EFFECT OF ARMICARB 100 AND MESSENGER ON CERCOSPORA LEAF SPOT ON SUGARBEET IN 2001

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INTRODUCTION

Armicarb 100 (Helena Company) and Messenger with harpin and harpin-related technology (Eden Biosciences) were compared to a standard treatment of Eminent alternating with BAS 500 for controlling Cercospora leaf spot in sugarbeet.

MATERIALS AND METHODS

Research was conducted at Breckenridge, MN, on a silty loam soil between 11 May and 24 September 2001. 'HH Agate' sugarbeet seeds were planted on 11 May with a John Deere MaxEmerge 2 planter into plots 11 feet in width (6 22-inch wide rows) and 30 feet in length. Seeds were placed 1.25 inches deep and 3 inches apart in rows that were 22 inches wide. Counter was applied at 11.9 lb/acre at planting to control sugarbeet root maggot. The experiment was arranged in a randomized complete block design with four replications. Plots were thinned manually to 150 beets per 100 foot of row on 6 June. Armicarb 100 was applied on on July 24, 31, August 7, 21, and September 5. Messenger alone, Messenger in alternation with Triphenyltin hydroxide, and Eminent in alternation with BAS 500 were applied on July 25, August 7, 21, and September 5. All treatments were applied directly to the 4-inner rows of the 6-row plots with a boom sprayer operating at 100 psi and delivering 20 or 30 gallons spray solution per acre, as required. There were also untreated check plots. Fertilization was done according to standard recommendation for sugarbeet. Plots were kept weed free using micro-rates of herbicides recommended for sugarbeet, hand-weeding, and cultivation.

The middle two rows of each 6-rows plot were harvested on 24 September. 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

Cercospora leaf spot symptoms were observed late in July and disease severity was very low in the plots. There were no difference among the treatments in recoverable sugar per ton, percent sucrose content, and in percent sugar loss to molasses. The most effective treatment for Cercospora control was the standard treatment of Eminent and BAS 500. Armicarb 100 when applied at the lower rate of 20 gpa resulted in a significantly lower tons per acre and recoverable sugar per acre than the other treatments. Yields were about three tons lower than the five-year average for the factory district. The lower yields were most likely a result of late planting (about three weeks later than normal) because of wet fields.

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Table 1. Effect of Armicarb 100 and Messenger at controlling Cercospora leaf spot at Breckenridge, MN 2001.

Treatments And Rates Per Acre	Sucrose Content (%)	SLM (%)	Root Yield (T/Acre)	Rec. Sucrose (lb/T)	Rec. Sucrose (lb/Acre)	CLS Sept. 21
Eminent 125 SL 13 fl oz / BAS 500 2.09 EC 9 fl oz	16.6	1.4	19.0	304	5685	1.2
Messenger 4 oz	16.8	1.4	17.4	307	5292	1.9
Messenger 4 oz / TPTH 80 WP 5 oz	16.4	1.4	17.1	299	5009	1.6
Armicarb 100 5 lb/100 gal 33 gpa	16.5	1.4	17.7	301	5304	1.8
Armicarb 100 5 lb/100 gal 20 gpa	16.6	1.4	12.4	304	3729	2.0
LSD (P=0.05)	0.8	0.13	3.52	17.14	1053	0.4
CV (%)	3.14	6.05	13.68	3.67	13.66	16.6