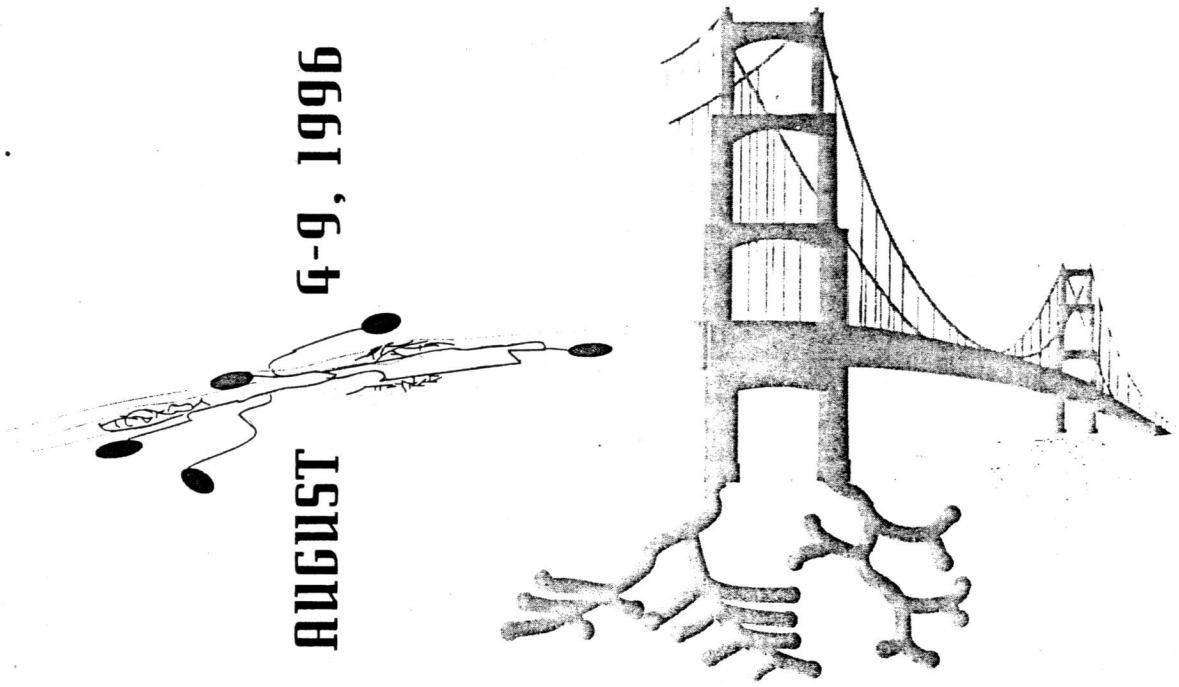
ICOM 1

First International Conference on Mycorrhizae



UNIVERSITY OF CALIFORNIA
AT BERKELEY
USA

Program and Abstracts

In 1992 and 1993 yield was affected by P, but not by inoculation. In 1994 and 95, M effects were again in the range of 40% for selected *G.etunicatum* isolates. In the first harvest, P-doses for maximum yield was reduced from 207g P_2O_5.plant-1 for NM plants to little over 100 for the M ones. Such effects was reduced in subsequent years. If adequate phosphorus is applied at planting, pre-colonization of coffee seedlings enhances early crop development and productivity in low-fertility soils in Brazil. (Funded by FAPEMIG and CNPq)

morning talk

SMITH, F. ANDREW[1] & SALLY E. SMITH[2]. [1]Botany, [2]Soil Science, The University of Adelaide, SA 5005, Australia. - Selectivity and control: the role of membranes in inter-plant transfer of nutrients

Attention is increasingly focused on the membranes of host/fungus interfaces as sites of control and selectivity of solute transfer in mycorrhizal symbioses. The simplest pattern of transfer - occurring in mycorrhizas other than orchids - involves loss of nutrients such as P from the fungus in return for carbohydrate from the plant. Different patterns of transfer must occur between plants that are linked by mycorrhizal fungi, as revealed by the use of various tracers, measurements of growth, etc. Again, it seems realistic to focus on the membranes at the host/fungus interfaces as sites of control and selectivity of solute transfer between linked plants.
In this review lecture we discuss the possible membrane transport mechanisms that are likely to be involved in solute transfer across the interfaces, with emphasis on inter-plant transport. We will emphasize the possible dangers of ignoring diversity in function in considering the benefits and costs of different mycorrhizal symbioses.

