

Fallow weed spraying — minimising spray drift

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Last summer was a particularly difficult season for fallow weed spraying, with few 'ideal spray days' and numerous reports of crop damage due to drift from a range of herbicides. Data from the Bureau of Meteorology at Moree confirm that

spraying conditions were very difficult.

In December 2003, the 9.00 am readings indicated that wind speed was over 15 kph on 26 days although delta T was less than 10°C on only two days. The 3.00 pm reading indicated wind speed was below

15 kph on 14 days (and between 10 and 15 kph on another 14 days), but the delta T was less than 10°C on 28 days. The data indicates that at these times of the day, spraying conditions were not suitable.

At 9.00 am, the delta T was suitable on most days, but the wind speed would have led to spray drift unless suitable drift reduction techniques were applied. The data clearly indicates that weather conditions around 3.00 pm were not suitable for spraying (low delta T). Weather conditions in January and February were similar.

DRIFT REDUCTION

One drift reduction technique is to increase droplet size and change to a coarser spray quality. The easiest way of achieving this is to change to nozzles with a larger orifice or to pre-orifice or air induction nozzles.

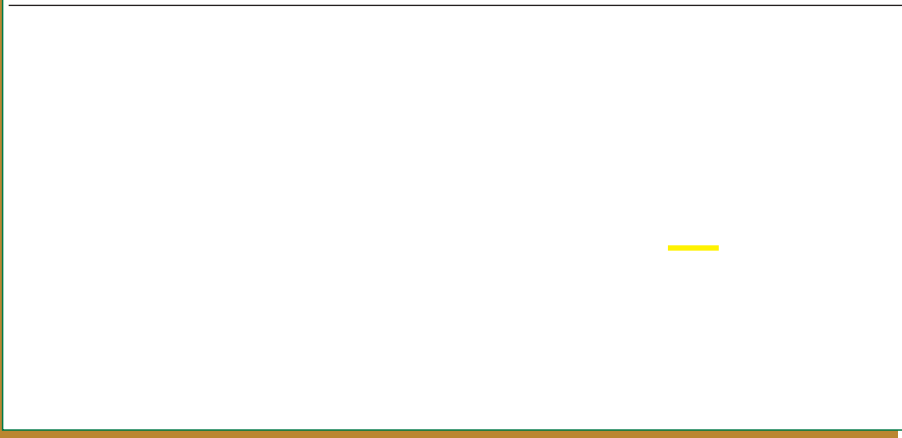
In an attempt to better understand the impact of nozzle selection on the performance of its products, Nufarm has been conducting a series of trials aimed at finding the best balance between water volume, pressure, travel speed, spray coverage, and efficacy while also minimising off target

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There weren't many suitable spraying days last season.

FIGURE 1: Roundup PowerMax comparison of Teejet XR 11002 and Turbo Tee-jet 11002 nozzles



loss. The trials have been conducted in both the wind tunnel and in the field with a range of nozzles including flat fan, pre-orifice and air induction nozzles. The work is ongoing, with the winter trials to be completed shortly.

Some of the data already generated is presented here. The data presented in Figure 1 was generated in the wind tunnel for Roundup PowerMax and indicates that nozzle selection can have a significant impact on reducing spray drift. An increase

in the volume mean diameter (VMD), and a reduction in the 0.1 VMD and percentage of droplets less than 141 microns was achieved by changing from an XR Teejet 110-02 to a Turbo Teejet 100-02 nozzle.

The driftable component (droplets less than 141 um) was reduced from 38 per cent (XR 11002 nozzle) to 12 per cent (TT11002 nozzle). The spray quality category shifted from fine to coarse, reducing the risk of off target drift.

A similar trial was conducted with Surpass (Figure 2), which again reflected a

shift in spray quality from fine to coarse with a change in nozzle selection. In the wind tunnel, Surpass (2,4-D IPA) was applied through XR Teejet 11002, Turbo Teejet 11002 and Agrotop Airmix 110-02 nozzles at the same pressure and water volume.

The VMD varied from 213 um for the XR nozzles to 333 um and 353 um for the TT and AM nozzles respectively. The spray quality category shifted from fine to coarse. The driftable component was reduced from 23 per cent for the XR to eight per cent (TT) and 4.9 per cent (AM).

The preliminary data generated in these trials indicates that careful consideration of nozzle selection should be made when making decisions about spraying fallow weeds. Off target drift can be significantly reduced by changing from conventional flat fan nozzles to pre-orifice or air induction nozzles.

But careful consideration of all the spraying parameters is critical in managing droplet drift:

- Spray volume;
- Pressure;
- Speed;
- Release height; and, most importantly,
- Weather conditions (especially temperature, humidity, delta T and wind direction).

FIGURE 2: Surpass: Spray quality comparing three different nozzles

