

### **Corn response to zinc, Carrington, 2008.**

(Greg Endres)

The conventional-till field trial was established at the NDSU Carrington Research Extension Center on a Heimdal Emrick loam soil with wheat as the previous crop. Experimental design was a randomized complete block with four replications. Spring soil analysis indicated 13 ppm phosphorus, 274 ppm potassium, 0.64 ppm zinc, 2.6% organic matter and 6.1 pH. Zinc sulfate (35.5% ai) was preplant (PPI) applied on May 7 and lightly incorporated. Seed treatments were applied on May 7. Mycogen '2K154' was planted in 4-row plots with 33 ft depth as 30-inch row spacing on May 8. Plants were thinned to about 26,000 plants/A on June 17. Foliar treatments were applied using a CO<sub>2</sub> hand-boom sprayer with 8001 flat fan nozzles delivering 16 gal/A on June 26 with 66 degrees F, 88% RH, and 6 mph wind to V5-stage (6- to 10-inch height) corn. The trial was harvested with a plot combine on November 3.

No statistical differences occurred among treatments for days from planting to silk, and seed yield, test weight and starch (Table). Seed yield tended to increase with zinc treatments numbers 4 and 5 compared to the untreated check. Seed moisture ranged from 24 to 32.5% with all zinc treatments except zinc treatment number 4 and the untreated check. Zinc treatment number 9 and zinc sulfate increased seed protein compared to the untreated check.

Table.										
Treatment					Corn					
No.	Name	Rate	Unit	Application	Days to silk	Seed yield	Test weight	Seed moisture	Seed protein	Seed starch
					Jday	bu/A	lb/bu	%		
1	untreated check	x	x	x	218	98.6	54.8	22.3	10.9	66.9
2	AGM 05024	6	fl oz wt/cwt	seed	220	88.6	53.2	25.0	10.9	67.5
3	AGM 05024	6	fl oz wt/cwt	seed	218	90.0	54.8	24.8	11.0	67.2
	FR 1085	3	fl oz wt/cwt	seed						
	AGST 08002	4	fl oz wt/cwt	seed						
4	AGM 05024	6	fl oz wt/cwt	seed	218	103.5	55.3	22.2	11.1	66.9
	FR 1085	3	fl oz wt/cwt	seed						
	AGST 08002	6	fl oz wt/cwt	seed						
5	AGM 07027	32	fl oz	FOLIAR	220	108.0	53.9	23.9	10.6	66.9
6	AGM 07027	32	fl oz	FOLIAR	221	90.8	53.1	30.5	11.1	67.1
	AGM 08005	6	fl oz	FOLIAR						
7	AGM 05024	6	fl oz wt/cwt	seed	219	93.5	54.2	27.8	11.2	67.2
	FR 1085	3	fl oz wt/cwt	seed						
	water	5	fl oz wt/cwt	seed						
	AGM 07027	32	fl oz	FOLIAR						
8	AGM 05024	6	fl oz wt/cwt	seed	220	90.7	52.8	32.5	11.2	67.0
	FR 1085	3	fl oz wt/cwt	seed						
	AGST 08002	4	fl oz wt/cwt	seed						
	AGM 07027	32	fl oz	FOLIAR						
9	AGM 05024	6	fl oz wt/cwt	seed	220	98.2	55.1	26.5	11.4	66.8
	FR 1085	3	fl oz wt/cwt	seed						
	AGST 08002	6	fl oz wt/cwt	seed						
	AGM 07027	32	fl oz	FOLIAR						
	AGM 08005	6	fl oz	FOLIAR						
10	ZINC SULFATE	10	lb/A	PPI	220	95.0	52.4	30.7	11.3	67.1
	mean				219	95.7	53.9	26.6	11.1	67.1
	CV (%)				0.7	10.7	3.9	16.8	2.5	0.8
	LSD (0.05)				NS	NS	NS	6.5	0.4	NS