

Chemical Savings - Part 1 – Nozzles

Start with the label.

Check the chemical labels to make sure dilution ratios and application rates haven't changed. Work closely with your PCA and chemical suppliers to ensure safe and effective use of the products you spray.

Proper nozzle alignment.

We see equipment come through our facility for service that have nozzles secured to the boom with tape, hose clamps or baling wire. It's not uncommon to see booms with three different types and/or sizes of nozzles and with one end of the boom 6" higher than the other. If nozzles aren't properly aligned the patterns may hit each other and you will end up with heavy doses of spray material where the patterns met and light areas in between. This costs you money and compromises the effectiveness of the application.

Spray Boom - Top View



If the nozzles are aligned parallel to the structure the spray patterns would intersect and cause streaks. This image slightly exaggerates the proper pattern alignment. With threaded style nozzle caps/bodies this angle needs to be adjusted manually. Quick connect, (1/4 turn), nozzle caps/bodies come pre-aligned.

Select the proper nozzle for the application.

Make sure the nozzle design is correct for the application. There are nozzles for all sorts of applications. You see nozzles similar to those used in agriculture in car washes, grocery store produce departments, machinery lubrication and for applying industrial coatings. Nozzle patterns can be flat fan, offset, full cone, hollow cone, straight stream and some even create swirling action. Consult with your Pest Control Advisor or the technical department of the Chemical Manufacturer. Your local branch of the Department of Agriculture will also have information regarding proper use and handling of chemicals commonly used in your region. Most, if not all, nozzle manufacturers offer nozzle selection guides that categorize by a variety of factors: chemical type, whether it's a systemic or contact material and offer information regarding droplet size for drift issues.

Generally, broadcast nozzles are a “tapered” design pattern. That means that the bulk of the material is applied to the center and the pattern tapers out at the ends. Tapered pattern nozzles were specifically designed to overlap between 30% and 50%.



Nozzle with tapered pattern

Make sure you don't reach into the wrong bin when you're buying new nozzles. “Even” pattern nozzles look just like the tapered styles. Even pattern nozzles are used for banding applications and apply a consistent amount of material. If even nozzles were set up with overlap you could apply twice as much material than your application requires. Even pattern nozzles usually have the letter “E” following the model number.



Nozzle with even pattern

Worn nozzles.

All nozzles will wear regardless of the material they are made of, or the material being sprayed. Nozzles that have a ceramic orifice will last the longest, followed by hardened stainless steel, stainless steel, brass and poly. Prices are relative, but you may find if you are spraying an abrasive material nozzles made from harder materials a well worth the added expense. Wettable powders and granular materials may wear nozzles faster depending on how well they emulsify. It's a good practice to check your nozzles, regardless of material, prior to the season's first spray session. If you spray a great deal of acreage or a lot of abrasive chemicals you might want to check for wear after a certain number of acres or hours.

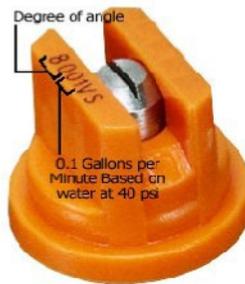
Checking nozzles for wear.

With the system clean and tank filled with clean water, turn on your spray boom and visually inspect each nozzle. You are looking for a nice even pattern that overlaps as previously mentioned. Have someone pull the sprayer across a dry concrete pad or blacktop while you follow along. Look for consistent evaporation the entire width of the boom.



It is recommended that you purchase a nozzle exact to the nozzles you are currently using to check nozzles for wear. Install the new nozzle next to a used nozzle and catch the material out of each for 30 seconds with a calibration, (measuring) cup. If there is 10%, or more, coming out of the used nozzle then it's time to change nozzles.

If you don't have a new nozzle for comparison's sake remove a nozzle from the boom. There will be a series of numbers on the face of the nozzle. The last part of this number is the nozzle output based of 40 psi. Replace the nozzle and catch for 60 seconds the amount you catch should, once again, be within 10% of the nozzles gallon per minute rating. An 8001 nozzle, 80 degree pattern and 1/10th of a gallon per minute should give you just a hair under 13 ounces.



The hour or so you spend checking nozzles for wear will prove well worth it. In the next tip, Nozzle Care, we'll go over other ways to save on chemicals with how to properly clear clogged nozzles, pressure variances and spray rate controls.

If you have any questions, concerns or would like to share something that you have found helpful in your spraying practices e-mail to: pbm@pbmsprayers.com.

Spray tips offered by PBM are from our experiences, some are input we have received from our customers and other spray equipment operators who wish to share successes they have had. We hope these tips help you, but cannot accept liability for any damage to property or individuals should you choose to use them in your spraying practices.