

EFFECT OF COMMERCIAL FERTILIZERS AND NUTRIENT MANAGEMENT PRODUCTS ON SUGARBEET YIELD AND QUALITY DURING 2014 GROWING SEASON

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INTRODUCTION

Besides traditional NPK fertilizers, sugarbeet growers always look for additional commercial products to increase productivity and sugar content. Trial results of different starter fertilizer combinations, biologicals and nutrient management aids were reported.

MATERIALS AND METHODS

Field trials were established on a Colvin silty clay loam location near Ada, MN in 2014. Planting was arranged in a randomized complete block design with four replications. Individual treatment plots measured 11 feet wide and 30 feet long. Recommended fertilizer nitrogen at the rate of 130 lb N/ac in the form of urea was applied and incorporated. Sugarbeet variety Crystal 985 Roundup Ready (rhizomania disease resistant), was planted on May 20/2014 with a John Deere MaxEmerge II planter. Sugarbeet seed was placed 1.25 inches deep with 5-inch in-row spacing. A 22-inch row spacing was used. Roundup herbicide was applied twice for weed control, plots were not cultivated. Quadris was applied at the four to six leaf stage and again three weeks later to help control rhizoctonia root rot. Two fungicide applications, Supertin/Topsin and Headline were applied for Cercospora leafspot control. Four of the six rows of in-furrow treatment plots were treated and then two of the middle four rows of each plot were harvested on September 24/2014. Yield determinations were made and quality analysis performed at American Crystal Sugar Quality Tare Lab, East Grand Forks, MN.

RESULTS

Table 1. Initial soil nutrient concentration and basic soil physico-chemical properties

Depth (inch)	NO ₃ -N (lb/ac)	Olsen-P (ppm)	K (ppm)	pH	OM%	CEC (cmol+/kg)
0-6	6	10	50	8.3	2.7	28.4
6-24	18					
24-48	20					

Table 2. Effect of different commercial fertilizer and nutrient management aids on sugarbeet yield and quality

Trial details	Treatments	Yield (tons/ac)	Sugar%
NZONEMAX, N management aid by Agxplore International claimed to increase crop N use efficiency	1. Control (No N)	19.69 ± 0.41 b	16.89 ± 0.29 c
	2. 100% N	24.19 ± 2.40 a	17.06 ± 0.25 abc
	3. NZone Max + 75% N	22.82 ± 2.52 ab	16.98 ± 0.14 bc
	4. NZone Max + 100% N	24.22 ± 2.76 a	17.21 ± 0.16 ab
	5. NZoneMax+130% N	26.16 ± 1.73 a	16.88 ± 0.15 c
	6. 75%N + 25% N with NZone Max at V3	26.07 ± 4.24 a	17.31 ± .33 a
	LSD (p=0.05)	3.88	0.32
Significance	Significant	Significant	
Conclusion	No effect of Nzonemax on yield and quality		
Amidas, (ammonium sulfate), Yara International	1. Control (No N)	14.46B	16.84B
	2. Urea @150 lb N/ac	19.50A	16.84B
	3. Urea@120 lb N/ac	19.78A	16.75B
	4. Urea+ AS@150 lb N/ac	21.69A	17.00AB
	5. Urea+ AS @120 lb N/ac	18.65A	17.26A
	6. Amidas @ 150 lb N/ac	20.71A	16.89B
	7. Amidas@ 120 lb N/ac	18.50A	16.69B
	8. Urea+ Agrotain@ 150 lb N/ac	19.56A	16.83B
	9. Urea+ Agrotain@120 lb N/ac	20.14A	17.51A
LSD (P=0.05)	2.39	0.33	
Conclusion	No effect of Amidas on yield and quality		
CHS Inc. Starter fertilizers 7-23-5 and 2-17-17	1. Control	25.7 ^B	17.4 ^A
	2. Recommended NPK	28.5 ^A	17.3 ^{AB}
	3. Recommended NPK+ 7-23-5@4 gpa	28.9 ^A	17.2 ^{AB}
	4. Recommended NPK+ 2-17-17@4 gpa	29.9 ^A	17.0 ^B
LSD (P=0.05)	1.82	0.25	
Conclusion	No effect		