

INVESTIGATING THE EFFECT OF REV APPLIED FOLIARLY TO SUGARBEETS IN NORTHWESTERN MINNESOTA

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The objective of this study was to determine the effect of DAKOTA REV applied foliar to sugarbeets. The study began on May 14, 2017 when the sugarbeets (Seedex Marathon) were planted. The field in which the sugarbeets were planted grew potatoes in the previous year. This field is located approximately 8 miles north of East Grand Forks, MN. The seeds were spaced 4.75 inches apart and were planted with 10-34-0 at a rate of 3 gal/ac.

On July 9, 2017, 57 days after planting, REV was applied to two plots in the field as displayed in figure 1. The REV was mixed with water and then the solution was applied at 11.1 gal/ac. The sprayer traveled 8 mph and the pressure was set to 40 psi. The wind speed averaged approximately 5 mph and came from the SSE. Two days after spraying 0.48 in. of precipitation fell on the field.

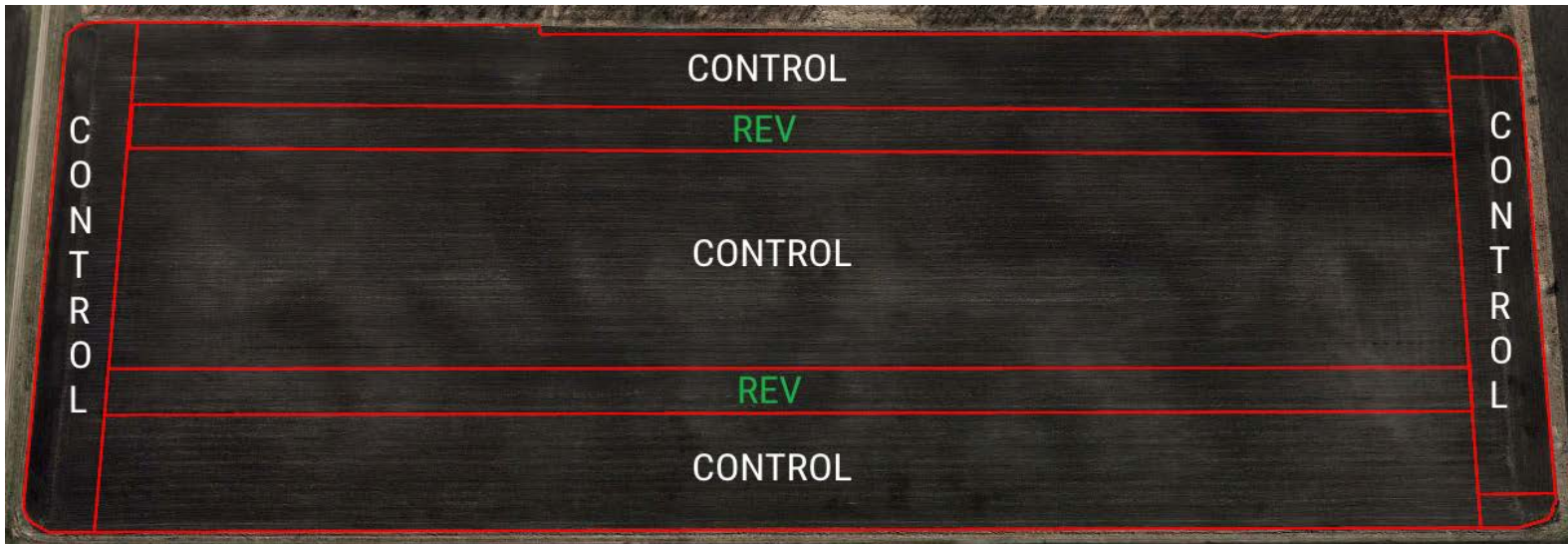


Figure 1: Plot map of sugarbeet field.

The field was harvested over four days from 10/8/17 to 10/11/17. A majority of the REV plots were harvested on 10/10/17. The harvest started 148 days after planting and 92 days after treatment. The beets were lifted into a truck which was then sent to an American Crystal Sugar facility for an official weight and sugar content measurement. REV-treated plots were harvested to ensure that the plot contained no untreated beets. It was observed that the trucks would be full by the end of one pass of REV-treated beets while the trucks would not be full at the end of a pass of the untreated beets. The weights received from American Crystal Sugar showed that the **untreated beets yielded 25.27 tons/ac whereas the REV-treated beets yielded 35.86 tons/ac**. The sugar content of the untreated beets was 18.33% whereas the sugar content of the REV-treated beets was 18.39%. Measurement of the acreage of the field was done by American Crystal Sugar.

The growing season was cooler than average and drier than average. According to North Dakota Agricultural Weather Network (NDAWN) the average temperature in Grand Forks, ND from 5/14/17 to 10/11/17 was 63.8°F. The 30-year normal for the same timeframe is 65.1°F. According to NDAWN the precipitation from 5/14/17 to 10/11/17 was 13.37 inches. The 30-year normal for the same timeframe is 14.02 inches. The predominant soil type for this field is silty clay loams. The pH was found to be 8.0, with 75 ppm N, 6 ppm P, and 223 ppm K.



