MILLER, JAY P., ARTHUR A. QUINN, and MARGARET M. REKOSKE, Betaseed Inc., 1788 Marschall Rd., Shakopee, MN 55379. **The evaluation of several sugarbeet genotypes over four years in the root rot nursery at the Shakopee Research Station.**

ABSTRACT

Aphanomyces cochlioides is an important pest problem in several of the midwestern sugarbeet growing areas. One of the plant breeding objectives at Betaseed Inc., is to develop Aphanomyces tolerant varieties. An effective breeding program relies upon an effective disease nursery in which to evaluate and select genotypes. Testing was conducted to assess the Shakopee Aphanomyces nursery site for adequate disease pressure and to determine whether significant and repeatable results could be observed over years.

In 1994, an Aphanomyces root rot nursery was initiated at Betaseed's Shakopee, MN, research station. The nursery site was selected based upon a previous history of Aphanomyces in the ground and upon positive results obtained from the University of Minnesota Aphanomyces soil index. A four replicate methodical trial consisting of five diverse genotypes was conducted from 1995 to 1998. Additionally, a six replicate American Crystal Sugar Official Aphanomyces Trial was conducted at the Shakopee nursery during the same four year period. Damage readings were taken throughout each growing season using a 1-9 rating scale where 1 designates a full stand of healthy beets and 9 designates total stand loss.

The results from the five methodical trial entries and the four checks from the American Crystal Official Trial were summarized to determine the level of disease and the consistency of the nursery. Significant differences were observed in all tests. Over the four-year period, the most susceptible genotype from the methodical trial had the highest (worst) disease ratings of 6.5, 7.5, 7.8, and 8.2, respectively, while the most tolerant genotype from the methodical trial had the lowest (best) scores of 2.2, 1.4, 2.8, and 1.8, respectively. From 1995 to 1998 the susceptible official trial check variety had an average disease score of 6.0; while, the tolerant check had an average disease score of 3.8. The results indicate that the Aphanomyces root rot nursery at Shakopee, MN provides an effective means for the evaluation and selection of sugarbeet germplasm.