

## UNIVERSITY OF RHODE ISLAND

### Use of Mycorrhizae in the Establishment and Maintenance of Greens Turf

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The project consists of several interdependent studies which include: 1) identifying the species of mycorrhizal fungi that are associated with velvet and creeping bentgrass and *Poa annua* in New England, 2) culturing the dominant or most promising species of fungi, and 3) testing the ability of the fungi to promote establishment of putting green turf in a sand medium, minimize application of phosphorous fertilizers and water, and offer protection against root pathogens.

Twenty-eight species of mycorrhizal fungi were isolated from bentgrass and *P. annua* turfgrasses. Two species were never isolated from root zones of *Poa annua*, but were commonly recovered from beneath both bentgrass species. This information may be useful in reducing the competitive abilities of *Poa* in greens. Nine species of mycorrhizal fungi have been established in pot culture. Some of the isolates are from sand dune soils (associated with beachgrass) and offer promise for use in sand greens (see below).

Numerous screening experiments have been conducted to identify the most effective fungi for sand green culture. We have tested 7 isolates/species of mycorrhizal fungi, three different levels of phosphorous fertilization, two kinds of peat (sphagnum and sedge), and three grass species. The most effective fungi were those isolated from sand dunes. Fungi isolated from turf soils often were ineffective in the USGA sand green medium (sand and peat). Preliminary observations also suggested that the dune fungi conferred tolerance to drought.

A field trial involving two kinds of peat, four levels of phosphorus fertilization, and two turfgrasses and mycorrhizal fungi is in progress.

An inexpensive method for producing highly infective inoculum of mycorrhizal fungi has been developed.

A method has been developed to grow bentgrass plants with mycorrhizal fungi under sterile laboratory conditions.

This technique will facilitate study of the interaction between mycorrhizal roots and pathogenic fungi.