

BRANTNER, J. R. and C. E. WINDELS, University of Minnesota, Northwest Research and Outreach Center, Crookston, MN 56716. **Control of *Aphanomyces damping-off* of sugarbeet by hymexazol seed treatment when disease onset occurs at different plant ages and inoculum levels.**

ABSTRACT

Hymexazol (Tachigaren 70 WP) on sugarbeet seed decomposes after sowing, and warm, wet soil conditions that favor damping-off caused by *Aphanomyces cochlioides* can occur at different times after planting. The objective of this research was to determine the duration of activity of hymexazol seed treatment when disease onset occurs at various plant ages and inoculum levels of *A. cochlioides*.

Seed of Beta 1305R coated with metalaxyl and thiram was treated with 0 (pelleted control), 14 g a.i. (= 20 g product, minimum build-up) or 31.5 g a.i. (= 45 g product, pelleted) of hymexazol per unit (100,000 seed). Seed was sown in soil from two fields naturally infested with *A. cochlioides* at a moderate and severe level and placed in a growth chamber at 18°C to minimize infection. Planting was staggered so plants were at 1, 2, 3, and 4 weeks after planting (WAP) when exposed to environmental conditions favorable for disease (25±1°C and high soil moisture) for 4 days and then held at 22-23°C for 10 days. Plant stands were counted three times weekly and dying seedlings were removed for microscopic verification of infection by *A. cochlioides*.

In soil with a moderate *A. cochlioides* inoculum level, both rates of hymexazol seed treatment were effective in protecting seedlings from damping-off. Final stands for 14 and 31.5 g hymexazol were statistically equal and significantly higher than the untreated control whether onset of disease-favorable conditions occurred at 1, 2, 3, or 4 WAP. Average final stands across plant ages at disease onset for 0, 14, and 31.5 g hymexazol were 44, 87, and 94%, respectively.

In soil with a severe *A. cochlioides* inoculum level, the 31.5 g a.i. rate provided significantly better control than the 14 g a.i. rate when disease-favorable conditions began 1 and 2 WAP; both rates were better than the untreated control. Final stands for 0, 14, and 31.5 g hymexazol were 2, 14, and 73%, respectively, when disease onset began 1 WAP and 0, 39, and 86%, respectively, when disease onset began 2 WAP. When disease-favorable conditions began 3 WAP, final stands were statistically the same for the untreated control and both rates of hymexazol (46, 65, and 53% for 0, 14, and 31.5 g a.i., respectively). When disease-favorable conditions did not occur until 4 WAP, both rates of hymexazol resulted in statistically equal final stands (61 and 72% for 14 and 31.5 g a.i., respectively) and were significantly higher than the untreated control (27%).

Overall, the 31.5 g a.i. rate of hymexazol was most consistent in controlling damping-off under different *A. cochlioides* inoculum levels and plant ages at time of disease onset, but the 14 and 31.5 g a.i. rates provided similar benefits under moderate disease pressure.