

Sunflower response to Flumioxazin. Zollinger, Richard K., Brian M. Jenks and Jerry L. Ries. An experiment was conducted near Valley City and Minot, ND, to evaluate sunflower response to four flumioxazin rates applied PRE at four application timings. At Valley City, flumioxazin treatments were applied 3 weeks before planting (WBP), 2 WBP, 1 WBP, and PRE. 3 WBP treatments were applied May 3, 2005 at 1:00 pm with 52 F air, 48 F subsoil at a four inch depth, 21% relative humidity, 0% clouds, 1 to 3 mph N wind, dry soil surface, and moist subsoil. 2 WBP treatments were applied May 10 at 12:30 pm with 56 F air, 56 F subsoil at a four inch depth, 50% clouds, 56% relative humidity, 5 to 10 mph NW wind, moist soil surface and subsoil. 1 WBP treatments were applied May 19 at 11:30 am with 61 F air, 59 F subsoil at a four inch depth, 100% clouds, 95% relative humidity, 3 to 6 mph N wind, dry soil surface, and moist subsoil. Four rows per plot of Mycogen '8N429CL' sunflower were planted May 25, followed by the application of PRE treatments at 9:30 am with 59 F air, 56 F subsoil at a four inch depth, 90% clouds, 89% relative humidity, 2 to 6 mph N wind, moist soil surface and subsoil. Soil characteristics are 56% sand, 38% silt, 6% clay, sandy loam texture, 4.7% organic matter, and 5.0 pH. Treatments were applied to the center 6.7 feet of the 10 by 40 foot plots with a backpack-type plot sprayer delivering 17 gpa at 40 psi through 11002 Turbo TeeJet flat-fan nozzles. The experiment had a randomized complete block design with three replicates per treatment.

At Minot, 3 WBP flumioxazin treatments were applied May 10 at 9:30 am with 54 F air, 51 F subsoil at a four inch depth, 70% relative humidity, 40% clouds, 5 mph NNE wind, and moist to wet soil conditions. 2 WBP treatments were applied May 19 at 11:52 am with 73 F air, 63 F subsoil at a four inch depth, 2% clouds, 47% relative humidity, 1 to 2 mph S wind, and moist soil conditions. 1 WBP treatments were applied May 24 at 8:50 am with 65 F air, 58 F subsoil at a four inch depth, 30 to 40% clouds, 46% relative humidity, 7 to 9 mph W wind, and moderately moist dry soil conditions. Four rows per plot of Mycogen '8N429CL' sunflower were planted May 31 followed by the application of PRE treatments at 10:45 am with 67 F air, 50 F subsoil at a four inch depth, 30 to 40% clouds, 64% relative humidity, 11 mph SE wind, and moist soil conditions. Soil characteristics are loam texture, 3.2% organic matter, and 5.0 pH. Treatments were applied to the center 6.7 feet of the 10 by 30 foot plots with a bicycle-type plot sprayer delivering 20 gpa at 30 psi for 3 WBP, 33 psi for 2 WBP, 36 psi for 1 WBP and PRE, through XR 80015 nozzles. The experiment had a randomized complete block design with three replicates per treatment.

Sunflower response to flumioxazin has been variable across the west and midwest. Flumioxazin causes significant sunflower injury and decreased population. Flumioxazin applied up to 3 WBP was not safe to sunflower and injury increased as flumioxazin was applied closer to planting. Sulfentrazone was safe to sunflower applied PRE. (Dept. of Plant Sciences, North Dakota State University, Fargo).

Table 1. Sunflower response to Flumioxazin, Valley City (Zollinger and Ries).

Treatment	Rate (lb/A)	Sunflower Injury - June 15				Stand Count - June 23			
		3 WBP (%)	2 WBP (%)	1 WBP (%)	Pre (%)	3 WBP plants/row ¹	2 WBP plants/row	1 WBP plants/row	PRE plants/row
Flumioxazin	0.064	40	43	50	63	53	37	27	24
Flumioxazin	0.096	57	60	70	85	31	33	28	12
Flumioxazin	0.128	65	55	67	85	31	26	24	11
Flumioxazin	0.191	75	68	73	93	22	25	23	7
Sulfentrazone	0.25	-	-	-	3	-	-	-	63
Untreated		0	0	0	0	----- 66 -----			
LSD (0.05)		----- 17 -----				----- 4 -----			

Table 2. Sunflower response to Flumioxazin, Minot (Jenks).

Treatment	Rate (lb/A)	Stand Count - June 22			
		3 WBP plants/row ²	2 WBP plants/row	1 WBP plants/row	Pre plants/row
Flumioxazin	0.064	25	34	17	31
Flumioxazin	0.096	19	23	12	23
Flumioxazin	0.128	15	15	14	22
Flumioxazin	0.191	7	10	10	16
Sulfentrazone	0.187	-	-	-	50
Untreated		----- 45 -----			
LSD (0.05)		----- 12 -----			

¹Plants/row = number of plants counted in the center two treated rows per 40 foot of row.²Plants/rows = number of plants counted in the center two treated rows per 30 foot of row.