

Development of Improved Turfgrass with Herbicide Resistance and Disease Resistance through Transformation

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Goals:

- *Establish a transformation system for creeping bentgrass.*
- *Improve the utility of creeping bentgrass by incorporating genes to confer herbicide resistance or enhanced resistance to fungal pathogens.*

Cooperators:

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This project seeks to improve creeping bentgrass through transformation to provide golf course managers with more effective and selective weed control with herbicides and more environmentally sound and cost-effective control of plant diseases with reduced use of fungicides. During the past two years, we have made considerable progress towards accomplishment of these goals.

Our work with the herbicide resistant plants has progressed to the stage of incorporation into the breeding program. Herbicide-resistant progeny plants produced from crosses carried out in 1995 and 1996 are currently in the field for evaluation. In the spring of 1997, six of the herbicide resistant progeny were selected for crosses with breeding material from Dr. Bill Meyer.

We also have produced a number of independent transgenic lines of creeping bentgrass containing potential disease resistance genes. In the summer of 1997, some of these lines were put into a randomized replicated field test for evaluation. The plot includes six independent transgenic lines each containing the pokeweed antiviral protein and bacterio-opsin, five independent lines of glucose oxidase, and 22 nontransgenic controls. Disease in the plot was from natural infection. Our preliminary results from this test are very encouraging regarding efficacy of the genes. Overall, the transgenics are exhibiting considerably less disease incidence than the controls.