

MACRAE, IAN V.^{1*}, GREGORY J. REYNOLDS², ALBERT L. SIMS³, CAROL E. WINDELS⁴ and SOIZIK LAGUETTE⁵, ¹University of Minnesota, Department of Entomology and Northwest Research and Outreach Center, Crookston, MN 56716; ²University of California-Davis, Department of Plant Pathology, Davis, CA 95616; ³University of Minnesota, Department of Soils, Water and Climate and Northwest Research and Outreach Center, Crookston, MN 56716; ⁴University of Minnesota, Department of Plant Pathology and Northwest Research and Outreach Center, Crookston, MN 56716 and ⁵University of North Dakota, Department of Earth System Science and Policy, Grand Forks, ND 58202. **Aerial imaging to assess *Rhizoctonia* crown and root rot severity in sugar beet fields.**

Rhizoctonia crown and root rot (RCRR), caused by the soil-borne fungus *Rhizoctonia solani* AG 2-2, is a disease of increasing economic importance to the sugar beet industry in Minnesota and North Dakota. In 2008 and 2009, research in inoculated fields measured ground-based hyperspectral reflectance of RCRR-infected sugar beet and identified vegetation indices most suitable for detection of the disease. Seven narrowband and five wideband vegetation indices were assessed and the wideband optimized soil adjusted vegetation index (OSAVI) provided the best overall fit with disease severity ratings. In 2010, image analysis (OSAVI) of a series of aerial imagery obtained with a multispectral camera were used to identify areas within fields that might be symptomatic of RCRR. Fields were subsequently ground truthed for disease rating, potential insect populations and soil nutrient problems. While results were generally consistent with aerial imagery identifying areas of RCRR, there was at least one field where suspected symptomology resulted from another cause. However, overall analysis of aerial-obtained multispectral imagery does seem to have promise in identifying areas of RCRR in the field.