

KHAN, MOHAMED F. R., Plant Pathology Department, North Dakota State University and University of Minnesota, Fargo, ND 58108-6050. **The journey from catastrophe to success.**

ABSTRACT

Minnesota and North Dakota produce 60% of the United States sugar beet, *Beta vulgaris*. One of the major limiting factors for sugar beet production is the foliar disease, Cercospora leaf spot caused by the fungus *Cercospora beticola*. Cercospora leaf spot destroys the leaves of the plants and thus impacts the photosynthetic capability of the plants. This disease results in significant reduction in root yield, recoverable sugar, percent sucrose, and increases concentration of impurities resulting in higher processing costs. In 1998, growers at American Crystal Sugar Company lost \$45 million because of a leaf spot epidemic, and growers surveyed that year indicated Cercospora leaf spot as their worst production problem. Research was conducted to determine how best to control Cercospora leaf spot with experimental, and labeled fungicides that were not very efficacious against *C. beticola*. Research sites were used for demonstration at field days. Research results were disseminated to growers, other educators, and advisors of growers at seminars, using research production guide, reports, bulletins, and a radio program conducted during the growing season. Research data was used in securing a section 18 exemption for the use of Eminent on sugar beet. Growers quickly adopted the research-based recommended practices and successfully controlled Cercospora leaf spot, saving millions of dollars in the process. Fungicide usage was reduced by 58% from an average of 3.74 applications in 1998 to 1.56 applications in 2009 resulting in an average saving of \$14 million annually. Growers who considered Cercospora leaf spot as their worst production problem decreased from 36% to less than 1% and 98% of growers reported excellent or good Cercospora leaf spot control with fungicides.