Are You Replacing Your Nozzles?

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As I write this article, our agriculture community is alive with activity. Tractors are busily preparing fields for planting, fertilizer trucks can be seen on the roadways moving from one location to another, and along with new crops comes the concern about controlling pests. Of course pesticides are just one option that is available for controlling pests, and the equipment that is used to apply that pesticide is just as important as utilizing the correct pesticide.

Just like all equipment, spray rigs need maintenance and repair. It is recommended that the spray rig be checked prior to and after extended storage, as well as after each use. Are you wearing your PPE or personal protective equipment? Make sure to always wear your PPE when checking, maintaining, and repairing a spray rig. Now that you have your PPE on, let's make sure to check the system from the spray tank all the way to the nozzles, of course only with water in the system *NEVER* with pesticides. Look for damages and leaks to the spray tank, pump, pressure gauge, hoses, strainers, fittings and nozzles. All worn out parts, such as hoses, fittings, nozzles and others, should be disposed of properly and not reused for any other purpose.

Did you know that a worn nozzle can still visibly show a uniform spray pattern? Often times we do not think about replacing nozzles until there is a non-uniform spray pattern. However nozzles are constantly wearing due to how many hours of spraying is done, if fertilizers are used, and what types of pesticides are sprayed. To accurately determine if a nozzle is worn out or not, calibrate all nozzles against an identical new nozzle. This is done by catching (in a measuring cup typically in ounces) the amount of water delivered from both the old and new nozzle for the same duration of time and at the same pressure. Any nozzle that delivers 10% or more water than the new nozzle is worn out and should be replaced.

For example, say the manufacturer states that the nozzle should provide 40 ounces of fluid per minute at 35 pounds of pressure. Since 10% is the factor determining if a nozzle is good or worn, multiply the ounces (40) by the factor (10%, which is .10), then add to the ounces (40) and subtract from the ounces (40) to determine the upper and lower range. (40 ounces x .10) = 4 ounces. Then 4 ounces + 40 ounces = 44 ounces and 40 ounces – 4 ounces = 36 ounces. Therefore, any flow that is collected for the duration of one minute at 35 pounds of pressure and is between 36 ounces and 44 ounces would be considered a good nozzle. Anything above or below this range would be considered a worn nozzle and should be replaced. Nozzles that provide low flow could also be plugged, it would be worth cleaning the nozzle and testing it again.

Of course, not all nozzles are created equal. Nozzles are made out of five different materials which are brass, plastic, stainless steel, hardened stainless steel and ceramic. In terms of cost, plastic nozzles are usually the cheapest and hardened stainless steel is the most expensive.

However, in terms of durability, also known as nozzle life, brass is the shortest lived followed by plastics, stainless steel and hardened stainless steel, while ceramics are the longest lived spray nozzle. Unfortunately nozzle life cannot be reported in years of use due to variable factors such as how many hours of spraying is done, if fertilizers are used, and what types of pesticides are sprayed. Therefore,

nozzle life utilizes the brass nozzle as a standard to compare against, for example plastics are considered 2-3 times the life of brass.

When was the last time you replaced the nozzles on all the spray equipment? Properly maintained and calibrated spray equipment will save you time, less headaches during application and assurance of correct application. So carve out some time this spring and get all your spray equipment maintained and ready for the busy season ahead.