

# THE EFFECT OF AWAKEN AND STARTER FERTILIZER ON SUGARBEET YIELD AND QUALITY-2000

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## Introduction

Awaken was recently introduced into the Red River Valley as a planting time treatment for enhancement of sugarbeet early season vigor, yield and quality. It is a versatile fertilizer additive, 18-3-0 plus micronutrients and contains ACA, patented agricultural crop additive. Past research has shown significant yield responses to starter fertilizer occur about 40% of the time. Early season vigor was enhanced about 2/3 of the time.

## Materials and Methods

Field experiments were established on Bearden silty clay loam (Fine-silty, mixed, super active, frigid, Aeric Calciaquoll) on the Kirk Watt farm at Glyndon, MN and on Fargo silty clay (Fine, smectic, frigid, Typic Epiaquert) north of the airport at Fargo, ND, during the spring of 2000. The experiment was arranged in a randomized complete block design with six replications. Individual treatment plots measured 11 feet wide and 30 feet long at Glyndon and 35 feet long at Fargo. Soil nitrogen levels were adjusted with fertilizer to approximately 120 lbs/acre of available residual soil test plus added fertilizer N. Awaken and 10-34-0 treatments were applied modified in-furrow at planting time at rates shown in [Table 1](#) and [2](#).

Sugarbeet, Crystal 222 and Beta 2084, were planted on May 3 and 6 at Glyndon and Fargo, respectively with a John Deere MaxEmerge 2. Sugarbeet was placed 1.25 inches deep with 5 1/8 inch in-row spacing. A 22-inch row spacing was used. Counter was surfaced band applied at 11.9 lbs/a and incorporated with chain at planting. Stand counts were taken on June 4 at both locations. Post emergence herbicides, cultivation and hand labor was used as needed for weed control. One application each of Eminent and Super Tin were applied for Cercospora leafspot control.

Sugarbeet were harvested September 18 and 21 at Fargo and Glyndon, respectively. The middle two rows of each 6 row plot were harvested. Yield determinations were made and quality analysis performed at American Crystal Sugar Quality Tare Lab, East Grand Forks, MN.

## Results and Discussion

Sugarbeet plant population was not affected by the application of starter fertilizer material at either location ([Table 1](#) and [2](#)). By June 4, plant emergence was practically complete for both varieties at the Fargo location but with a drier seedbed at planting time at the Glyndon site emergence was delayed and still occurring. Wet soil conditions following the June 4 counts prevented any further evaluation of emergence effects. With the warm soil temperatures present at the time of seeding, a significant response in plant emergence and early plant growth would not be expected to occur. Increase in plant vigor and significant yield responses normally occur when seeding into soil with lower soil temperature. The large amount of precipitation that occurred on June 17 had a much greater effect on the growth of sugarbeet at the Fargo location, although the study area was not flooded by standing water at either location.

The application of 10-34-0 starter resulted in a significant increase in the recoverable sugar production averaged across both sugarbeet varieties at each location. Awaken alone or in combination with 10-34-0 did not have a significant effect on root yield or recoverable sugar production. Since a detrimental effect on sugar production was not measured with the addition of Awaken, this material would be a suitable fertilizer additive to carry micronutrients for sugarbeet if the circumstances required. The amount of nitrogen and phosphorus contained in Awaken is not sufficient at the 3 pint/A rate to produce a starter effect given the warm soil conditions present at planting time during this growing season.

**Table 1. Effect of starter fertilizer material on sugarbeet plant establishment, root yield, sucrose percentage, recoverable sugar production, and harvest population (September 21), Glyndon, MN, 2000.**

STARTER FERTILIZER TREATMENT	SUGAR BEET VARIETY	JUNE 4 PLANTS /100 FT	ROOT YIELD Tons/A	SUCROSE Percent	REC. SUGAR Lbs/Acre	BEETS /100 FT
Check	Crystal 222	131	25.1	16.7	7767	189
Awaken 3 pts/A	Crystal 222	124	25.3	16.3	7628	176
Awaken 3 pts/A + 10-34-0 3 gpa	Crystal 222	120	26.0	16.5	7886	175
10-34-0 3 gpa	Crystal 222	123	27.1	16.5	8190	179
Check	Beta 2084	116	26.9	17.1	8563	154
Awaken 3 pts/A	Beta 2084	122	27.6	16.7	8515	162
Awaken 3 pts/A + 10-34-0 3 gpa	Beta 2084	118	26.9	16.6	8265	170
10-34-0 3 gpa	Beta 2084	117	27.5	16.7	8492	166
<u>Variety Mean</u>						
Check		123	26.0	16.9	8165	172
Awaken 3pts/A		123	26.4	16.5	8073	169
Awaken 3 pts/A + 10-34-0 3 gpa		118	26.4	16.6	8075	173
10-34-0 3 gpa		120	27.3	16.6	8834	173
LSD (.05)		NS	0.9	0.4	370	18

**Table 2. Effect of starter fertilizer material on sugarbeet plant establishment, root yield, sucrose percentage, recoverable sugar production, and harvest population (September 18), Fargo, ND, 2000.**

STARTER FERTILIZER TREATMENT	SUGAR BEET VARIETY	JUNE4 PLANTS /100 FT	ROOT YIELD Tons/A	SUCROSE Percent	REC. SUGAR Lbs/Acre	BEETS /100 FT
Check	Crystal 222	215	24.1	15.6	6802	225
Awaken 3 pts/A	Crystal 222	215	24.3	16.0	7090	232
Awaken 3 pts/A + 10-34-0 3 gpa	Crystal 222	205	24.9	16.3	7446	225
10-34-0 3 gpa	Crystal 222	213	24.1	16.4	7247	217
Check	Beta 2084	193	23.3	16.9	7288	179
Awaken 3 pts/A	Beta 2084	192	23.4	16.6	7166	172
Awaken 3 pts/A + 10-34-0 3 gpa	Beta 2084	217	24.7	16.7	7608	174
10-34-0 3 gpa	Beta 2084	189	24.4	17.0	7669	172
<u>Variety Mean</u>						
Check		204	23.7	16.2	7045	202
Awaken 3 pts/A		204	23.9	16.3	7128	202
Awaken 3pts/A + 10-34-0 3 gpa		211	24.8	16.5	7527	199
10-34-0 3 gpa		201	24.2	16.7	7458	195
LSD (.05)		NS	1.0	0.4	317	10

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