

The Effect of Nozzle Type on Penetration of Fungicides into the Soybean Canopy

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Objective

The objective of this study was to find the effect of nozzle type on coverage of fungicides. Many reports suggest that coverage is very important in controlling soybean rust. Rust starts in the lower canopy, so the ability of the nozzle to penetrate the soybean canopy is very important. Analyzing coverage on water-sensitive paper from different types of nozzles may deem important in controlling rust.

Background

Cooperator:	Tom Weiler	Soil Test:	pH = 6.1
County:	Morrow		P = 72 ppm
Nearest town:	Chesterville		K = 270 ppm
Drainage:	Systematic Drained	Fertilizer:	None
Soil Type:	Sloan Silt Loam	Herbicides:	Glyphosate - twice
Tillage:	Conventional	Planting Date:	May 9, 2005
Previous Crop:	Corn	Planting Rate:	198,250 seeds/A
Variety:	Pioneer 93B67	Row-width:	10-inch
		Harvest Date:	October 31, 2005

Method

This study consisted of four replications in a randomized complete block experimental design. The treatments were applied on August 2nd. Treatments were applied using a 10-foot hand-held sprayer pressurized using carbon dioxide. The total volume of 15 gallons per acre was applied to all treatments.

All treatments were applied at 40 psi with the exception of the XR nozzle where 30 psi was used. Water sensitive paper was set in each treatment at 12, 24, and 36-inches off the ground. The soybeans were 40 – 46 inches tall. The coverage on the water sensitive water was rated as 9 = best and 1 = no coverage.

Results

<u>Treatment</u> (Nozzles)	<u>PSI</u>	<u>GPA</u>	<u>MPH</u>	<u>Spray Quality Class</u>	<u>Coverage Rate**</u>		
					<u>36-inch</u>	<u>24-inch</u>	<u>12-inch</u>
Air induction							
AI 11002	40	15	4	Very Coarse	4	4	3
Flat Fan	30	15	3.37	Medium	5	5	3
XR 8002							
Twin Jet	40	15	4	Fine	9	9	9
TJ60-8002							
Turbo TeeJet	40	15	4	Medium	7	7	7
TT11002							
Cone TX12	40	15	4	Medium	6	4	4
Turbo TeeJet	40	15	4	Medium	7	7	3
Duo with two TT11001							

** The rating scale was 9 being the best and 1 being no coverage

Summary

In this one-year test the twin jet nozzles provided the best coverage on the water-sensitive paper at all heights. The nozzle that produced the poorest coverage was the A. I. nozzles. The rest of the nozzles performed similar.

More replications of these treatments and other scenarios (volume, pressures, nozzles, etc.) should be studied.

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