

## Impact of nozzle type and spray volume on weed control using Liberty 280 herbicide in soybeans in southeast Minnesota in 2015.

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The objective was to evaluate nozzle type and spray volume impacts on weed control with Liberty 280 herbicide (contact) in soybean in southeastern Minnesota. The research site is a Lawler loam series with pH of 6.6, O.M 2.1% and soil test P and K levels of 49 ppm and 137 ppm, respectively. In the spring the field was disked and field cultivated once prior to planting. The previous crop was fallow. The soybean variety was Stine 19LF62 LibertyLink and was planted June 2, 2015 at a depth of 1.5 inches in 30 inch rows at a rate of 135,000 seeds per acre. A randomized complete block design was used with four replications. Postemergence treatments (POST) were applied with a tractor-mounted sprayer delivering 7.5 gpa at 36 psi and 15 gpa at 36 psi using 4 different spray tips from TeeJet. The four spray tips included a Turbo Teejet (medium droplets), a Turbo Teejet Induction (ultra-course droplets), a Turbo TwinJet (course droplets), and Turbo TwinJet Induction (course droplets) nozzles. All nozzles were in the 11002 size category with the same ounces per minute flow rate. Applications were made to large weeds in order to accentuate control differences between the nozzle types and application volumes. Application dates, environmental conditions, and weed stages can be found in Table 1. Evaluations of the plots were taken July 21. Performance ratings for weed control can be found in Tables 2. A 1-5 rating scale was utilized to assess weed control. A score of 1 = Poor, 2 = Fair, 3 = Good, 4 = Very Good, and 5 = Excellent control. (University of Minnesota Extension Regional Office, Rochester.)

### Conclusions:

Spray volume was the single most important factor for improved weed control. At 15 gallons per acre all nozzles performed equally. Only one nozzle the Turbo TeeJet performed equally well at both the 7.5 and 15 gallon per acre volume. This nozzle is the only nozzle tested in the medium sized droplet category. Split pattern nozzles did not improve weed control at either spray volume in this trial.

**Table 1. Application date, environmental conditions, and weed stages**

Date	7/2
Treatment	POST I
Temperature (F)	
Air	68
Relative Humidity (%)	56
Wind (mph)	6
Soil Moisture	Normal
Soybean	
Stage	V4
Height (inch)	8
Giant Ragweed	
Height (inch)	15
Common Waterhemp	
Height (inch)	5
Rainfall after each application (inch)	
Week 1	0.69
Week 2	0.30
Week 3	1.64

**Table 2. Weed control of nozzles at 7.5 and 15 GPA in soybeans at Rochester, MN in 2015.**

Pest Code	Rating Date	Rating Type	Weed Control Scale 1= Poor, 5 = Excellent	ALL SPP Jul-21-2015 CONTROL 1-5
No	Name	Rate	Unit	
1	TT 11002 @ 7.5 GPA LIBERTY 280 Ammonium Sulfate	32 3	fl oz/a lb/a	3.4 a
2	TT 11002 @ 15 GPA LIBERTY 280 Ammonium Sulfate	32 3	fl oz/a lb/a	3.3 a
3	TTI 11002 @ 7.5 GPA LIBERTY 280 Ammonium Sulfate	32 3	fl oz/a lb/a	2.9 bc
4	TTI 11002 @ 15 GPA LIBERTY 280 Ammonium Sulfate	32 3	fl oz/a lb/a	3.3 a
5	TTJ60 11002 @ 7.5 GPA LIBERTY 280 Ammonium Sulfate	32 3	fl oz/a lb/a	2.6 cd
6	TTJ60 11002 @ 15 GPA LIBERTY 280 Ammonium Sulfate	32 3	fl oz/a lb/a	3.1 ab
7	AITTJ60 11002 @ 7.5 GPA LIBERTY 280 Ammonium Sulfate	32 3	fl oz/a lb/a	2.4 d
8	AITTJ60 11002 @ 15 GPA LIBERTY 280 Ammonium Sulfate	32 3	fl oz/a lb/a	3.5 a
<b>LSD P=.20</b>				<b>0.45</b>