

**Annual weed control with Fierce and other preemergence herbicides at Rosemount, MN - 2011.**

Gunsolus, Jeffrey L. and Douglas W. Miller. The objective of this experiment was to evaluate crop safety and residual weed control with preemergence applications of Fierce (flumioxazin & pyroxasulfone) and several other standard soil applied herbicides in glyphosate-resistant soybeans. The experiment was conducted at Rosemount, MN on a Waukegon silt loam soil. Following corn, the experimental area was fall plowed. In the spring, the field was field cultivated on April 15 and April 25. Pioneer 91Y92 soybeans were planted on May 27 with 30 inch row spacing. The experimental design was a randomized complete block with four replications and plot size was 15 by 25 ft. All herbicide treatments were applied to a center 10 ft strip with a CO<sub>2</sub> powered backpack sprayer utilizing a six nozzle boom with 20 inch nozzle spacing, 11002VS XR Teejet flat-fan nozzles, 30 psi pressure, and a spray volume of 20 gpa. Application dates, environmental conditions, and weed data are presented below. Weed control ratings are presented in the tables below. Yield data were not collected.

<b>Treatment Date</b>	<b>May 27</b>
Application Time	11:45am - 12:45pm
Air Temperature (°F)	61
Relative humidity (%)	49
Dewpoint (°F)	39
Soil Temperature (°F)	56
Sky	cloudy
Wind	SE 8-13
Rainfall before Application	
Week 1 (inch)	2.18
Rainfall after Application	
Week 1 (inch)	0.97
Week 2 (inch)	0.12
<b>Weed Species</b>	<b>Density (plants/ft<sup>2</sup>)</b>
Common Lambsquarters – Colq	3.2
Common Ragweed – Corw	0.9
Pennsylvania Smartweed – Pesw	0.4
Pigweed species	0.3
- primarily Powell amaranth	
Wild Mustard – Wimw	0.4
Grass species	
- Barnyardgrass	0.4
- Giant Foxtail	0.1
- Large & Smooth Crabgrass	0.4
- Woolly Cupgrass	0.8
- Yellow Foxtail	scattered

Heavy rainfall occurred on May 28 followed by a hot, dry period that resulted in severe soil crusting and poor soybean and weed emergence. The experimental area was rotary hoed at a speed of 1.2 mph on June 13 to break up the soil surface, but that did not result in a significant increase in soybean emergence. Soybean plants that emerged were chlorotic and had shredded leaves, therefore any possible preemergence herbicide injury symptoms could not be discerned. No soybean canopy formed due to poor population which greatly affected weed growth later in the season.

All treatments with the exception of Authority MTZ, Prefix, and Valor SX provided good to excellent common lambsquarters control with the low rate of Fierce showing less residual control by the last rating date. Lambsquarters control with Authority MTZ, Prefix, and Valor SX was only fair and the least amount of residual control was exhibited by Prefix and Valor SX.

Initial common ragweed control was good to excellent with the two higher rates of Fierce, Authority First, Optill X, Optill X + V-10206, Prefix, and V-10206 + Valor SX + Classic. Within this group, residual control of common ragweed with the Fierce treatments was only fair while the other treatments maintained good residual control. Authority Assist showed good initial control but declined sharply with subsequent ratings. The low rate of Fierce showed only fair initial ragweed control and Valor SX even less. Control with both of these treatments declined with time with Valor decreasing the greatest. The Authority MTZ treatment resulted in poor control of common ragweed at all rating dates.

Both initial and residual control of Pennsylvania smartweed was excellent with Authority Assist, Authority First, Optill X, Optill X + V-10206, and V-10206 + Valor SX + Classic. Initial smartweed control was also excellent with the two higher rates of Fierce and Prefix but residual control with these treatments was only fair. The low rate of Fierce, Authority MTZ, and Valor SX resulted in only fair initial smartweed control and fair to poor residual control.

Pigweed control was excellent for all treatments except for Authority MTZ, which showed only fair initial control and fair to poor residual control. Residual pigweed control was good for Authority First and Valor SX. All other treatments had excellent residual pigweed control.

