

EFFECT OF AGZYME AND ENHANCE ON SUGARBEET YIELD AND QUALITY

Mohamed F. R. Khan¹ and Aaron L. Carlson²

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 and Enhance on sugarbeet yield and quality.

MATERIALS AND METHODS

A field trial was conducted in Foxhome, MN, in 2011. 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 10 May, using SESVanderHave 36811RR with 45 g of Tachigaren/kg seed. Terbufos (Counter 15G) was applied modified in-furrow at 6 lbs/A during planting to control sugarbeet root maggot (*Tetanops myopaeformis* von Röder; Diptera: Ulidiidae). Weeds were controlled with glyphosate applied on 14, 28 June and 25 August. Quadris was applied 14 June to help control Rhizoctonia root rot. Cercospora leaf spot was controlled with Topsin, Eminent, and Headline applied 27 July, 8 and 25 August, respectively.

In-furrow application was made at planting on 10 May using StreamJet 0004 nozzles operated at 15 psi and calibrated to deliver 23 gpa spray solution. Foliar treatment was applied 9 June to 2-5 leaf beets with a bicycle sprayer calibrated to deliver 23 gpa of solution at 40 p.s.i pressure to the middle four rows of plots using TeeJet 8002 XR flat fan nozzles. Treatments were applied in-furrow at planting at rates indicated in Table 1.

Plots were defoliated mechanically and harvested using a mechanical harvester on 22 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 8.3.4 software package (Gylling Data Management Inc., Brookings, South Dakota, 2011). 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 plant stand, root yield, sucrose concentration, sugar loss to molasses, or recoverable sucrose in the plots treated with Agzyme + 10-34-0 or Enhance with 10-34-0 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, 2009, and 2011, AgZyme application did not result in a significant change for any of the parameters evaluated.

Table 1. Effect of AgZyme and Enhance on sugarbeet stand, yield, and quality at Foxhome, MN in 2011.

Treatments and (rate/A)	Application Date	Sept. 22 Stand Count beets/100'	Root yield Ton/A	Sucrose concentration %	SLM* %	Recoverable Sucrose lb/A
10-34-0 (3 gal)	10 May	206	26.9	16.1	1.02	8146
AgZyme (12.8 fl oz) + 10-34-0 (3 gal)	10 May	191	26.8	16.2	1.05	8137
10-34-0 (3 gal) / Enhance (64 fl oz)	10 May 9 June	201	25.1	16.1	1.02	7573
LSD (P= 0.05)		†NS	NS	NS	NS	NS

*Sugar loss to molasses.

†NS – treatment means in the column were not significantly different.