

**PERFORMANCE OF DRIFT
REDUCING SPRAY TIPS
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Abstract

The recent development of herbicide tolerant crops and highly active herbicide chemistry has necessitated the employment of precision application. Transgenic weed control programs such as Roundup Ready® cotton (*Gossypium hirsutum*) are valuable new tools, however, the containment of herbicide applications within fields has become even more imperative since herbicide resistant and non-herbicide resistant croplands are often intermixed. Several new spray nozzles have been developed for managing spray drift. These nozzles accomplish this by increasing average diameter of individual spray droplets. This has led to questions relative to their influence on herbicide performance, especially with non-translocated herbicides.

Three studies were initiated near College Station, Texas, to evaluate the effectiveness of two herbicides applied through five different “drift-reducing” spray tips. Roundup Ultra® (glyphosate) was chosen as a representative translocated herbicide for this study and Gramoxone Extra® (paraquat) was selected for its non-translocative (contact herbicide) characteristics. The five spray tips chosen for this study were the XR TeeJet®, AI TeeJet®, DG TeeJet®, Turbo TeeJet® and TurboDrop® tips. A multi-nozzle CO₂ pressurized backpack spraying system was fitted with the appropriate spray tips and calibrated to deliver 12 GPA of spray solution for all treatments.

In the initial experiment, plots (15 x 13.3 ft) infested with a mixed population of tall morningglory (*Ipomoea purpurea*) and sharppod morningglory (*Ipomoea trichocarpa*) (1-4 leaf), and seedling johnsongrass (*Sorghum halepense*) (1-3 leaf) were treated with Roundup Ultra® (1.0, 2.0 pts/A) and Gramoxone Extra® (2.0 pts/A) applied through each of five spray booms fitted with the different nozzle tips. When evaluated seven days after treatment, no significant differences in weed control were shown between any of the spray tips evaluated on any of the weed species with either herbicide. No later evaluations were made due to a flush of weeds that emerged shortly after application. A second study was conducted that evaluated the same spray tips and herbicides examined in the first study. Weed species present included the same morningglory complex previously studied, as well as smellmellon (*Cucumis melo*) (2-4 leaf). Again, no significant differences in weed control were shown between

any of the spray tips evaluated. A third study was established utilizing the same herbicides and spraying systems to measure their effectiveness for controlling ryegrass (2-3 tillers, 3-6" tall). When evaluated 17 days after treatment, no significant differences were shown between any of the treatments utilizing the different spray tips.

The results of these studies indicated that equal efficacy could be expected from spraying systems utilizing any of the five different spray tips evaluated in this study, on the weed species examined. However, it should be emphasized that all applications were made at spray volumes of 12 gallons per acre and that lower spray volumes might show different results. Additionally, it should be mentioned that although no differences between nozzle tips within herbicides or rates were shown, some differences in effectiveness were evident between dosages of Roundup Ultra® and between the two herbicides.