

Sugar Enhancement Trial

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Introduction: The sugar content and purity of a beet crop is a major factor in how well the factory can operate and ultimately how profitable the sugar beet crop will be to the shareholders. The SMBSC growing area has struggled to increase the sugar content of the beet crop in recent years. The impact of finding a product that could substantially increase the sugar content of the beet crop would be a monumental achievement.

Objective: Low sugar content has hindered the SMBSC beet payment in recent years. Several products currently available were tested in this trial to evaluate their ability to improve the sugar content of the crop.

Materials and Methods: A trial was conducted near Lake Lillian to screen several products that may have the ability to improve sugar content. The trial was planted on April 27th using SV863. Normal agronomic practices were used to keep the trial weed and disease free. This trial was designed as a randomized complete block with four replications and eight treatments. Plots in this trial were six rows wide with the center 4 rows being treated and the center two rows being harvested for yield and quality analysis. The 6-8 leaf treatments were applied on June 5th using a bike sprayer with XR11002 nozzles with a spray volume of 17gpa. The 10-12 leaf treatments were applied on June 20th using the same sprayer equipment. The center two rows of each six row plot were harvested on September 20th using a six row defoliator and a two row research lifter. The beets harvested from the center two rows were weighed on the lifter and a sample of those beets were used for a quality analysis at the tare lab. The data was analyzed for significance using SAS GLM version 9.4.

Results and Discussion: No significant differences were found in the yield parameters (Table 1). None of the products tested performed statistically better than the control. These are results from a one year study with a limited number of entries. Further testing may need to be done to see if there is a product that could significantly improve the sugar content of beets in the SMBSC growing area.

| Treatment | Treatment Description | Timing |
|------------------|-----------------------------------|-------------------------|
| 1 | Control | N/A |
| 2 | Sugar and Spice (1gal/acre) | 6-8 leaf and 10-12 leaf |
| 3 | FP16 (2gal/acre) | 6-8 leaf and 10-12 leaf |
| 4 | Nresponse + Micro 500 (1gal/acre) | 6-8 leaf and 10-12 leaf |
| 5 | Vitazyme (13oz/acre) | 6-8lf |
| 6 | Siapton (1.5pints/acre) | 6-8 leaf |
| 7 | Coron (1gal/acre) | 6-8 leaf and 10-12 leaf |
| 8 | Voyagro (1pint/acre) | 6-8lf |

Table 1: Description of treatments in the Sugar Enhancement Trial.

| Treatment | Percent Sugar | Tons PerAcre | Percent Extractable Sugar | Extractable Sugar per Ton (lbs.) | Extractable Sugar per Acre (lbs.) | Percent Purity |
|------------------|----------------------|---------------------|----------------------------------|-----------------------------------------|------------------------------------------|-----------------------|
| 1 | 16.5 | 32.5 | 13.8 | 275.0 | 8895.3 | 89.8 |
| 2 | 16.5 | 31.3 | 13.8 | 276.8 | 8635.3 | 90.5 |
| 3 | 16.7 | 34.4 | 14.0 | 280.8 | 9750.0 | 90.6 |
| 4 | 16.7 | 32.0 | 14.1 | 282.8 | 9013.3 | 90.9 |
| 5 | 16.9 | 29.5 | 14.4 | 286.5 | 8432.3 | 90.9 |
| 6 | 16.7 | 33.0 | 14.2 | 282.8 | 9314.8 | 90.9 |
| 7 | 16.1 | 33.5 | 13.6 | 270.3 | 8736.0 | 90.4 |
| 8 | 16.9 | 32.4 | 14.4 | 287.7 | 9296.7 | 91.3 |
| Mean | 16.6 | 32.1 | 14.0 | 280.2 | 8995.6 | 90.7 |
| CV% | 2.4 | 7.3 | 3.4 | 3.4 | 7.4 | 1.0 |
| Pr>F | 0.1638 | 0.3412 | 0.1909 | 0.2043 | 0.2653 | 0.6930 |
| lsd (0.05) | NS | NS | NS | NS | NS | NS |

Table 2: Yield parameter results for the Sugar Enhancement Trial.