality (Coarse)

Figure 3: Effect of adjuvant type on spray quality.
(SACOA Fallow Trial December 14)

TOOLS TO OPTIMISE SPRAY JOBS

There are a couple of handy tools that are available to ensure the boomspray is set up to achieve the best possible weed control.

SnapCard app

This app is available for download on Apple and android devices, it allows a photo of water sensitive paper to be taken with a mobile phone and will calculate actual and estimated coverage.

Water sensitive paper

These cards are a useful tool to measure droplet size and coverage. Try and replicate actual target orientation by attaching to leaves or on ground.

Weather meter

Critical for understanding whether conditions, particularly wind speed and Delta T are suitable for spraying.

REFERENCES

- SACOA Fallow Trial, December 2014
- Agvivo Demonstration Trial Avon Valley, June 2014.

FIND OUT MORE

Further information is available at www.sacoa.com.au or by contacting SACOA on 08 9386 7666 or contact your local SACOA representative;

- Jamie Cox
  North Eastern Regional Manager
  0427 100 065
- Damon Fleay
  Western Regional Manager
  0427 425 702

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