

EFFECT OF AGZYME ON SUGARBEET YIELD AND QUALITY

Mohamed F. R. Khan¹ and Randy Nelson²

¹Extension Sugarbeet Specialist, North Dakota State University & University of Minnesota

²Research Technician, Plant Pathology Department, North Dakota State University

The objective of this research was to evaluate the effect of AgZyme on sugarbeet yield and quality.

MATERIALS AND METHODS

Field trial was conducted in Foxhome, MN and Prosper ND, in 2007. The experimental design was a randomized complete block with four replicates. Field plots comprised of six 30-foot long rows spaced 22 inches apart. Plots were planted on 3 and 9 May at Prosper and Foxhome, respectively, using Beta 4818 with 45 g of Tachigaren/kg seed. Treatments were applied in-furrow at planting. The control was 10-34-0 at 3 GPA compared to 10-34-0 at 3 GPA mixed with AgZyme (Ag Concepts) at 0.1 GPA. Terbufos (Counter 15G) was applied modified in-furrow at 12 lbs/A during planting to control sugarbeet root maggot (*Tetanops myopaeformis* von Röder; Diptera: Ulidiidae). Plots were thinned manually on 18 June to 41,580 plants per acre. Weeds were controlled with recommended herbicides (Khan, 2007), and hand weeding.

Plots were defoliated mechanically and harvested using a mechanical harvester on 24 and 26 September at Foxhome and Prosper, respectively. The middle two rows of each plot were harvested and weighed for root yield. Twelve to 15 random roots from each plot, not including roots on the ends of the plot, were analyzed for quality at the American Crystal Sugar Company Quality Tare Laboratory, East Grand Forks, MN. The data analysis was performed with the ANOVA procedure of the Agriculture Research Manager, version 6.0 software package (Gylling Data Management Inc., Brookings, South Dakota, 1999). The least significant difference (LSD) test was used to compare treatments when the F-test for treatments was significant ($P=0.05$).

RESULTS AND DISCUSSIONS

The data indicate that at Foxhome ([Table 1](#)), recoverable sucrose was significantly higher with AgZyme compared to the control because of significantly higher net tons. At Prosper ([Table 2](#)), AgZyme did not result in any significant yield advantage compared to the control. However, there was higher tonnage and higher recoverable sucrose when AgZyme was applied with 10-34-0 compared to 10-34-0 used alone. More research should be done, probably using different and higher rates of AgZyme to determine whether it can consistently increase yield through higher tonnage.

Table 1. Effect of AgZyme on sugarbeet yield and quality at Foxhome in 2007.

TREATMENT* AND RATE/A	RECOVERABLE SUCROSE		ROOT YIELD (T/A)	SUCROSE CONCENTRATION (%)	LTM** (%)
	(lb/A)	(lb/T)			
Control (10-34-0 3 GPA)	6900	332	20.9	18.1	1.5
Control + AgZyme 0.1 GPA	7659	342	22.5	18.5	1.4
LSD (P= 0.05)	631	NS	0.6	NS	NS

*Treatments were applied on 9 May.

**Sugar loss to molasses.

Table 2. Effect of AgZyme on sugarbeet yield and quality at Prosper in 2007.

TREATMENT* AND RATE/A	RECOVERABLE SUCROSE		ROOT YIELD (T/A)	SUCROSE CONCENTRATION (%)	LTM** (%)
	(lb/A)	(lb/T)			
Control (10-34-0 3 GPA)	7941	284	28.3	15.8	1.6
Control + AgZyme 0.1 GPA	8536	284	30.5	15.7	1.5
LSD (P= 0.05)	NS	NS	NS	NS	NS

*Treatments were applied on 3 May.

**Sugar loss to molasses.