Authority MTZ was the only treatment that did not control wild mustard. Little to no mustard emerged later in the season, so the later ratings reflect the initial control effect rather than any potential residual herbicide effect.

Most of the grasses present were late germinating species and were rated only on July 18 and 25. The two higher rates of Fierce, Prefix and Optill X + V-10206 treatments resulted in good to excellent grass control. V-10206 + Valor SX + Classic showed fair grass control. All other treatments showed a lower degree of grass control or suppression with Valor SX showing the least.

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Table. Weed control ratings

Herbicide Treatment	Rate (product/A)	Visual Control																				Grass Species						
		Colq					Corw					Pesw					Pigweed Species					Wimu					7/18	7/25
		6/24	7/1	7/11	7/18	7/25	6/24	7/1	7/11	7/18	7/25	6/24	7/1	7/11	7/18	7/25	6/24	7/1	7/11	7/18	7/25	6/24	7/1	7/11	7/18	7/25	7/18	7/25
		----- (%) -----																										
Fierce <sup>1</sup>	3 oz	90	88	83	79	71	78	74	63	54	45	84	84	78	64	63	100	100	100	100	100	100	100	100	100	100	66	65
Fierce	3.75 oz	97	97	95	93	93	95	95	90	80	79	99	94	91	85	85	100	100	100	100	100	100	100	100	100	100	90	90
Fierce	4.5 oz	97	93	90	85	81	94	93	91	85	80	99	99	96	88	86	100	100	100	100	100	100	100	100	100	100	93	93
Authority Assist <sup>2</sup>	5 fl oz	100	98	98	98	98	90	63	53	35	26	100	100	100	100	100	100	100	100	100	100	99	99	99	99	99	53	51
Authority First <sup>3</sup>	3.2 oz	97	97	97	96	96	97	97	96	92	90	100	100	100	100	100	99	99	98	94	89	100	100	98	97	97	60	48
Authority MTZ <sup>4</sup>	11 oz	73	73	65	65	65	28	25	20	15	15	84	80	74	71	78	84	84	79	66	64	73	68	65	65	63	84	71
Optill X <sup>5</sup>	2 oz	100	100	100	100	100	99	93	93	93	89	100	100	100	100	100	100	100	100	100	100	99	99	99	99	99	66	55
Optill X + V-10206 <sup>6</sup>	2 oz + 1.5 oz	100	100	100	100	100	99	98	97	97	94	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	98	98
Prefix <sup>7</sup>	2 pt	78	75	66	45	26	96	93	93	90	90	95	95	91	86	86	99	99	98	98	98	100	100	100	100	100	95	95
Valor SX <sup>8</sup>	2 oz	79	76	61	48	43	68	64	51	34	26	76	86	69	51	46	99	99	94	93	90	100	99	99	99	99	33	30
Valor SX + Classic <sup>9</sup> + V-10206	2 oz + 0.35 oz + 1.5 oz	100	100	98	97	94	99	99	96	95	95	100	100	100	99	99	100	100	100	100	100	100	100	100	100	100	86	75
LSD (0.05)		17	19	20	22	22	9	15	13	12	14	11	8	11	11	13	ns	ns	12	16	18	11	14	14	14	15	17	20

<sup>1</sup> Fierce 76WDG = 33.5% flumioxazin & 42.5% pyroxasulfone.

<sup>2</sup> Authority Assist 4SC = 3.33 lbs ai/gal sulfentrazone & 0.67 lbs ai/gal imazethapyr.

<sup>3</sup> Authority First 70DF = 62% sulfentrazone & 8% chloransulam-methyl .

<sup>4</sup> Authority MTZ 45WG = 18% sulfentrazone & 27% metribuzin .

<sup>5</sup> Optill X 68WG = 17.8% saflufenacil & 50.2% imazethapyr.

<sup>6</sup> V-10206 = experimental.

<sup>7</sup> Prefix 5.29EC = 4.34 lbs ai/gal s-metolachlor & 0.95 lbs ai/gal fomesafen.

<sup>8</sup> Valor SX 51WDG = flumioxazin.

<sup>9</sup> Classic 25WG = chlorimuron.