



New application technologies slash herbicide drift

What's been learned from researchers, manufacturers, farmers and applicators to control drift.

Researchers today are transforming weed control with new precision tools and application techniques that can keep herbicides precisely where they belong, according to the Weed Science Society of America (WSSA). As a result, farmers are able to optimize the performance of herbicides and minimize what drifts off target as they are being applied.

One of the latest breakthroughs involves low-drift nozzles that can significantly reduce the proportion of very fine or small spray droplets that are susceptible to drift.

"These low-drift nozzles are really having a revolutionary impact," says Dr. Tom Wolf, a research scientist with Agriculture and Agri-Food Canada (AAFC) in Saskatoon and a member of WSSA. "Research shows we can reduce the spray that drifts away from its target to less than 0.5 percent of the applied amount. That's a decrease of more than 80 percent compared to conventional sprays."

The secret is a design that reduces the internal operating pressure of the sprayer nozzle and mixes air into the herbicide spray as it is applied.

"We've seen nearly 100 percent adoption among custom applicators in Canada, and up to 50 percent of the more innovative growers on large farms are using them as well," Wolf says. "They have clearly found the devices work well in their operations."

Still, there are obstacles to even broader adoption. Not all weeds and all herbicides respond the same way when changes are made to reduce the number of very fine spray droplets.

"It can be tough to provide practical recommendations to applicators on diversified farms," Wolf says. "But scientists are meeting that challenge by communicating their research findings to herbicide manufacturers and applicators alike. We're finding low-drift sprays can be used successfully in the majority of situations an applicator is likely to encounter."

Robert Klein, a WSSA member and crop specialist at Nebraska's West Central Research and Extension Center, recommends combining multiple drift control strategies in order to achieve optimal results. Here are eight proven techniques he recommends:

Increase spray coarseness. Switching to low-drift nozzles has a large impact on drift. For traditional nozzles, lowering pressure can also increase droplet size and reduce drift. There is a fine line, however, between droplets that are too small, causing excessive drift, and too large, providing insufficient coverage. Look to your nozzle manufacturer for guidance on the recommended pressure. Low-drift nozzles typically require a higher pressure to operate properly.

Gauge the weather. Environmental factors can be critical to the control of spray drift. Klein cites wind speed as one important example. “When wind speed increases, so does the potential for drift downwind of the sprayer,” he says.

Today’s ultrasonic weather sensors can help. A far cry from yesterday’s rudimentary weather vanes, sensors measure air temperature, humidity, dew point, barometric pressure, wind chill, wind direction and wind speed. The units are extremely compact and can be mounted inside a sprayer cab. That means the applicator has continuous, up-to-date weather data and can apply herbicides when they are least likely to drift.

Control the flow. Modulated flow controls reduce drift by rapidly pulsing each spray nozzle on and off. This allows pressure and droplet size to remain constant as the sprayer moves across the field at various speeds.

Rev up the air speed. Air-assisted sprayers emit a high-velocity, downward air stream that pushes the spray droplets directly onto the targeted weeds or treatment area. As a result, they can reduce drift if used properly.

Create a buffer. Untreated zones around fields can serve as buffers that keep drift away from off-target sites.

Add drift retardants. If you use a traditional sprayer, special additives can be used to reduce the number of fine droplets. Make certain, though, that you select an additive especially designed for the type of nozzle and herbicide you use. Certain additives can be a minus when used with the wrong nozzle tip.

Hood your sprayer. By mounting hoods around the nozzles on a sprayer boom, you can create a physical barrier that reduces spray drift. It’s a simple but effective technique.

Monitor the boom height. Extension specialists recommend keeping booms close to your weed target in order to decrease the possibility of downwind drift. But be careful to follow the manufacturer’s instructions so you maintain the uniform spray pattern and coverage needed to control weeds effectively.

“Each of these approaches has its strong points,” Klein says. “In order to make sure we’re using the optimal combination of techniques for each scenario, it is important for scientists, applicators, farmers and manufacturers to communicate closely and share best practices.”

For more information on WSSA, visit www.wssa.net. 

Courtesy of: Weed Science Society of America