EFFECT OF AGM 05017, 03006 AND ORIGIN PROLIFIC ON SUGARBEET YIELD AND QUALITY

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Objective
Determine the effect of AGM 05017, 03006 and Origin Prolific on sugarbeet yield and quality.

Materials and Methods
Field research was conducted in 2006 at Foxhome, MN and Prosper, ND. Sugarbeet variety 'Beta 4818' treated with Tachigaren (45 g/kg seed) was seeded into field plots 11 feet wide (6 rows spaced 22 inches apart) and 30 feet in length at Foxhome and Prosper on 25 April and 5 May, respectively. Counter insecticide was applied at 11.9 lb/acre at planting to control sugarbeet root maggot (*Tetanops myopaeformis* von Röder; Diptera: Otitidae). Fertilization was done according to standard recommendations for sugarbeet. Weeds were controlled with recommended herbicides (Khan, 2006), cultivation and hand weeding. Cercospora leaf spot was controlled using labeled fungicides.

Treatments were manually thinned to 175 plants per 100 feet of row when plants were at the four to six leaf stages. The experiment was a randomized complete block design with four replicates. There were five treatments (Table 1) including an untreated control; products were provided by Agriliance LLC, Inver Grove Heights, MN. Treatments were applied to the middle four rows of plots using a CO_2 powered, four nozzle hand-held sprayer calibrated to deliver 20 gallons per acre using 8002 nozzles operating at 40 psi. Applications were made on 12 June and 7 July at Foxhome and 16 June and 7 July at Prosper. The middle two rows of plots were harvested on 26 September and 3 October at Prosper and Foxhome, respectively. Yield was determined and quality analysis performed by American Crystal Sugar Company Quality Tare Laboratory, East Grand Forks, MN. The least significant difference (LSD) test was used to compare treatments when the F-test for treatments was significant ($p=0.05$). The data analysis was performed with the ANOVA procedure of the Agriculture Research Manager, version 6.0 software package (Gylling Data Management Inc., Brookings, South Dakota, 1999).

Results
At Foxhome, there were no significant differences in recoverable sucrose, root yield, sugar concentration, and sugar loss to molasses among treatments (Table 1). However, there was a general trend of higher recoverable sucrose and root yield in treated plots compared to the untreated control.

At Prosper, there were no significant differences in recoverable sucrose, root yield, sucrose concentration, and sucrose loss to molasses between the untreated control and the

treated plots. However, AGM 03006 + Origin Prolific resulted in significantly higher recoverable sucrose and root yield compared to AGM 05017 applied alone and significantly higher recoverable sucrose compared to AGM 03006 applied alone.

Reference
Khan, M. 2006. 2006 Sugarbeet Production Guide. North Dakota State University and University of Minnesota Extension Services, pp. 24-55.

Table 1. Sugarbeet yield and quality at Foxhome, 2006.

Treatment and rate/ A	Recoverable sucrose		Root yield	Sucrose concentration	Sucrose loss to molasses
	(lbs/A)	(lbs/T)	(t/A)	(%)	(%)
Untreated control	7631	276	27.8	15.21	1.38
AGM 05017 32 fl oz	8357	294	28.7	16.08	1.35
AGM 05017 32 fl oz + Origin Prolific 3 lbs	7883	278	28.6	15.37	1.45
AGM 03006 32 fl oz	7856	273	29.1	15.08	1.45
AGM 03006 32 fl oz + Origin Prolific 3 lbs	8213	283	29.3	15.51	1.38
LSD (p=0.05)	1461	22	3.6	1.02	0.14

Table 2. Sugarbeet yield and quality at Prosper, 2006.

Treatment and rate/ A	Recoverable sucrose		Root yield	Sucrose concentration	Sucrose loss to molasses
	(lbs/A)	(lbs/T)	(t/A)	(%)	(%)
Untreated control	11354	299	38.4	16.47	1.55
AGM 05017 32 fl oz	10646	295	36.5	16.32	1.60
AGM 05017 32 fl oz + Origin Prolific 3 lbs	11321	298	38.4	16.44	1.60
AGM 03006 32 fl oz	10575	289	37.0	15.97	1.52
AGM 03006 32 fl oz + Origin Prolific 3 lbs	12115	299	41.1	16.44	1.50
LSD (p=0.05)	1165	14	4.2	0.63	0.22