

Corn response to starter fertilizer, Carrington, 2016.

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A field study continued at the NDSU Carrington Research Extension Center to examine the performance of corn with starter fertilizer and side-dressing N. Experimental design was a randomized complete block with four replications. The trial was established on conventionally tilled, Heimdal-Emrick loam soil with 3.7% organic matter, 7.9-8.2 pH (0-24" soil depth), 63 lb nitrate-N/A, 7 ppm (low) phosphorus, 149 ppm (high) potassium and 0.52 ppm (low) zinc. Spring wheat was the prior crop in 2015. DeKalb 'DKC33-78 RIB' (83 day relative maturity) Roundup Ready corn was planted with a John Deere 71 4-row flex planter on May 4 in 30-inch rows, and included treatments of 10-34-0, 6-24-6, and zinc (NWC 10% Zn 9.5% N 4% S Chelate) liquid fertilizer applied in-furrow or in a 2x0" band. UAN at 50 lb N/A was applied by coulter injection on June 20 at the V6 corn stage to 2 of 4 trial replications. Hail occurred on July 9 just prior to the tasseling stage (VT) causing leaf shredding and loss of $\leq 5\%$ but no stand loss. Grain was harvested with a plot combine on November 1.

Time from planting to plant emergence and silk stage generally was a day earlier among fertilizer treatments compared to the untreated check (Table 1). Plant stand was similar among treatments but tended to be higher with in-furrow or banded fertilizer compared to the untreated check. Grain yield and test weight tended to improve with fertilizer compared to the untreated check. There was not a yield advantage with 6 gpa compared to 2.5 or 3 gpa of in-furrow applied 10-34-0; with in-furrow vs. banded 10-34-0; with 3 gpa banded plus 3 gpa in-furrow compared to 6 gpa in-furrow applied 10-34-0; with in-furrow applied zinc plus 10-34-0 compared to 10-34-0; or with in-furrow applied 6-24-6 compared to 10-34-0. A PSNT soil test was taken on June 8 showing 100 lb N/acre, indicating that additional N was unlikely to increase yield. Yield with side-dressed N tended to increase but was statistically similar to the untreated check (Table 2).

Table 1. Corn response to starter fertilizer, Carrington, 2016.										
Treatment			Plant			Seed				
Liquid fertilizer	Rate	Application method	Emergence	Silk	Stand	Yield	Test weight	Moisture	Protein	Starch
	gpa		Jday ^a		pl/A	bu/A	lb/bu	%		
untreated check	x	x	140	201	25,235	153.7	56.8	18.9	7.9	73.2
10-34-0	6	in-furrow	139	200	34,530	166.0	57.1	18.8	7.7	73.6
10-34-0	2.5	in-furrow	139	200	34,530	168.0	57.2	18.7	8.0	72.8
10-34-0	2.5	band	139	201	30,875	171.6	57.2	19.0	7.5	73.3
10-34-0	3 plus 3	band plus in-furrow	139	200	33,535	160.2	57.2	18.7	8.0	72.9
10-34-0 + Zn	2.75 + 0.25	in-furrow	139	200	35,195	159.7	56.8	18.6	7.6	73.5
6-24-6	4.5	in-furrow	139	200	29,880	160.6	57.3	18.7	7.6	74.0
10-34-0	3	in-furrow	138	200	35,195	164.8	57.0	18.8	7.7	73.7
CV (%)			0.3	0.1	17.5	7.5	1.0	2.0	2.6	0.5
LSD (0.05)			1	1	NS	NS	NS	NS	0.3	0.6

^aJday: 139=May 19; 200=July 19.

Table 2. Corn response to post N, Carrington, 2016.			
Treatment	Seed		
	Yield	Test weight	Moisture
	bu/A	lb/bu	%
untreated check	161.2	57.0	18.8
post N ^a	166.0	57.2	18.7
CV (%)	5.1	0.9	1.4
LSD (0.05)	NS	NS	NS
^a Post N applied as UAN (28-0-0) at 50 lb nitrate-N/A at V6 stage.			