Soybean Response to Plant Protection Inputs, Carrington; BASF Collaboration

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The experiment was conducted at the NDSU Carrington Research Extension Center in cooperation with BASF to evaluate soybean yield response to preplant (PP) weed control followed by post-emergence (POST) application of a foliar fungicide and insecticide. Experimental design was a randomized complete block with four replicates. The field trial was established on a conventionally-tilled Heimdal-Emrick loam soil with 3.1 percent organic matter and 6.4 pH. Treatments were applied with a hand-held boom sprayer delivering 13 gal/A at 35 psi through 8001 flat-fan nozzles to the center 6.7 ft of 10- by 40-ft plots. PP herbicides were applied on May 17 with 88° F, 19 percent RH, and 9 MPH wind and incorporated with a field cultivator plus harrow set at a soil depth of 1 to 2 inches. Asgrow AG0430 and Integra 20090 Roundup Ready soybean seed were inoculated and planted at 175,000 seeds/A on May 18 in 30-inch rows. POST glyphosate (Roundup PowerMax) was applied at 0.75 lb ae/A plus NIS+AMS (Class Act NG) at 2.5% v/v on June 29 with 71° F, 62 percent RH, and 5 mph wind to 4-trifoliate soybean, 1- to 6-inch tall green and yellow foxtail, 1- to 10-inch tall common lambsquarters, and 1- to 5-inch tall wild buckwheat. Priaxor fungicide was applied solely at 4 oz product/A plus NIS (Preference) 0.25% v/v or as a tank mixture with Fastac insecticide at 4 oz product/A on July 23 with 77° F, 64 percent RH, and 7 mph wind to R3 (initial pod development) soybean. The trial was harvested for seed yield on September 25.

No crop response was observed from soil-applied herbicides when evaluated on June 30. Foliar disease notes were not recorded on August 9 due to minimal presence of disease. Seed yield of Asgrow AG0430 was 36.2 bu/A compared to 33.6 bu/A with Integra 20090 (LSD 0.05 = 2.1 bu/A). Weed control was excellent (95-98%) with Sharpen + Zidua followed by POST glyphosate (Table). Seed yield, test weight, seed count, oil, and protein were similar among POST pesticide treatments.

Table 1. Soybean response to plant protection inputs.

Pesticide		Weed control (%)[1]				Soybean				
Treatment[2]		30-Jun		30-Jul		Yield	Test Weight	Seeds/lb	Oil	Protein
No.	Description	fota	cola	grass	cola	bu/A	lb/bu		%	%
1	untreated check	0	0	0	0	7.7	56.3	2729	19.9	32.2
2	glyphosate	72	71	95	98	44.7	56.3	2756	21.3	30.6
3	glyt + Priaxor at 4 fl oz/A + NIS at 0.25% v/v	72	71	96	98	43.3	56.2	2695	21.3	30.4
4	glyt + Priaxor at 4 fl oz/A + Fastac at 4 fl oz/A + NIS at 0.25% v/v	68	68	95	98	43.9	56.2	2664	21.3	30.5
C.V. (%)		5.9	5.2	2.6	2.6	8.1	0.4	5.1	1.7	1.6
LSD (0.05)		4	3	2	2	2.9	NS	NS	0.4	0.5

[1]fota = green and yellow foxtail; cola = common lambsquarters; grass = green and yellow foxtail, and barnyardgrass.

[2]Treatments 2-4 include PPI Sharpen at 1 fl oz/A + Zidua at 2.5 fl oz/A on May 17 and POST glyphosate (Roundup PowerMax at 22 fl oz/A plus Class Act NG at 2.5% v/v) on June 29. Fungicide (Priaxor) and insecticide (Fastac) + NIS (Preference) applied on July 23.