

# EFFECT OF AGZYME ON SUGARBEET YIELD AND QUALITY

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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 Prosper ND, in 2009. 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 28 May, using Beta 87RR38 with 20 g of Tachigaren/kg seed. 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 30 June to 41,580 plants per acre. Weeds were controlled with recommended herbicides (Khan, 2009), and hand weeding.

Treatments were applied with a CO<sub>2</sub> pressurized 4-nozzle sprayer equipped with 0004 solid stream nozzles calibrated to deliver 23 gpa of solution at 15 p.s.i pressure to the middle four rows of plots. Treatments were applied in-furrow at planting at rates indicated in Table 1.

Plots were defoliated mechanically and harvested using a mechanical harvester on 21 September. 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 (Gyilling 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

There were no significant differences in vigor of seedlings treated with AgZyme compared to the control. The data indicated that there were no significant differences in tons per acre, sucrose concentration, sugar loss to molasses, or recoverable sucrose per acre in the treated plots compared to the control that received only 10-34-0. In 2007, the use of AgZyme resulted in significantly higher recoverable sucrose compared to the control at Foxhome, MN. However, in trials done in 2008 and 2009, the use of AgZyme did not result in a significant increase in any of the parameters evaluated.

**Table 1. Effect of AgZyme on seedling vigor, sugarbeet yield and quality at Prosper, ND in 2009.**

Treatment <sup>1</sup> and Rate/A	Vigor <sup>2</sup>	Plant Stand	Root Yield	Sucrose	SLM <sup>3</sup>	Recoverable
		at Harvest		Concentration		Sucrose/A
		No/60 ft	tons/A	%	%	lb/A
Control						
10-34-0; 1gal	10	104	32.4	15.3	1.19	9080
Agzyme; 12.8 fl oz + 10-34-0; 1 gal	10	103	32.2	15.3	1.26	9001
Agzyme; 25.6 fl oz + 10-34-0; 1 gal	10	103	32.6	15.1	1.31	8955
LSD ( $P=0.05$ )	NS <sup>4</sup>	NS	NS	NS	NS	NS

<sup>1</sup> Treatments were applied 28 May

<sup>2</sup> Vigor was evaluated 21 days after planting. Sugarbeet ranged from cotyledon to 2-leaf stage. Vigor was rated on a scale of 1 to 10 where 1 is unhealthy and weak seedlings and 10 is healthy and vigorous.

<sup>3</sup> Sugar Loss to Molasses

<sup>4</sup> NS = Treatment means for that column did not differ significantly