EFFICACY OF TELONE II ON CONTROLLING APHANOMYCES IN SUGARBEET

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Introduction and Objective

Aphanomyces, caused by the soil borne fungus, *Aphanomyces cochlioides*, is the most destructive root disease of sugarbeet in the Red River Valley. Over 50% of sugarbeet fields in North Dakota and Minnesota are infested with Aphanomyces. The use of tolerant varieties and Tachigaren treated seeds has been useful in controlling Aphanomyces root rot. However, there is still a need to find additional control measures against *A. cochlioides*.

The objective of this research was to determine if Telone II could control Aphanomyces root rot on sugarbeet.

Materials and Methods

Research was conducted at Fargo, ND. Telone II was applied on November 6, 2002 to the respective plots using an Alloway ridger equipped with 12" anhydrous shanks. Telone II was applied through a number 35 disk orifice at 40 psi at the rate of 8 and 12 gallons per acre. Plots receiving Telone II were sealed using a ridge packer. Crystal 817 and Beta 3800 sugarbeet seeds were planted with a John Deer MaxEmerge 2 planter into plots 11 feet in width (6 22-inch wide rows) and 30 feet in length on May 2. Seeds were planted to stand 1.25 inches deep in the center of 22 inch rows. Counter was applied at 11.9 lb/acre at planting to control sugarbeet root maggot. The experiment was a randomized complete block design with four replications. Fertilization was done according to standard recommendations for sugarbeet. Plots were kept weed free using micro-rates of herbicides recommended for sugarbeet, hand-weeding, and cultivation. Three applications of fungicide were used to control Cercospora leaf spot.

The middle two rows of each plot were harvested on September 24. Yield was determined and quality analysis performed by American Crystal Sugar Company Quality Tare Laboratory East Grand Forks, Minnesota. Data was analyzed for differences by analysis of variance and LSD using Agriculture Research Manager, version 6.0.

Results and Discussion

Plants in the treatments were not infected with Aphanomyces root rot, although Aphanomyces was severe the preceding year; therefore, differences among treatments were probably as a result of varietal differences, and or the use of Tachigaren.

Beta 3800 with Tachigaren resulted in significantly lower recoverable sucrose per acre than the untreated Crystal 817, or Crystal 817 with Telone II at 12 gallons per acre. There was no significant difference in recoverable sugar per acre, recoverable sugar per ton of beets, net tons per acre, percent sucrose, and percent sugar loss to molasses among the different treatments of the Crystal 817 variety. There was no significant difference in recoverable sugar per acre between Beta 3800 with and without Tachigaren. Beta 3800 resulted in significantly higher net tons per acre, significantly higher sugar loss to molasses, significantly lower recoverable sugar per ton, and significantly lower sucrose content than Beta 3800 with Tachigaren.

Table 1 – Effect of variety, Telone II, and Tachigaren on sugarbeet yield and quality

Treatment	RSA	RST	Net T/A	% S	% SLM*
Crystal 817	7625 a	330 ab	23.4 ab	18.20 ab	1.72 a
Crystal 817 +Telone @ 12 GPA	7659 a	338 a	22.9 b	18.51 a	1.62 ab
Crystal 817 + Telone @ 8 GPA	7298 ab	332 ab	22.2 b	18.27 ab	1.67 a
Beta 3800	7480 ab	309 c	24.4 a	17.10 c	1.67 a
Beta 3800 + 45 grams Tachigaren	7138 b	325 b	22.2 b	17.76 b	1.50 b

LSD (P=0.05)	470	13	1.4	0.54	0.15
CV	5.24	3.25	5.21	2.5	7.56

*SLM Sugar loss to molasses

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