



TURFGRASS TRENDS

Volume 8, Issue 12 • December 1999

BIOLOGICAL PLANT CARE

Plant-Soil Organism Symbiosis The Importance of Mycorrhiza

By Nicolas Malajczuk, Norma Jones and Constance Neely. The World Bank, Asia Technical Department, Agriculture Division.

Editor's Note: The use of mycorrhiza is fairly new to the turf industry and studies are not fully developed for their use in turf. Use of the organisms in forestry and nursery industries is better documented. This article is published to provide a general knowledge of mycorrhiza and how they work in forest soil as reported by a research team from the World Bank. The Bank's guidelines are created to assure proper use of World Bank loan funds. Therefore, it can be said the use of mycorrhiza has been recognized for specific industries around the world. This article might change your attitude about soil health, plant fertility, clipping removal and overuse of pesticides.

Productivity of the forest plant community is a consequence of the interaction of tree shoots and roots with the environment. One of the more important, and perhaps the least understood, zones of biological interaction is the soil immediately surrounding the root — the rhizosphere. Numerous microorganisms colonize this region and influence plant growth through physiological effects on uptake, storage and cycling of nutrients.

Despite their importance, soil organisms are rarely considered when degraded sites are replanted, trees are established on farmer's fields or when existing forests are manipulated. Yet, we know some interactions between soil organisms and plants can be essential to plant survival and normal growth. One such interaction termed 'mycorrhiza,' literally 'fungus-root,' is the association between specialized root inhabiting fungi and the roots of living plants.

In this mutually beneficial association, or symbiosis, each partner receives nutrients while also contributing to the other partner's survival. This development of plant and fungus together over time, or coevolution, has become an 'obligate' association in many cases. Obligate means each organism requires the presence of the other. In other cases, both organisms benefit from the association but do not require the symbiosis for survival. The association is especially critical in disturbed areas or areas that have been progressively degraded over time since rhizosphere organisms can be affected by shifts in land management practices.

IN THIS ISSUE

- **Plant/Soil Organism Symbiosis: The Importance of Mycorrhiza 11**
- **In Praise of Turf: Lawn Maintenance From an Eastern Homeowner's Perspective. 10**
- **Back to Basics: Taking soil samples. 14**

General samples

Problem-area samples

Sampling volume, depth and frequency

Tips on sampling