

KHAN, MOHAMED F.R.^{1*}, LARRY J. SMITH², MARK BREDEHOEFT³, and STEVE ROEHL³. ¹North Dakota State University/University of Minnesota, Soil Science Department, Fargo, ND 58105-5758, ²University of Minnesota, Northwest Research and Outreach Center, Crookston, MN, and ³Southern Minnesota Beet Sugar Cooperative, Renville, MN. Efficacy of fungicides for Cercospora leaf spot control on sugarbeet in eastern North Dakota and Minnesota.

ABSTRACT

Cercospora leaf spot is the most damaging foliar disease of sugarbeet in the production areas of North Dakota and Minnesota. The objective of this study was to evaluate the efficacy of labeled and experimental fungicides for Cercospora leaf spot control. In 1999, this study was conducted at Gluek and Willmar (southern Minnesota), where there were 40 treatments, and Crookston and Foxhome, where there were 36 treatments. In 2000, this study was conducted at Renville and Maynard (southern Minnesota), where there were 35 treatments, and Crookston and Breckenridge, where there were 30 treatments. Each plot was six 22-inch rows wide by 35 feet long. Each experiment was arranged in a randomized complete block design with four replications of treatments. Treatments were applied in 20 gal/acre of water through four hollow cone spray nozzles at 100 psi spray pressure to the middle four rows of plots and the middle two rows were harvested for yield and quality analysis. Most treatments were applied on a 14 d interval.

Disease pressure was high in 1999 and moderate in 2000. In 1999 and 2000, at Gluek, Willmar, and Crookston, all fungicide treatments resulted in significantly higher recoverable sucrose per acre than the untreated check. In 1999, at Foxhome, all treatments, except Quadris applied alone, Benlate applied alone, Benlate followed by Manzate in alternation, and triphenyltin hydroxide (TPTH) followed by TRA0019 in alternation, resulted in significantly higher recoverable sucrose per acre than the untreated check plots. In 2000, all treatments, except Agri-Tin followed by Eminent in alternation, Quadris, Caramba, and TPTH resulted in significantly higher recoverable sucrose per acre than the check plots.

At all test sites, in 1999 and 2000, Eminent followed by TPTH in alternation at 14 d intervals provided good control of Cercospora leaf. At Crookston, Foxhome, and Breckenridge, the inclusion of a mixture of Topsin and Penncozeb in an Eminent and TPTH fungicide alternation program was effective at controlling Cercospora leaf spot and provided a useful tool in fungicide resistance management. At Breckenridge in 2000, Flint followed by TPTH in alternation also provided good Cercospora leaf spot control.

The experimental compound, BAS 500 (Headline™), when used at the 0.15 lb a.i./A rate either alone or in alternation with other registered compounds, consistently provided excellent control at all test sites. It should be noted that at Crookston and Breckenridge in 2000, BAS 500 applied with Agridex at 1% v/v caused leaf necrosis.