poster session 2 ST SH 25

SMITH, JANE E.[1], ARI JUMPPONEN[2], MICHAEL J. LARSEN[3], & DONARAYE MCKAY1. [1]USDA. Forest Service, Pacific Northwest Research Station, Corvallis, OR 97331, USA; [2]Department of Forest Science, Oregon State University, Corvallis, OR 97331, USA; [3]USDA Forest Service, Intermountain Research Station, Moscow, ID 83843, USA. - Ecology and taxonomy of *Piloderma* spp.: a golden indicator of old-growth forest soil legacy

A golden-yellow ectomycorrhizal fungus may be an important indicator of old-growth soil conditions in Pacific Northwest forests of North America. Harvest of late successional (old-growth) forests in the Pacific Northwest region has prompted legal challenges to forest management plans resulting in the development of ecosystem management strategies. To evaluate the effect of these management strategies on biological diversity, it is essential to know the identities and community composition of organisms, including ectomycorrhizal fungi, in natural and managed forest ecosystems. Frequency data for Piloderma were collected as part of a larger study to determine whether ectomycorrhizal fungal communities vary between successional stages of Pseudotsuga menziesii forests. Fungal filaments of Piloderma spp. were closely correlated with stand age in a recent fungal survey spanning 3 years, 9 forest stands and 1125 sampling points. Piloderma spp. occurred in 55% of the old-growth, 6% of the rotation-age, and 2% of the young-growth plots. The potential value of Piloderma as an indicator species brought to light the long confusion over species concepts for this genus. A re-evaluation of the taxonomic status, based on microscopic characteristics of nomenclatural types and other specimens, suggests only two distinct species among the four in question, P. fallax (syns. P. bicolor, P. croceum) and P. byssinum. These taxonomic views are supported by our preliminary analysis of the internal transcribed spacer (ITS) of the nuclear ribosomal DNA from representative isolates and collections of Piloderma spp. from the United States and Sweden.

poster session 3 ST SH 90

SNYDER, SEASON R., MOLLIE WALTON & CARL F. FRIESE. Biology Department, University of Dayton, 300 College Park, Dayton, OH 45469-2320. - Comparative soil and mycorrhizal dynamics associated with small scale disturbances on rangeland ecosystems in Colorado and New Mexico

A comparative study was conducted on the soil dynamics associated with small mammal disturbances on arid and semi-arid rangelands in the United States. The project was undertaken to study whether modifications in physical soil properties of soil would in turn result in alterations in plant community structure and diversity as well as alterations in the soil microbial community. The physical properties of soil examined for this study were temperature, pH, moisture, organic matter, and texture. One factor in the assessment of the soil microbial community consisted of total spore counts for arbuscular mycorrhizae (AM). The results showed there were substantial differences among the physical properties of the soil at the Colorado and the New Mexico site. Within both sites there were no substantial differences in the total number of AM spores between disturbed and undisturbed soils. However, between the two sites there were greater numbers of spores in Colorado in comparison to New Mexico rangeland ecosystems. The results also showed that the differences in physical properties of soils associated with small mammal disturbances were independent of the grazing intensity. The results will provide further insight into the restoration and management of these rangeland ecosystems.

poster session 13 WF SH 45

SÖDERSTRÖM, BENGT[1,2], SANDY DICKSON[1], F. ANDREW SMITH[3] & SALLY E. SMITH[1]. [1]Department of Soil Science, Waite Campus, University of Adelaide, Glen Osmond, South Australia 5064. [2]Permanent address: Department of Microbial Ecology, Ecology Building, Lund University, S-223 62 Lund, Sweden. [3]Department of Botany, University of Adelaide, South Australia 5005. - Arum and Paris-type of endomycorrhiza in some plant-AM fungus species combinations