

CAN YOUR SPRAYER HANDLE PESTICIDES OF THE FUTURE

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The new breed of pesticides available to the professional turf grass manager is exciting. However, trying to evenly apply compounds such as growth regulators, selective herbicides that kill grass in grass, and compounds so active it takes only 1/3 to 1 ounce an acre, we must be precise in calibration and have an accurate spray system.

A precision spray system needs to blend six important functions: Nozzles, swath width uniformity, agitation, controls, pumps and safety.

NOZZLES

It is important to understand the mode of action of pesticides when selecting nozzles. If the pesticide needs to be foliar applied, use nozzles or pressures that generate smaller droplets that cling to foliage. If the pesticide or fertilizer needs to reach the surface or shoot area, use a nozzle that produces larger droplets that will roll off the leaf's surface to the ground.

Another important note when nozzles require screens is to make sure screens are frequently checked because flow can be altered 30 to 50% without visual detection as you watch the nozzle spraying.

Some common nozzles in turf application are MeterConeTM (Chem-Farm, Inc.), Flat Fan (Spraying Systems and Delevan), RaindropTM (Delevan), FloodjetTM (Spraying System and Delevan). MeterConeTM Nozzles produce a 120° wide, hollow cone pattern for excellent directional coverage. The pattern width does not vary with pressure changes. This allows for lower pressure with larger droplet or higher pressure with smaller droplet applications with the same nozzle without changing spacings or boom height. Large orifices eliminate the need for nozzle screens and help eliminate plugging. The wide angle, hollow cone pattern allows for varying boom height and boom tilting without affecting the spray pattern. One hundred percent overlap and 30° angle MeterCone nozzles are recommended.

FLAT FAN NOZZLES

Spraying Systems introduced the XR Teejet VS Flat Fan. The XR means extended pressure ranges without changing the 80° pattern of the most common Flat Fan. VS is for Visi-FlowTM color coding on the nozzles. It is important to angle the Flat Fan to avoid pattern collision. Also it is important to keep the boom height at the recommended height and the boom level to avoid skips and heavy application streaks. Match screens to the nozzles according to the application guide. Use as large a screen as recommended to avoid flow restrictions due to plugged screens. When using an 80° Flat Fan, use 30% overlap. A twist of the nozzles is recommended to avoid pattern collision.

RAINDROPTM NOZZLE

The Raindrop has a 140° wide hollow cone pattern. The nozzle produces large droplets at low or high pressure spraying. The hollow cone design allows for larger orifices and screens are not needed. The wide hollow cone allows for varying boom heights and angles without affecting the spray pattern. One-hundred percent overlap and 45° angle on the nozzles are recommended.

FLOODJET

The large, single Floodjet produces a wide pattern, depending on pressure, up to 20 plus feet. The pattern generated is 50% heavy on each edge of the pattern. It is important to know this if streaking occurs.

SWATH WIDTH UNIFORMITY

For accurate application, a spray boom needs uniformity across the entire boom. Two points are important for swath width uniformity.

First, run equal length feed lines large enough to prevent friction loss to all sections of the spray boom. Do not run a one foot piece to the close center section and 12 foot pieces to the wings of the boom. The short hose will flow more.

Secondly, when you reach the boom section, split the flow to the nozzle section with a manifold and single hose to each nozzle, feed the boom in the center of each section, or make sure you have large feed lines that will not cause friction loss.

NOTE: The only way to determine if your spray system is flowing evenly is to catch the nozzle flow across the entire boom and make sure each nozzle has the same flow. CAUTION: Greater gallons per acre or more viscous solutions increase the friction loss.

AGITATION

Whether using hydraulic agitation or mechanical agitation, make sure you have adequate mixing of your pesticides. Premixing pesticides to make sure they are in a solution before pouring into a sprayer is recommended and will greatly help keep pesticides in solution or suspension.

CONTROLS

Controls are becoming increasingly important when applying pesticides. Controls allowing the operator to shut sections off and to change pesticide rates by increasing or decreasing pressure where appropriate, is becoming increasingly important. Rate controlling monitors are good tools for the spray operator, but they will not make a poor spraying system more accurate without the other five categories that make a precision spraying system. A \$2500 saddle will not make a broken down mule win the Kentucky Derby.

PUMPS

Make sure your pumping system is providing enough flow to feed the nozzles and agitation. Also, if an engine is used to power the pump, make sure your engine speed does not fluctuate causing pressure increases and decreases that will affect your application rate.

SAFETY

Make sure you have done all you can to make sure your spray system is safe. Provide a safe way to drain your sprayer. A hose running to a ball valve is better than a plug in the bottom of the tank. Mount your sprayers securely on your vehicles to avoid sliding of the unit. Use nozzles that resist plugging so the operator does not need to keep cleaning them. Use self cleaning filters to avoid the need to unscrew the canister filters. Wear appropriate protective gear.

CALIBRATE YOUR SPRAYER

Determine with your nozzle application guide how many ounces per minute a new nozzle should apply at a given pressure. Catch the flow. If the flow is not correct adjust to the pressure that provides the correct ounces. Change nozzles, clean screens, or adjust feed lines to correct nozzles that are inaccurate.

SUMMARY

A precision spray system needs nozzles, swath width uniformity, agitation, controls and safety. Every sprayer needs these features. If your spray system lacks one of these categories, improve that area.

The pesticides of the future need precision application.