CHANDA, ASHOK[1], NATE RUSSART[2], TIMOTHY BAKER[2], JASON BRANTNER[1], AND IAN MACRAE[2].* [1]Department of Plant Pathology, [2]Department of Entomology, University of Minnesota Northwest Research & Outreach Center, 2900 University Ave, Crookston, MN 56716. **Remote sensing for detection of Rhizoctonia crown and root rot of sugarbeet.**

Rhizoctonia crown and root rot (RCRR), caused by *Rhizoctonia solani* AG 2-2, is becoming more frequent and widespread in the sugarbeet growing regions of Minnesota and North Dakota. In this region, symptoms of RCRR typically begin at about 8 weeks after planting and continue to develop until harvest. Infected plants occur sporadically or in large portions of the field. Early detection of RCRR may offer opportunities for remedial fungicide applications, mapping distribution of the pathogen in fields, application of integrated management strategies (partially resistant varieties, cultural practices, and fungicides) for the next sugarbeet crop, or for estimates of RCRR for crop insurance.

Advances in remote sensors and vehicle platforms have regenerated interest in within-season remote detection of RCRR. However, research approaches have not reliably identified diagnostic reflectance values or vegetative indices. In an effort to identify baseline data, hyperspectral reflectance data associated with RCRR disease severity in partially resistant and susceptible sugarbeet varieties was obtained. Each variety was inoculated with 0, 20, 40, or 60 kg ha^{-1} *R. solani* AG 2-2-infested barley grain incorporated into soil prior to planting or two infested barley grain per root near canopy closure. Mean root rot ratings were 0, 1.6, 1.3, 2.2, and 5.5 for the partially resistant variety and 0.1, 1.8, 4.1, 3.7, and 6.3 for the susceptible variety inoculated with 0, 20, 40, and 60 kg ha^{-1} and two grains per root, respectively. A hyperspectral spectroradiometer was used to assess canopy reflectance values twice weekly after plots were inoculated with *R. solani*. These data were used to create reflectance curves which were compared to assess effects of infection and variety.