

USE OF OCEANGROWN® FERTILIZERS TO IMPROVE SUGARBET YIELD AND QUALITY

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Introduction

OceanGrown® products are a series of organic fertilizers manufactured and marketed by OceanSolutions LLC in Clearwater, FL. According to their website, their mission is to 'increase the global food supply and reduce environmental damage caused by agriculture-based pollutants through the use of our innovative nutrient rich ocean extract designed to nitrify soil, create higher profits and reduce agriculture input costs.' In addition, a total of 90 nutrients are claimed to be present in the products, contributing, according to their literature, to better human nutrition. The sugarbeet experiments were carried out together with experiments in field corn, potato, pinto bean and spring wheat during the 2010 season. Only the sugarbeet yield and quality portion of the experiments is presented in this paper. Elemental analysis was not conducted on sugarbeet due to the refined end product that is consumed by humans.

Methods

The experiment was conducted about 10 miles east of Perley, MN on Bearden silty clay loam soils (fine-silty, mixed, superactive, frigid Aeric Calciaquolls). The experimental design was a randomized complete block with 6 treatments and four replications. Two plots in the first block were damaged with standing water early in the season, and were eliminated from the analysis. Treatment protocols were developed by OceanSolutions for use in sugarbeets. Different protocols and fertilizer components were used for every crop. Residual nitrate soil test was 50 lb/acre to a four-foot depth.

Sugarbeet treatments-

-Untreated Check, no N, no OceanGrown fertilizers

-OceanGrown fertilizers only, no N or P supplemented-

OceanGrown fertilizers consisted of:

1 gallon/acre OceanGrown Calcium Component applied preplant

In-furrow starter treatment of 64 oz/acre OceanSolution and 2 gallon/acre OceanGrown Humic Acid Component, diluted with water to make a 3 gal/acre total volume treatment

Foliar fertilizer application 5/26, 6/18 and 7/28

Foliar fertilizer application- 32 oz/acre OceanSolution, 16 oz/acre OceanGrown Liquid Carbon Component, and 1 gal/acre Humic Acid Component

Foliar fertilizer was applied in a total solution of 10 gal/acre applied at 40 psi using flat fan nozzles

-OceanGrown fertilizers (as above) with ½ rate N (supplemental 15 lb N/acre as urea).

-OceanGrown fertilizers (as above) with full rate N (Supplemental 80 lb N/acre as urea).

-Half rate N treatment only- (15 lb N/acre as urea)

-Full rate N treatment only (80 lb N/acre as urea)

Preplant treatments were applied and incorporated with two field cultivator passes (set at 3 inch depth) immediately before seeding on May 5.

Results

There were no differences between treatments in harvest stand, recoverable sugar per ton, per cent loss to molasses or amino-N (Table 1). The OceanGrown fertilizers with no supplemental N treatment had a greater sugarbeet yield than the check, however, the treatment did not have a greater recoverable sugar per acre compared to the check. The OceanGrown treatment with the ½ rate of N was similar in sugarbeet yield and recoverable sugar per acre as the ½ rate N treatment without the OceanGrown products. The full rate of N

treatment alone had greater sugarbeet yield and greater recoverable sugar per acre compared to the OceanGrown treatment with a full rate of N.

Table I. Sugarbeet yield and quality components as affected by OceanGrown experiment treatments, Perley, MN, 2010.

Treatment	Sugarbeet yield Tons/acre	HarvestStand, plants/acre	Recoverable Sugar per ton Lb/ace	Recoverable Sugar per acre Tons/acre	% Loss To Molasses	Amino-N
Check	30.8	46,100	329	5.1	0.8	215
OG*	34.8	51,200	318	5.5	0.9	224
OG ½ N	33.2	47,500	316	5.2	0.9	206
OG Full	36.2	47,700	324	5.9	0.9	228
½ N	34.7	50,300	318	5.5	0.9	198
Full N	39.9	50,000	319	6.3	0.9	211
F	8.5	1.13	0.83	0.5	1.4	1.46
P	0.0009	0.39	0.55		0.29	0.27
LSD 5%	3.1	NS	NS	0.5	NS	NS

*OG, Ocean Grown only

OG ½ N is Ocean Grown with ½ rate N treatment

OG Full is Ocean Grown with full rate N treatment

½ N is the ½ rate of N treatment only

Full N is the full rate of N treatment only

Summary

The OceanGrown series of fertilizer applications successfully increased sugarbeet yield over the check, but failed to increase recoverable sugar per acre over the check. The full rate of N treatment without the OceanGrown fertilizers was superior to the full rate of N treatment with the OceanGrown treatment. The ½ rate of N with OceanGrown treatment was similar in yield and recoverable sugar per acre compared to the ½ rate of N only treatment. The use of these products for improvement of sugarbeet yield and quality compared to standard treatments does not appear to be justified from this study.