

WEILAND, JOHN. J. Sugarbeet and Potato Research Unit, USDA-ARS-Red River Valley Agricultural Research Center, 1307 18th st. N. Fargo, N.D. 58105. ***Cercospora beticola* expressing the green fluorescent protein for studies on the biology of sugarbeet leaf spot disease.**

Leaf spot disease of sugarbeet remains an important problem in beet sugar production. The elusive nature of control strategies for the causal organism of leaf spot, *Cercospora beticola*, is due in large part to our poor understanding of *Cercospora* genetics and biology. A color-marked, transgenic isolate (101004a) of *C. beticola* expressing the green fluorescent protein (GFP) gene from the jellyfish *Aequorea victoria* was produced that can be visualized by fluorescence microscopy. The isolate retained the ability to incite leaf spot disease on inoculated sugarbeet plants. Appropriate light filtering permitted the visualization of *C. beticola* mycelium against the background fluorescence of sugarbeet tissue structural components. Detection of GFP in extracts of isolate 101004a was also possible using a fluorescence microplate reader, allowing for quantitative growth assays to be developed. Isolate 101004a will be used in the examination of seedling root penetration by *C. beticola* and in additional experiments aimed at understanding the biology of this sugarbeet pathogen.