

BRANTNER, JASON R.\* and ASHOK K. CHANDA, Department of Plant Pathology, University of Minnesota, Northwest Research and Outreach Center, Crookston, MN 56716. **Benefit of supplemental spent lime added to previously limed soils for control of *Aphanomyces* root rot on sugarbeet.**

Application of sugarbeet factory spent lime to soil in fields infested with the soilborne oomycete pathogen *Aphanomyces cochlioides* has been shown to decrease disease and increase sugarbeet yield in Minnesota and North Dakota. Sugarbeet growers are inquiring about the need to reapply lime in fields where lime has previously been applied. In a field trial where lime had originally been applied in April 2004 at 0, 2.7, 5.3, 8, and 10.6 tons dry wt A<sup>-1</sup>, plots were split and 3.5 tons dry wt lime A<sup>-1</sup> was added to half of each plot on October 31, 2014. In the spring of 2015 and 2016, sugarbeet was sown and data was collected on plant stand, *Aphanomyces* root rot, and sugarbeet yield and quality. In 2015, there was significant interaction between supplemental and original rates of lime for plant stand, root rot ratings, and yield ( $P \leq 0.05$ ). At 4 and 7 weeks after planting, sugarbeet stands were higher in plots that received supplemental lime where original lime rates were 0 and 2.7 tons A<sup>-1</sup> ( $P \leq 0.05$ ), but not where original lime rates were 5.3 tons A<sup>-1</sup> or higher. Supplemental lime reduced *Aphanomyces* root rot and increased sugarbeet yield only in plots where lime had not been previously applied ( $P \leq 0.05$ ). In 2016, a second successive year of sugarbeet and high rainfall combined to provide severe *Aphanomyces* pressure. There were no significant interactions between supplemental and original rates of lime. Original lime rate had a significant linear effect ( $P \leq 0.05$ ) on plant stand, *Aphanomyces* root rot, and sugarbeet yield and quality. Supplemental lime resulted in increased plant stands and root yields and decreased *Aphanomyces* root rot ( $P \leq 0.05$ ). Results demonstrate a benefit from adding lime to fields previously limed at low rates under normal conditions and fields previously limed up to 10.6 tons dry wt A<sup>-1</sup> under severe *Aphanomyces* conditions.