Corn Response to Initial Timing of Weed Control, Carrington

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Trial objective was to generate additional data for a ND corn database showing the yield response based on timing of initial herbicide application for weed control. Experimental design was a randomized complete block with four replications. The dryland field trial was established at the NDSU Carrington Research Extension Center on conventionally-tilled Heimdal-Emrick loam soil with 3.0% organic matter and 6.3 pH. Croplan '2520RR' was planted at 32,000 seeds/A in 22-inch rows on May 16. Corn plant emergence across the trial was May 26. Weed species included green and yellow foxtail, common lambsquarters, common ragweed, Eastern black and hairy nightshade, kochia, prostrate and redroot pigweed, volunteer soybean and wild buckwheat. Herbicides were applied using a CO2 hand-boom sprayer with 8001 flat fan nozzles delivering 17.5 gal/A (PRE) or 12 gal/A (POST) at 35 PSI. Balance Flexx at 6 fl oz/A plus Aatrex 4L at 16 fl oz/A were PRE applied May 16 as the planting time treatment with 60 degrees F, 21% RH, and 10 mph wind to a dry soil surface. Rain at 0.24 inches occurred on May 19 and totaled 0.55 inches on May 30. Glyphosate (Roundup PowerMax) at 22 fl oz/A plus Status at 5 oz/A and Class Act NG at 2.5% v/v was the POST treatment. The PRE treatment was followed by POST herbicides on June 3 to supplement initial weed control. Average weed densities (plants/ft2) measured on June 11: grass = 1 and broadleaf = 25. Timing of POST1 herbicide application was June 10 with 70 degrees F, 57% RH, and 8 mph wind to V3 stage (3-collar and 8- to 10-inch height) corn and weeds averaging 3 inches in height (range of 0.5 to 6 inches). Timing of POST2 herbicide application was June 21 with 79 degrees F, 60% RH, and 4 mph wind to V5-6 stage (5- to 6-collar and 15-inch height) corn and weeds averaging 9 inches in height (range of 3 to 19 inches). Timing of POST3 herbicide application was July 2 with 54 degrees F, 90% RH, and 7 mph wind to V7 stage (7-collar and 24- to 28-inch height) corn and weeds averaging 24 inches in height (range of 1 to 36 inches. The trial was harvested with a plot combine on October 3.

Corn plants with PRE or POST1 herbicide application for initial weed control generally were taller and had earlier silk dates compared to corn with later POST initial weed control or the untreated check (Table). Green color of corn plants generally lessened with delay in initial weed control. Plant lodge and seed moisture at harvest generally were similar among herbicide treatments and less than the untreated check. PRE and POST1 weed control provided greater seed yield compared to delayed POST weed control or the untreated check. Test weight with PRE-timed weed control was less compared to POST2 and POST3 weed control.

Table. Corn Response to Timing of Initial Application of Herbicides for Weed Control, Carrington

Treatment	Plant1						Seed		
	Height (cm)		Leaf Color (0-9)		Silk Date	Lodge	Yield	Test Weight	Harvest Moisture
Factor	July 11	Aug 1	July 11	Aug 1	Jday	Sept 27	bu/A	lb/bu	%
Weed Control[2]									
untreated check	97	142	6	5	217	10	59.5	52.7	17.5
Pre/POST	122	196	9	9	210	2	162.0	54.2	15.6
POST1	120	199	8	8	210	1	159.1	54.5	14.9
POST2	104	189	7	7	212	2	138.8	55.2	15.5
POST3	109	157	5	6	213	4	125.6	55.2	15.6
LSD (0.05)	15	26	2	2	2	5	18.7	1.0	0.5
Mean	111	176	7	7	212	4	129.0	54.4	15.8
C.V. %	8.5	9.4	14.2	14.9	0.6	81.9	9.4	1.2	2.0

[1] Leaf color: 0 = yellow, 9 = dark green; Lodge: number of plants/3 rows with lodged stems below ears.

[2] PRE = May 16 (fb POST June 3); POST1 = June 10; POST2 = June 21; POST3 = July 7.