

Soybean tolerance to preemergence application of metribuzin and sulfentrazone.

A trial was conducted to evaluate soybean tolerance to the application of metribuzin and sulfentrazone (Spartan) in soybean. Soybean were planted on May 20, 2024 using a John Deere no-till planter at a depth of 1.5 inches at a seeding rate of 110,000 seed/A. Plots were four rows of soybean planted in 30-inch rows. Rows 1 and 2 were planted using soybean variety “AG07XF4; Rows 3 and 4 were planted with soybean variety “AG07XF2”. Two soybean varieties were used to compare varietal tolerance to metribuzin and sulfentrazone. Plot size in this trial was 10 feet wide and 40 feet long. Four replications of treatments were randomized in a randomized complete block. Herbicide treatments were applied after soybean were planted, also on May 20. All soybean plots were maintained weed free throughout the growing season by way of postemergence applications of glyphosate when weeds emerged in soybean plots. Soybean was evaluated for injury at 31 days after planting; no visual injury was observed for either soybean variety (Table 1). Soybean stand was measured 35 days after treatment (DAT) from one meter in a random location within each of the center two rows of each plot, no differences in soybean stand was observed. Soybean height was measured at 56 DAT by measuring height of 10 random soybean plants within each plot. No differences in soybean height were observed due to herbicide treatment. Soybean was harvested with a small plot combine on September 24. Due to drought conditions, soybean seed were unable to accumulate size and mass and therefore, yields were very low. For soybean variety AG07XF2, there were statistical differences in both yield and test weight of soybean, however, herbicide treatments were always equal to or greater than the untreated control. For variety AG07XF4, no differences were observed in yield or test weight of soybean. From this trial, it appears that under these growing conditions and soil, both metribuzin and sulfentrazone were not injurious to the two soybean varieties tested in this trial. Some soybean varieties are known to be sensitive to either metribuzin and/or sulfentrazone. If using these herbicides, check with seed supplier to verify that the soybean varieties you are planting have a known tolerance to these herbicides. The soil type in this trial is a loam with 34% sand, 45% silt, and 21% clay, with a pH of 5.6 and organic matter of 3.3%. Metribuzin should not be used for weed control in soybean in coarse soils (sand, sandy loam, or loamy sand) with organic matter of 2% or less. Lower rates of metribuzin are recommended for all soils with organic matter of 2% or less. Similarly, the rate of sulfentrazone labelled for use in soybean is dependent both on soil texture and organic matter. It is important to know these soil parameters in fields where these herbicides will be used for weed control in soybean in order to apply the correct labelled rate and to minimize risk of injury to the soybean crop.

Table 1. Soybean response to preemergence application of metribuzin and sulfentrazone at Hettinger, ND, 2024.

Herbicide	Rate	Injury — % —	Stand plants/A	Height cm	AG07XF2		AG07XF4	
					Yield BU/A	Test wt LB/BU	Yield BU/A	Test wt LB/BU
1 Untreated		0	106729-	23-	6.4b	47.0b	6.0-	44.0-
2 Metribuzin	5.33	0	108974-	23-	6.8ab	50.9ab	6.4-	47.7-
3 Metribuzin	10.7	0	106352-	23-	6.6ab	49.3ab	6.5-	47.4-
4 Spartan	4	0	109761-	22-	6.9ab	51.9ab	6.6-	48.6-
5 Spartan	8	0	119901-	23-	7.5a	55.0a	6.7-	50.0-
6 Metribuzin	5.33	0	108383-	24-	7.2ab	53.5a	7.0-	52.2-
Spartan	4							
7 Metribuzin	10.7	0	114512-	23-	7.0ab	52.4ab	6.5-	47.8-
Spartan	4							
8 Metribuzin	5.33	0	99898-	23-	7.0ab	52.3ab	6.4-	48.0-
Spartan	8							
9 Metribuzin	10.7	0	107546-	23-	6.7ab	49.6ab	6.5-	48.2-
Spartan	8							
LSD P=.05		.	10337.1	1.3	0.88	6.04	0.85	6.52
Standard Deviation		0.0	7112.0	0.8	0.59	4.06	0.57	4.39
CV		0.0	6.52	3.74	9.12	8.33	9.26	9.48
Treatment F		NaN	1.935	2.161	2.539	2.817	1.679	1.763
Treatment Prob(F)		NaN	0.0972	0.0833	0.0480	0.0324	0.1718	0.1512

Table 2. Application environment and equipment for preemergence application of herbicide treatments for weed control in soybean.

Application Description	Application equipment	
Date	May-20-2024	Equipment Type Tractor mounted
Start Time	4:27 PM	Operation Pressure 42 PSI
Stop Time	4:50 PM	Nozzle Model 11002DR
Temperature Start, Stop	64.3, 62.2 F	Nozzle Spacing 20 IN
% Relative Humidity Start, Stop	37.9, 39.1	% Coverage 100
Wind Velocity+Dir. Start	4.8 MPH, E	Boom Length 100 IN
Wind Velocity+Dir. Stop	5.1 MPH, E	Boom Height 20 IN
Wind Velocity+Dir. Max	7.3 MPH, E	Ground Speed 2.8 MPH
Wet Leaves (Y/N)	N, no	Carrier WATER
Soil Temperature	67 F	Application Amount 15 GAL/AC
Soil Moisture	DRY	Mix Size 3.0 L
% Ground Cover	100	Propellant CO2
% Cloud Cover	100	Tank Mix (Y/N) Y, yes