

TEXAS A&M UNIVERSITY

Developing *Rhizoctonia* Brown Patch and *Pythium* Disease Resistance In Bentgrass and Zoysiagrass

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Techniques for handling and inoculating large numbers of bentgrass field samples are being used to identify resistance to *Pythium* and *Rhizoctonia* blight diseases. Large culture collections of both pathogens have assisted in the use of highly virulent strains of the fungi for disease screening. Previous inoculation studies with bentgrass genotypes obtained from the germplasm introduction nursery, HTS (heat treatment selection nursery), NHTS (not heat treated selection nursery) and the elite bentgrass nursery have been examined for *Pythium* foliar blight resistance. Repeated inoculation studies compared with the standard variety Penncross demonstrated improved *Pythium* resistance among several members of the experimental bentgrass germplasm collections. Of the 1,203 germplasm lines screened during 1989, 6% demonstrated resistance to *Pythium* foliar blight.

Wet weather during the spring allowed research investigations to focus on field evaluations of *Pythium* blight symptoms in field nurseries. Disease symptoms were observed in June on two field nurseries following lengthy environmental periods favoring disease pressure. Typical visual symptoms of foliar thinning and decline were observed on 15.4% and 29.4% of the NHTS and HTS plots, respectively. Disease symptoms appeared to be greater on germplasm from the variety Prominent than on other parental lines observed in both nurseries. Greenhouse studies were used to correlate disease symptoms from the HTS nursery field plots with a seedling bioassay for *Pythium* blight in small plastic cups. Blighting of seedling stands in cups produced by sampling soil cores from field plots was greater in cups than on the field plots. Among the tested experimental cultivars showing field resistance (less than 25% disease), 41% were substantiated by seedling blight data. These results indicate the importance of obtaining field plot visual data to identify sources of resistance to *Pythium* blight. *Rhizoctonia* spp. inoculation studies on germplasm from HTS and NHTS field nursery plots showing field resistance to *Pythium* blight did not show a high level of resistance to both diseases. Of 105 *Pythium* resistant genotypes examined, 11 demonstrated potential resistance to both *Pythium* and *Rhizoctonia* blight diseases.

The USGA *Rhizoctonia* culture collection has also made valuable contributions in the area of developing refined techniques for tissue culture selection of resistant genotypes. Cooperative research with Dr. Jeff Krans, Mississippi State University, screens bentgrasses originating from tissue culture lines against *Rhizoctonia* blight. Isolates of fungi causing *Helminthosporium* diseases and *Sclerotinia* dollar spot are being collected and samples will be gratefully received from any available sources. The isolates will be maintained in long-term storage with other USGA isolates.