

# KEEP YOUR DROPLETS TO YOURSELF

Spray right or don't spray at all

## Stop spray drift with these tips

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Crop protection chemical application is fundamental to conservation and sustainable cropping systems, helping to control weeds, diseases, and pests to maximise crop yield and quality. A major risk of poor chemical application is spray drift. There is a substantial risk of damage to surrounding sensitive areas on both your own and on neighbouring businesses. Non-target sensitive areas include viticulture and horticulture crops, broadacre crops and pastures, waterways, native vegetation, animals and local townships. Growers must adopt industry accepted best practice strategies and equipment to eliminate spray drift and off-target damage.

Poor chemical application practices, such as spraying in the wrong weather conditions (i.e., hazardous temperature inversions), at high speed or incorrect equipment set-up can result in spray droplets drifting tens of kilometres from the application site. Off target spray damage must be prevented at all costs. Spray drift can cause economic damage to others, damage to the environment and communities and places unnecessary pressure on ensuring future responsible access to current and new chemistry.



## 1) CHOOSE PRODUCTS CAREFULLY

Understand the coverage requirements, the mode of action, formulation type and adjuvant required of each product you are applying. Read and follow the crop protection product label for what is legally required regarding spray quality, the use of buffer (no-spray) zones and wind speed during application. Product labels are legal documents and need to be adhered to. Discuss any concerns with your agronomic adviser.

## 2) MONITOR WEATHER

Use weather forecasting and real-time weather measurement tools to assist in implementing your spray plan:

- Understand and measure the wind speed and direction before and during your spraying.
- Pay close attention when Delta T drops below or increases to greater than 8.
- Delta T Below 2 means that small droplets with high concentrations of active ingredient can remain suspended for many hours increasing the time they are vulnerable to drift.
- When Delta T is too high (i.e. > 8) water evaporates rapidly away from the droplets, the droplets shrink and the concentrations of active and adjuvants increase. Reducing droplet size increases their risk to drift.
- Low overnight wind speeds (less than 11 kilometres an hour) and predictions of dew or frost all indicate the likely presence of a surface temperature inversion.
- Do not spray when the wind direction is toward sensitive areas (crops and environments at risk of spray drift damage) and do not spray when excessive sea breezes develop.

## 3) NEVER SPRAY IN HAZARDOUS TEMPERATURE INVERSIONS

Using on-farm or local weather information, check for hazardous surface temperature inversions. If you don't understand the concept of a temperature inversion, seek expert advice before spraying so that this weather phenomenon is understood and accounted for when deciding if it is safe to spray chemical.

There is a high chance that surface temperature inversions will form later in the day, as sunset approaches, and they are likely to persist overnight and beyond sunrise on many occasions. If the spray operator cannot determine that a hazardous inversion is not present, then no spraying should occur.

## 4) KNOW YOUR SPRAY EQUIPMENT

It is imperative that you and other spray operators you employ understand the equipment they are operating. This is especially true if your machinery is equipped with specific drift reduction technology. If you, your employees or your spray contractor do not understand the spray drift reduction technology, seek support from your machinery provider.

Know the capacity of your equipment to apply crop protection products in a timely and appropriate manner during the season especially when your spraying program is subject to higher-than-normal time pressures (i.e., you are unable to cover the required hectares in a timely manner). If the capacity of your spray equipment cannot keep up with demand, adjustments need to be made to your spray management program (i.e., better planning or increasing the capacity of your spray equipment).

## 5) USE CORRECT DROPLET SIZE

Use nozzles that deliver the coarsest possible droplet size that still ensures efficacy of the product (see the product label for instructions). Be prepared to increase application volumes when coarser spray qualities are required. For example, when using any of the Group 4 herbicides, do not apply with smaller than very coarse droplets, as per the product label.

All nozzles produce some drift. Droplets less than 150 microns are highly susceptible to drift but even larger droplets can become drift prone if reduced in size by evaporation. The following are the range of VMD (Volume Median Diameter) for each droplet size.

VERY FINE	VF	<126 µM
FINE	F	126 TO 225 µM
MEDIUM	M	225 TO 329 µM
COARSE	C	329 TO 440 µM
VERY COARSE	VC	440 TO 524 µM
EXTREMELY COARSE	XC	524 TO 646 µM
ULTRA COARSE	UC	> 646 µM



## 6) LEAVE BUFFERS

Leave unsprayed buffers as per the label directions, or when the wind direction is towards sensitive areas. Always check the label for buffer zone requirements for each product in the spray mix.

## 7) AVOID HIGH SPRAYING SPEED

Avoid high ground spraying speeds when spraying. Speeds above 16 to 18 kilometres an hour with trailing rigs, and above 20 to 22 kilometres an hour with self-propelled sprayers can greatly increase losses and increase the risk of spray drift due to the aerodynamic properties of the spraying equipment and has the potential to affect the efficacy of the spray job.

## 8) CONSIDER BOOM HEIGHT AND STABILITY

Correct boom height above the target is critically important for successful spraying. For example, with a 110-degree nozzle using a 50 centimetre nozzle spacing, the boom height should be 50 centimetres above the top of the stubble or crop canopy in order to achieve the required double overlap of the spray patterns. Boom stability is critical to ensure the application process is performed adequately in terms of efficacy and spray drift prevention. Use height control systems for wider booms and/or reduce the spraying speed to avoid boom bounce.

## 9) KNOW THE RISKS

Growers must be aware that they are liable for any adverse outcomes on others because of their spraying activities. All spray equipment operators have a moral and legal obligation to ensure that their spray applications do not impact other producers, their neighbours, the environment, or their community.

The Department of Primary Industries and Regions SA will pursue all reports of anyone who has either deliberately or negligently caused damage to others by not following regulatory requirements. A breach of the legal obligations around chemical application can carry a maximum penalty of up to \$35,000.

## 10) ALWAYS RECORD

Always measure and keep records of the wind speed, wind direction, temperature, and relative humidity at the start of spraying and at the end of every tank. Label mandated no-spray zones and downwind buffer distances are based on wind measurements at 2 metres above the ground. If possible, check weather station data for temperature inversions.

## 11) REPORTING

The reporting of rogue spray applicators who continually ignore industry mandated spraying practices is essential to the grain industries' stewardship of the pesticides available for use. It is critical that grain producers aspire to achieve no off-target spray damage to neighbouring farms, other agricultural industries, townships, and the environment. Growers can report off-target damage through the Department of Primary Industries and Regions SA on the Agricultural and Veterinary Chemicals Hotline on 1300 799 684 or [pirsa.ruralchemicals@sa.gov.au](mailto:pirsa.ruralchemicals@sa.gov.au).