Crop Year	Scale Ticket Number	Scale Date	Sugar Percent	Raw Tons
Control (Untreated) Harvest Results				
2017	81039098	10/8/2017		24.29
2017	81072574	10/8/2017		23.47
2017	81041151	10/9/2017		25.4
2017	81076185	10/10/2017	18.6	23.81
2017	81042464	10/10/2017		24.67
2017	81042488	10/10/2017		24.12
2017	81042511	10/10/2017		23.54
2017	81042548	10/10/2017	17.8	24.53
2017	81076276	10/10/2017		22.16
2017	81042566	10/10/2017		22.92
2017	81042597	10/10/2017	19.3	24.4
2017	81076335	10/10/2017		23.18
2017	81042609	10/10/2017		23.96
2017	81042639	10/10/2017		24.57
2017	81076405	10/10/2017		23.13
2017	81043014	10/11/2017		24.26
2017	81043028	10/11/2017		24.74
2017	81043060	10/11/2017	19.2	23.27
2017	81043076	10/11/2017	17.9	23.06
2017	81043106	10/11/2017		23.03
2017	81043126	10/11/2017		25.58
2017	81043152	10/11/2017		23.58
2017	81043167	10/11/2017		25.37
2017	81043195	10/11/2017	18.2	24.01
2017	81043228	10/11/2017		24.88
2017	81043244	10/11/2017	18.6	23.5
2017	81043273	10/11/2017		24
2017	81043288	10/11/2017	17.6	23.99
2017	81043326	10/11/2017		23.88
2017	81043359	10/11/2017		24.2
2017	81043374	10/11/2017		24.44
2017	81043411	10/11/2017	17.7	23.36
2017	81043424	10/11/2017		24.52
2017	81077226	10/11/2017	18.1	22.59
2017	81018004	10/11/2017	17.5	23.91
2017	81043457	10/11/2017	17.8	22.86
2017	81077281	10/11/2017	17.2	22.95
2017	81077291	10/11/2017	17.7	21.8
2017	81043488	10/11/2017	18.3	23.57
2017	81043502	10/11/2017	18.7	23.14
2017	81077322	10/11/2017	18.5	22.46

10/25/2017

2017	81018054	10/11/2017	19	24.89
2017	81077366	10/11/2017	18.5	23.25
2017	81043535	10/11/2017	19	23.94
2017	81043552	10/11/2017	18.9	23.61
2017	81077404	10/11/2017	18.6	23.59
2017	81043560	10/11/2017	18.7	22.53
2017	81077436	10/11/2017	18.5	11.81

Avg Plot % Sugar 18.33

Plot Harvested Tons 1128.72

Crystal Measured Field: 62
 Untreated Area (Crystal Measured - Plot Acreage) 44.66667

Plot Harvested Tons 1128.72 Tons
 Control Yield Per Acre: 25.26985075 Tons/Ac
 Avg Sugar % 18.33 %

Crop Year	Scale Ticket Number	Scale Date	Sugar Percent	Raw Tons
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Rev Load Results

Crop Year	Scale Ticket Number	Scale Date	Sugar Percent	Raw Tons
2017	81041087	10/9/2017		24.79
2017	81041105	10/9/2017	18	23.53
2017	81041175	10/9/2017	18	23.57
2017	81041229	10/9/2017		22.5
2017	81041273	10/9/2017		25.78
2017	81041966	10/10/2017		23.09
2017	81041985	10/10/2017	18.2	25.04
2017	81042011	10/10/2017		24.13
2017	81042029	10/10/2017	17.9	23.19
2017	81042050	10/10/2017		24.31
2017	81075787	10/10/2017		23.18
2017	81042098	10/10/2017		23.95
2017	81042141	10/10/2017		24.31
2017	81075843	10/10/2017		23.07
2017	81042185	10/10/2017		23.82
2017	81042218	10/10/2017	18.3	24.94
2017	81075910	10/10/2017	18.7	22.43
2017	81042263	10/10/2017	19.1	24.31

10/25/2017

2017	81075982	10/10/2017		22.93
2017	81042297	10/10/2017		23.36
2017	81042320	10/10/2017		24.6
2017	81076063	10/10/2017	18.7	23.08
2017	81042358	10/10/2017		21.59
2017	81042393	10/10/2017	18.7	24.43
2017	81076127	10/10/2017		19.88
2017	81042408	10/10/2017		16.62
2017	81042439	10/10/2017	18.3	15.1
	Avg Plot % Sugar		18.39	
	Plot Harvested Tons			621.53

Variety: Seedex Marathon
Seed Spacing: 4.75 in
Pre-plant fertilizer 10-34-0
Fertilizer Rate: 3 gal per Acre
Plant Date: 5/14/2017
2nd Roundup Application Date: 7/8/2017
Rev applied Date: 7/9/2017
Rev Rate: Quart per Acre
Nozzle: Tee Jet AI11003
Rate 11.1 GPA
PSI: 40 PSI
Application Speed 8 MPH

REV Plot Size
Number of Plots 2
Number of Rows 88 Rows per plot
Length of Plot 780 yds or 2340 ft

	Inches	Feet
Width of Plot (88 Rows at 22in)	1936	161.3333
Plot Acreage	8.67	Acre
Total Plot Acreage:	17.33	Acre
Plot Harvested Tons	621.53	Tons
Rev Yield Per Acre:	35.86	Tons/Ac
Avg Sugar %	18.39	%

Crystal Measured Field: 62
Untreated Area (Crystal Measured - Plot Acreage) 44.67

Plot Harvested Tons	1128.72	Tons
Control Yield Per Acre:	25.27	Tons/Ac
Avg Sugar %	18.33	%

10/25/2017

Difference between Treated and Nontreated

	Yield	% Sugar
REV:	35.86	18.39
Control:	25.27	18.33
Difference	+10.59	+0.06