

KHAN, MOHAMED F.R.^{1,2} and AARON L. CARLSON*¹, ¹Plant Pathology Department, North Dakota State University and ²University of Minnesota, Fargo, ND 58108-6050. **Efficacy of fungicides for controlling *Rhizoctonia solani* on sugarbeet.**

ABSTRACT

Rhizoctonia root rot, caused by *Rhizoctonia solani*, is the most difficult disease of sugarbeet to control in Minnesota and North Dakota. The objective of this research was to determine efficacy of labeled and experimental fungicides for controlling *Rhizoctonia* root rot.

Field experiments were performed in 2010 at Hickson, ND. This site was broadcast-inoculated immediately prior to planting with *R. solani* AG2-2 IIIB grown on sterilized barley. Sugarbeet of a commercially-available *Rhizoctonia*-susceptible variety was planted on May 20, 2010. In-furrow fungicide applications were made using a solid stream nozzle calibrated to deliver 23 gallons per acre of spray solution to the middle 4 rows of 6-row plots. Fungicide treatments were applied after sugarbeet emergence in a 7-inch band to the middle 4 rows of 6-row plots on either June 2 or June 23 or on both days. Stand counts were taken during the season and at harvest. The center 2 rows of plots were harvested October 4, 2010 and roots were brought to American Crystal Sugar Company Quality Tare Lab in East Grand Forks, MN for quality analysis.

Experiment 1 showed Quadris at 14.3 fl oz/A applied once on June 2 or June 23, or applied on both days gave greater stand at harvest and greater extractable sucrose compared to the inoculated check. Quadris applied twice tended to give greater stand and extractable sucrose compared to one application of Quadris.

Experiment 2 showed Quadris at 9.2 fl oz/A or Proline at 5.7 fl oz/+ NIS at 1/8% v/v applied on June 2 gave similar stand and extractable sucrose to the inoculated check. Proline + NIS applied on June 2 and 23 gave greater stand and extractable sucrose than one application of Proline + NIS or Quadris and the inoculated check.

Experiment 3 showed Quadris at 9.2 fl oz/A or Headline at 6 fl oz/A applied in-furrow at planting on May 20 gave greater stand than the inoculated check at 20 and 50 days after planting. At harvest Quadris applied in-furrow gave greater stand than Quadris applied in a 7-inch band on June 2 as well as Headline applied in-furrow. An experimental fungicide gave greater stand at 50 days after planting than any other fungicide treatment and similar stand at harvest to Quadris applied in-furrow. No treatment gave good enough control of *R. solani* to justify the harvest of this experiment.

Soils were warm at planting (63F) and sugarbeet were protected by in-furrow applications of fungicides tested when compared to the inoculated check. Infection of some sugarbeet occurred prior to band applications of fungicide, but two band applications of the fungicides tested increased sugarbeet stand and yield at harvest compared to the inoculated check in all experiments.