

DEVELOPING BROWN PATCH AND PYTHIUM DISEASE RESISTANCE IN
BENTGRASS AND ZOYSIAGRASS

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New techniques developed for volume handling and inoculating of turfgrass field samples were successfully used for mass screening of bentgrass germplasm lines for Pythium spp. resistance. Core samples from the field or greenhouse were placed in plastic McDonald's sundae cups and were covered with plastic lids containing aeration holes. The sundae cups were placed in covered clear plastic boxes after grass samples were inoculated with pathogenic fungi and maintained in a moisture saturated environment for a 7-day period.

This technique allows the fungi to grow in water saturated air and provides conditions under which predictable results can be expected with regard to the pathogenic development of the fungi. Large scale disease screening efforts with the cups was accomplished with two walk-in environmental chambers maintained with continuous incandescent lighting and temperatures of 26 C. The technique is now being used routinely to screen as many as 530 turfgrass genotypes with reliable Pythium blight results in five to seven days.

Considerable progress has been made in the identification of bentgrass genotypic lines with resistance to Pythium foliar blighting. Large numbers of bentgrass genotypes have been challenged with highly virulent Pythium spp. strains, and some of the genotypes which withstood the initial inoculations were re-challenged with Pythium spp. to reinforce their resistance status. Of 1203 field collected bentgrass lines inoculated during the reporting period, 5.9% expressed Pythium blight resistance, while 11% showed disease tolerance and 83% were moderately or highly susceptible to the disease. The commercial bentgrass variety, Penncross, was consistently highly susceptible with an overall mean disease severity rating of 96.3%. Previous studies have shown that bentgrass germplasm lines obtained from the field were more resistant to Pythium blight than the same plants grown on a greenhouse bench for extended periods prior to inoculation. At this time, all inoculations are carried out on field-grown turfgrass samples in order to maximize the identification of disease resistance.