

Timing of Weed Control in Soybean, Carrington

Greg Endres and Mike Ostlie

The study was conducted to contribute to 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 on a conventionally-tilled Heimdal-Emrick loam soil with 3.1 percent organic matter and 6.4 pH with spring wheat as the previous crop. 'DSR0401' Roundup Ready inoculated soybean was planted May 15 in 14-inch rows. Treatments were applied with a hand-held boom sprayer delivering 17 gal/A (PPI) or 10 gal/A (POST) at 35 psi through 8001 flat-fan nozzles to the center 6.7 ft of 10- by 25-ft plots. Sharpen at 1 fl oz/A plus Zidua at 2.5 oz wt/A was PPI on May 14 with 83° F, 10 percent RH, and 13 mph wind and incorporated twice at 1- to 2-inch depth with a field cultivator plus harrow. Table 1 provides POST application details for glyphosate (Roundup Powermax at 22 fl oz/A plus Class Act NG at 2.5% v/v). The trial was harvested for grain yield on September 25.

Table 1. POST glyphosate application details for soybean response to timing of weed control, Carrington, 2012.

Application Date	POST Treatment	Soybean ¹		Average Weed Height	Weed density ²		Environment			
		Stage	Plant Height		Grass	Broad-leaf	Air Temp.	RH	Wind Speed	Clouds
			inch							
15-Jun	A	V1	2 to 4	2	13	5	77	34	3	35
29-Jun	B	V4	6 to 8	6 to 8	36	10	68	66	6	0
11-Jul	C	V6 to R1	15 to 16	16	NA	NA	80	65	9	15
21-Jul	D	R2	NA	NA	NA	NA	86	52	7	25

¹Soybean density on June 28 averaged 196,340 plants/A.

²Grass weeds include green and yellow foxtail, and barnyardgrass; Broadleaf weeds include common lambsquarters, and redroot and prostrate pigweed.

Plant maturity was delayed 3 to 6 days with the latest initial POST application of glyphosate (POSTC) or the untreated check compared to earlier weed control treatments (Table 2). Seed yield (45.5 and 47.1 bu/acre) was highest with initial weed control at planting or early POST. Yield was reduced 4, 17, and 47 percent with initial POSTA, POSTB, and POSTC treatments, respectively, compared to initial weed control at planting. Seed oil was higher but was offset by lower protein with the three early herbicide treatments compared to POSTC or untreated check.

Table 2. Soybean response to timing of weed control, Carrington, 2012.

Treatment		Physiological Maturity	Seed Yield	Test Weight	Seeds/lb	Oil	Protein
Number	Description ¹	Jday	bu/A	lb/bu		%	
1	untreated	264	12.5	57.1	2890	18.8	32.9
2	PRE/POSTA/POSTD	258	47.1	56.8	2955	19.9	30.4
3	POSTA/POSTD	258	45.5	56.8	3000	19.9	30.7
4	POSTB	259	39.3	56.6	3040	20.0	31.1
5	POSTC	262	25.1	56.5	2890	19.1	32.5
C.V. (%)		0.4	13.4	0.5	1.8	1.0	1.5
LSD (0.05)		2	7.0	NS	85	0.3	0.7

¹PPI = Sharpen at 1 fl oz/A plus Zidua at 2.5 oz wt/A; POSTA-D = Roundup Powermax at 22 fl oz/A plus Class Act NG at 2.5% v/v.

**Timing of weed control evaluation, July 11, 2012.**