

Nozzle Damage From Improper Cleaning Can Cause Sprayer Problems

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— Improperly cleaning a sprayer nozzle can cost a lot of money in misapplied pesticide applications, according to a recent demonstration provided as part of an afternoon series of workshops conducted midweek at various Lancaster County sites.

In one case, a few seconds spent cleaning debris out of a brass flat fan nozzle with a nail caused a 25 percent disparity in distribution of spray material, according to a demonstration at the John Zimmerman farm in East Earl. The demonstration was provided Wednesday afternoon to 16 farmers by Jeff Stoltzfus, adult farmer instructor for the Eastern Lancaster County School District.

The workshops, sponsored by the Lancaster County Conservation District, showed the workings of an array of different types of nozzles and some of the important steps applicators can take to ensure their nozzles are proper for the application and are clean and ready to use.

Sprayer testing should be conducted after nozzle inspection. According to Stoltzfus, applicators should use either pressurized air to

clean the nozzles or a simple toothbrush. Using a piece of wire or nail, according to Stoltzfus, can damage the nozzle and effect the spray rate significantly.

Applicators have a wide range of nozzle types to choose from, including brass, stainless steel, plastic, or ceramic. On most applications, the stainless steel, which costs a little more, will last longer. But the ceramic will last up to 20 times longer under normal applications, according to a sprayer manufacturer representative at the meeting.

Sprayer calibration is necessary and vital, especially in light of new herbicides that have applications down to the fraction of the ounces per acre. In all cases, when calibrating the sprayer, applicators should use only water to determine accuracy of delivery (speed of sprayer) and pressure.

Applicators need to ensure that the pattern of spray is uniform and overlaps about 40-50 percent. Also, the nozzle should be set 10 degrees off the boom in order to ensure no heavy streaks where the two sprays come together. Inspect the spray delivery on asphalt or fine gravel.

The height of the sprayer is significant. For foliar application

with smaller droplets, the sprayer needs to be positioned at a lower height. For applications requiring a larger droplet, the boom can be set a little higher if there is no worry about wind and sprayer drift, according to Stoltzfus.

Stoltzfus and applicator John Zimmerman provided a demonstration of how to check sprayer calibration. A 14-row boom spray calibration was done. "There are a number of different ways to calibrate sprayers," said Stoltzfus.

Stoltzfus said that, according to a recent survey, 70 percent of sprayers had some form of applica-

tion problem. A high percentage showed great variability across the boom for whatever reason, he said.

To calibrate a sprayer, first mark a straight line measuring 204 feet. The boom sprayer, with nozzles on 20-inch centers, is towed by tractor at full throttle at a speed of 5 miles per hour. If the sprayer is set right, and the speed is maintained for that distance, about 16 ounces should be collected at exactly 26 seconds of flow time. This works out to a 16-gallon-per-acre application rate.

To measure flow, a simple measuring cup can be used, or bottles

can be placed under each nozzle to determine volume. Another method would be to use a tip flow meter, also called a tip tester, which measures flow from the nozzles in gallons per minute.

Applicators should keep in mind that if calibrating for liquid nitrogen, flow rates should be adjusted because of the greater density of liquid nitrogen compared to water.

Applicators should check for blocked, cracked, or otherwise damaged hoses. Pressure should be consistent up and down the line, said Stoltzfus.

(Turn to Page A33)



For backpack sprayers, the same applies for checking nozzle spray area (10 inches recommended) and hoses for even pressure and flow rate. Bob Anderson, Lancaster crops agent, left, checks the starting time for Travis Martin, conservation technician.



To calibrate a sprayer, a straight line is marked at 204 feet. John Zimmerman is on the tractor driving a boom sprayer with nozzles on 20-inch centers. The tractor is in full throttle at a speed of 5 miles per hour.



Dan Marini, Zeneca technical sales representative, provided information on calibrating pesticide hoppers. Marini emphasized the importance of taking the right steps to ensure safety when applying pesticides.



Jeff Stoltzfus, center, helps applicators check volume of spray to determine correct calibration. "There are a number of different ways to calibrate sprayers," said Stoltzfus.



To measure flow, a simple measuring cup can be used, or bottles can be placed under each nozzle to determine volume. Here, applicators hold measuring cups underneath the boom.