

BRANTNER*, JASON R. and CAROL E. WINDELS, University of Minnesota, Northwest Research and Outreach Center, Crookston, MN 56716. **Zoospore production and aggressiveness of *Aphanomyces cochlioides* isolates on sugarbeet and evaluation of adult plant resistance.**

Information on pathogen variability and effective screening techniques are needed to evaluate sugarbeet germ plasm for resistance to *Aphanomyces cochlioides*. Objectives were to 1) evaluate isolates of *A. cochlioides* for variability in zoospore production and aggressiveness and 2) determine if a zoospore inoculation technique could separate sugarbeet varieties differing in susceptibility to *A. cochlioides*. Sixteen isolates of *A. cochlioides* were grown in a mineral salts solution for production of zoospores. Zoospore production varied significantly ($P = 0.05$) among isolates (range: 125 to 194,000/ml). Six isolates that produced greater than 64,000 zoospores/ml were used to inoculate 4-wk-old sugarbeet plants of a resistant, moderately resistant, and susceptible variety (200,000 zoospores/plant). After inoculation, soil was kept moist, and plants were incubated at 25-27°C with a 16-hour photoperiod for 4 wk. Roots then were removed, cleaned, weighed, and rated for root rot (0-7 scale, 0 = root clean, 7 = root completely rotted). There were no isolate by variety interactions. Isolates varied significantly ($P = 0.05$) in aggressiveness on sugarbeet (range: 1.9-4.5). The root rot rating for the resistant variety (2.0) was significantly lower ($P = 0.05$) than ratings of the moderately resistant and susceptible varieties (2.5 and 2.9, respectively). Root weights (expressed as percent of root weights of noninoculated plants) of the resistant and moderately resistant varieties (58 and 53%, respectively) were significantly higher ($P = 0.05$) than that of the susceptible variety (39%). In conclusion, *A. cochlioides* isolates varied in zoospore production and aggressiveness, but resulted in good separation of varieties differing in susceptibility to *Aphanomyces*.