

## **DRIFT REDUCTION NOZZLES**

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Recent developments in spray nozzle technology have increased deposition efficiency of the more effective small droplets while reducing the potential for drift. In general, this has been accomplished by using nozzles/atomizers and air-assist technology. Here is a look at some of the different nozzle design mostly for reducing the number of small, drift-prone droplets. Nozzles producing spray droplets of 300 microns or larger is necessary for reducing drift.

### ***Low-Drift Nozzles***

Almost all major agricultural nozzle manufacturers have recently introduced their version of so called Low-Drift nozzles. These nozzles (Drift Guard - Spraying Systems, Rain Drop Fan - Delavan) are designed to create larger droplets at the same flow rate and operating pressure than comparable standard flat-fan nozzles. This has been accomplished by adding a pre-orifice to the nozzle tip assembly just ahead of the conventional discharge orifice. These nozzles will produce an average droplet size of 300 to 400 microns.

### ***Turbo TeeJet Nozzle***

Spraying Systems Co. has introduced a new flat-fan nozzle (Turbo TeeJet) that can be used for the same purposes as a standard flat-fan nozzle. The advantages of the new Turbo TeeJet nozzles are twofold: they can be operated at a wider range of pressures 15 to 90 psi, and they produce fewer drift-prone droplets compared to the same size of a standard flat fan. A hybrid between standard flat fan spray tips and the clog-free flooding nozzles, Turbo TeeJet has a pre-orifice at the tip that slows liquid velocity. The resulting larger droplets are less likely to drift but still provide good coverage with a uniform spray pattern.

### ***Air-Assist Nozzles***

These nozzles are TurboDrop (Greanleaf Technologies), AI TeeJet (Spraying Systems) and Raindrop Ultra (Delavan) These nozzles are designed to produce larger droplets while reducing the percentage of fine droplets. As with other low-drift nozzles, air-assisted nozzles contain a pressure reduction chamber with a narrow port used to draw air into this pressure chamber. As the liquid passes through the orifice plate, as a result of the pressure drop created by this venturi, air is sucked into the nozzle body. In the mixing chamber, air and spray solutions are blended much like a water aspirator. As the liquid is discharged from the nozzle tip, droplets filled with air are produced. Upon leaving the nozzle orifice, the air included in the nozzle expands, which makes the size of droplets somewhat larger and causes an increase in velocity of droplets. In addition to the large droplets having a higher velocity, the nozzles further improves the chances the droplet will reach the target before becoming subject to drift. Another benefit of this nozzle is that the large droplets shatter and splatter on contact, causing the small

air-filled drops to spread out on the target for better coverage. These nozzles will produce an average droplet size of 400 to 600 microns. Total volume applied with these type nozzles should be rates above 15 gpa.

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