Keep it On Target

Managing drift in your spray operation

Today, global positioning satellites (GPS) track and map soil profiles, planting, harvest operations and field spraying. New crops varieties contain special herbicide tolerant genes so that cost effective non-selective herbicides can be used on otherwise sensitive crops.

Make no mistake – these new ways of high tech agriculture are the way of the future. However, we must be careful and responsible in keeping that 'cutting edge' technology from becoming the 'bleeding edge' of our daily operations and economic liabilities.

Non-selective herbicide tolerant crops present many opportunities and challenges. The opportunities for more economical, broad-spectrum weed control are obvious. The challenges come when checking what crops and technologies are used in adjacent fields. If the crops in adjoining fields do not have the tolerant gene, then off target drift can cause significant problems.

Have you ever sprayed a non-selective herbicide during a time of the season with so many off-target hazards? What if the adjacent field has a high value biotech crop – could this mean even more liability if the spray drifts off target? These are important questions that applicators must consider in today's high tech agriculture.

Even on traditional crops, some herbicides are highly active. Small amounts moving off-target can be expensive. Expensive if off-target drift results in damage claims on high-value neighbouring crops and expensive if the spray does not hit and control the intended target. The bottom line – nothing good comes from off target drift.

The ultimate contributing factor in off-target drift is spray fines – the small mist type spray particles that easily move in the wind and drift off-target. Spray particle size is measured in microns. Fine spray particles are generally defined as spray droplets that are less than 150 microns in diameter. Under windy conditions these 'fines' easily move away from the target.

If conditions are poor, larger particles drift too. If equipment is not set properly, nozzles can produce a high percentage of fines, which means more chance for drift. Table 1 provides some typical reference information with respect to spray droplet size.

Table 1.

Droplet Diameter	Type Of Droplet	Droplet Per Sqare Inch	Drift Distance For 10 Foot Fall*
20 microns	Wet Fog	144,000	1109 ft.
100 microns	Misty Rain	1150	45 ft.
200 microns	Light Rain	144	15 ft.
1000 microns	Heavy Rain	1	5 ft.

So how can you prevent and manage drift? There is one basic fact to keep in mind about spray drift – all sprays can drift to some extent. No matter how many precautions you take, spray drift cannot be totally eliminated. With proper management, occurrences of spray drift can be limited with minimal effect.

Effective spray drift management boils down to a three-step process. Unless steps are taken with each spray application, then the applicator may fail to completely manage drift.

First, use common sense and good judgment when deciding where and when to spray. Environmental conditions such as wind speed and direction can significantly influence spray drift. No other management tool can overcome poor judgment in a spray drift situation. This is the first and most important step in the spray management process.

Second, use proper equipment set and calibrated according to specifications. Spray volume and pressure, nozzle selection and orientation parameters are clearly identified on most manufacturers' guides. These instructions are designed to maximize spray performance by efficiently and effectively delivering the selected product to its target. Proper equipment selection and set up is a critical spray management process.

Third, use a spray drift management adjuvant and deposition aid to round out the process. New generation, highly effective drift management adjuvants are now available. They modify the viscosity of the spray water resulting in less drift and more product on target. The treated water generates a spray droplet that is less susceptible to off target movement.

The way most drift management adjuvants work is to increase the overall size of the spray particles thereby reducing the percentage of driftable fines.

A measurement used to indicate overall spray droplet size is the *volume mean diameter* (VMD). VMD determines the midpoint droplet size in a given spray application. A desirable VMD measurement might be 350 microns for some applications.

As the VMD goes up, the percentage of driftable fractions goes down. However, as VMD goes up, there are usually fewer total droplets and at some point a VMD could become so large that it begins to disrupt spray pattern and ultimately performance.

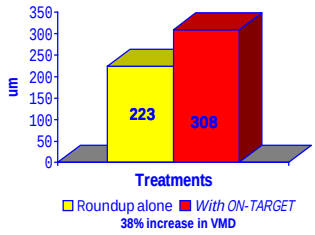
Research shows these effects when a drift management product is mixed with Roundup herbicide. The VMD in Figure 1 increased by 38% when ON TARGET was added to the spray mixture. In this test, the volume of driftable fines (Driftable Fraction – below 100 microns) reduced by 46% (Figure 2).

Margins for error can be managed by following the simple three-step process to good spray management 1) Good judgment, 2) Proper equipment, 3) Use ON TARGET drift management adjuvant. Successful spray professionals make these steps a part of each application.

Manage drift with On Target

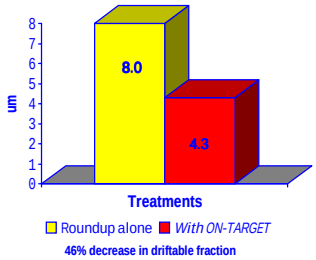
VMD Comparison* **(µm)**

***Volume Median Diameter**



Driftable fraction

(% volume <100 µm)



(Ref: Dr. Steve Parkin, Silsoe Research Institute, Bedford UK., 2001)

Without *ON TARGET*

With *ON TARGET*

Precision agriculture means less room for mistakes. Margin for error can be managed by following a simple three-step process to good spray management 1) Good judgment, 2) Proper equipment, 3) Use ON TARGET drift management adjuvant.
Successful spray professionals make these steps a part of each and every application.

On Target drift management agent

NORAC CONCEPTS INC.
P.O. Box 31097, Guelph, ON N1H 8K1 T (519)821-3633 F (519)821-2083 www.noracconcepts.com