

KHAN, MOHAMED F.R.<sup>1\*</sup>, and Peter Hakk<sup>1</sup>, <sup>1</sup>North Dakota State University & University of Minnesota, Soil Science Department, Fargo. **Managing *Cercospora beticola* resistant to fungicides.**

*Cercospora* leaf spot (CLS) caused by *Cercospora beticola* is one of the most damaging foliar diseases of sugarbeet worldwide. The objective of this study was to evaluate the efficacy of fungicides used alone or in mixtures for controlling to *C. beticola* resistant to tetraconazole (demethylation inhibitor - DMI) and pyraclostrobin (quinone outside inhibitor - QoI) fungicides. Studies were conducted at Foxhome, MN in different years. Each plot comprised of 6 22-inch wide rows, 30 feet in length. All experiments were arranged in a randomized complete block design with four replicates. Sites were inoculated with known tetraconazole and pyraclostrobin resistant populations of *C. beticola*. Treatments were applied with 4-nozzle boom sprayers calibrated to deliver 17 gal/acre of solution at 60 psi pressure to the middle 4-rows of plots at 14 d intervals. *Cercospora* leaf spot severity was assessed throughout the season. The middle 2-rows of plots were harvested and root yield and quality were determined. Disease severity was high resulting in death of older leaves and leaf regrowth in the non-treated check in all studies. In the *C. beticola* resistant to tetraconazole study conducted in 2009 and 2010, tetraconazole did not provide effective control of CLS resulting in recoverable sucrose per acre (RSA) which were not significantly different from the non-treated check. However, newer DMIs including prothioconazole, and difenoconazole and propiconazole mixture provided significantly better disease control and resulted in significantly higher RSA than tetraconazole. Triphenyltin hydroxide (TPTH) (inhibitor of oxidative phosphorylation) and pyraclostrobin (QoI) both provided effective control of tetraconazole resistant *C. beticola* and resulted in significantly higher RSA than tetraconazole and the non-treated check. In the *C. beticola* resistant to pyraclostrobin study conducted in 2016, the DMIs in mixtures with TPTH provided the most effective disease control and resulted in significantly higher RSA than the non-treated check and the pyraclostrobin + fluxapyroxad treatment.