Timing of Initial Weed Control in Soybean, Carrington

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The study was being conducted to continue building a North Dakota database documenting response of soybean to initial timing of weed control. Experimental design was a randomized complete block with four replicates. The field trial was conducted at the NDSU Carrington Research Extension Center. 'DSR0404-2Y2' Roundup Ready inoculated soybean was planted in 15-inch rows on May 21 and plant emergence across the trial was on May 28. Herbicides were applied with a hand-held boom sprayer delivering 10 gal/A at 35 psi through 8001 flat fan nozzles to the center 6.7 ft of 10- by 25-ft plots. A tank mixture of Roundup Powermax at 32 fl oz/A plus Class Act NG at 2.5% plus Zidua at 4 oz wt/A plus metribuzin at 0.33 lb/A was PRE applied on May 22 with 66°F, 44% RH and 9 mph wind. Rain totaled 0.33 inches 10 days after application of PRE herbicides. Table 1 provides POST application details for glyphosate (Roundup Powermax at 32 fl oz/A plus Class Act NG at 2.5% v/v). This POST treatment was also applied on May 27 and June 24 to continue weed control following application of PRE herbicides. The trial was harvested for seed yield on October 6.

Soybean plant development was similar among treatments measured from planting to first flower and maturity (Table 2).

Canopy closure occurred first with PRE and POSTA treatments while the untreated check did not have canopy closure.

Seed yield tended to be higher with initial weed control at planting compared to POST treatments and all herbicide treatments provided greater yield than the untreated check.

Table 1. POST Glyphosate Application Details for Soybean Response to Intial Timing of Weed Control

		Soybean[1]		Weed Height		Weed Density[2]		Environment			
Application Date	POST Treatment	Growth Stage	Average Plant Height	Average	Range	Grass	Broadleaf	Air Temp.	RH	Wind Speed	Clouds
			inches	inches		square foot		°F	%	MPH	%
June 13	A	VC-V1	3 to 4	3	1 to 9	34	15	60	64	0	10
June 24	B	V2	5 to 6	7	1 to 16	x	x	57	96	9	100
July 2	C	V3-V4	8	12	1 to 20	x	x	59	77	3	60

[1] Soybean density on June 13 averaged 179,460 plants/A.

[2] Grass weeds include green and yellow foxtail; Broadleaf weeds include common lambsquarters, redroot and prostrate pigweed, volunteer flax, and wild buckwheat.

Table 2. Soybean Response to Initial Timing of Weed Control

Treatment		Flower	Canopy Closure[1]	Physiological Maturity	Seed Yield	Test Weight	Seeds/lb	Oil	Protein
Number	Timing[2]	----------Jday----------			bu/A	lb/bu		------%------	
1	untreated	195	x	265	17.7	x	x	15.2	33.8
2	PRE/POST	195	208	264	53.4	56.7	2909	15.6	32.9
3	POSTA	195	209	264	47.2	56.5	2818	15.6	33.1
4	POSTB	195	222	264	50.5	56.3	2946	15.6	33.3
5	POSTC	195	226	265	51.6	56.5	2880	15.5	33.7
C.V. %		0.3	2.4	0.3	11.8	0.7	2.1	1.6	1.1
LSD (0.05)		NS	8	NS	8.0	NS	NS	NS	33.4

[1] $\geq$ 75% of plot area covered by soybean canopy.

[2] PRE/POST = May 22/May 27 and June 24; POSTA = June 13; POSTB = June 24; POSTC = July 2.