

JOHNSON, DAVID J.* , and JOHN M. HALLOIN. USDA, Agricultural Research Service, Sugarbeet and Bean Research Unit, and Department of Botany and Plant Pathology, Michigan State University, East Lansing, MI 48824. **Progress in development of a sugarbeet seedling assay for resistance to *Aphanomyces cochlioides*.**

The pathogen *Aphanomyces cochlioides* Dresch. causes extensive damping-off of seedlings and root rot on surviving sugarbeets (*Beta vulgaris* L. in warm, wet soils. Within the United States, development of germplasm resistant to this pathogen relies on a naturally infested field nursery in Minnesota, a situation that provides time limitations on researchers, and inherent variability of the disease environment. Past efforts to minimize these problems through use of greenhouse assays have provided inconsistent results. This inconsistency of results was likely due to a lack of understanding of natural infection in the field, coupled with a lack of understanding of the modes of resistance to *A. cochlioides* already present in some sugarbeet varieties. We are developing a soil-less assay for resistance to *Aphanomyces* seedling disease using rolled germination paper in growth chambers and zoospore inoculum. In this system, resistance to damping-off is strongly temperature dependent: high at 15°C, intermediate at 20 and 25°C, and low at 30°C. Under conditions of intermediate resistance (25°C), attempts to find significant differences in disease severity between susceptible (eg. Edda) and resistant (eg. USH20, ACH 555, and 68-22) varieties have yielded inconsistent results, apparently due to variability of factors in the system. Work is underway to refine the system: further reducing variability in the host, the environment, and the inoculum.