



Available Online at ESci Journals

International Journal of Phytopathology

ISSN: 2305-106X (Online), 2306-1650 (Print)

<http://www.escijournals.net/phytopathology>

First Report

FIRST REPORT OF AN ARBUSCULAR MYCORRHIZAL FUNGUS FUNNELIFORMIS MOSSEAE ASSOCIATED WITH THUJA PLICATA IN AN ECTOMYCORRHIZAL FOREST IN GREECE

^aAntonios Zambounis*, ^bAliki Xanthopoulou, ^cFilippos A. Aravanopoulos, ^{a,b}Athanasios Tsaftaris,
^bPanagiotis Madesis, ^cEvaggelos Barbas*

^aLaboratory of Genetics and Plant Breeding, Faculty of Agriculture, Forestry & Natural Environment, Aristotle University of Thessaloniki, P.O. Box 261, Thessaloniki GR-54124, Greece.

^bInstitute of Applied Biosciences, CERTH, Themi, Thessaloniki, Greece.

^cLaboratory of Forest Genetics and Tree Breeding, Faculty of Agriculture, Forestry & Natural Environment, Aristotle University of Thessaloniki, P.O. Box 238, Thessaloniki GR54006, Greece.

The ability of trees forming arbuscular mycorrhizal (AM) associations to get established in ectomycorrhizal forests is still unknown (Weber *et al.*, 2005). The success of both establishment and adaptation depends on the type of interactions between the plants introduced and the type of indigenous soil microbiota (Fahey *et al.*, 2012). *Thuja plicata* is an AM forest tree successfully established (since 1962) in an artificial trial plantation in the region of Chalkidiki (northern Greece). The successful adaptation of an AM tree in an ectomycorrhizal forest raises questions about the feasibility, if any of the mycorrhizal association under these conditions, as well as on the kind of this association and the species of mycorrhizal fungi putatively involved. During a survey, roots fragments were excised from three *Thuja plicata* trees and were co-cultured with leek roots (*Allium porrum*, var. bleu de solaise) in the greenhouse. The successful colonization of the leeks by AM fungi was confirmed by the presence of arbuscular and vesicular structures in the roots after microscopic examination. Colonized *Allium porrum* roots have then been harvested, surface disinfected (90% ethanol for 10 seconds, 6% sodium hypochlorite for 5 min) and plated on agar solidified medium in Petri dishes. Molecular identification of the mycorrhizal fungal species involved in this symbiosis, was performed after total nucleic acids were extracted using the DNeasy Plant Mini Kit (Qiagen, Crawley, UK). A portion of the 18S ribosomal RNA region was amplified using the primers AML1 (5' AACTTTTCGATGGTAGGATAGA 3'), AML2 (5' CCAAACACTTTGGTTTCC 3'). The PCR amplicon was cloned using TOPO TA Cloning Kit (Invitrogen, Paisley, U.K.) and sequenced (GenBank accession Nos. KU365383 - KU365385). All partial sequences revealed 99% nucleotide homology with the 18S rRNA sequence of a *Funneliformis mosseae* fungus isolate (KP144312). To our knowledge, this is the first record of *Thuja plicata* associated with *Glomeromycetes* AM fungal communities in an ectomycorrhizal forest in Greece.

Fahey, C., R. A. York and T. E. Pawlowska. 2012. Arbuscular mycorrhizal colonization of giant sequoia (*Sequoiadendron giganteum*) in response to restoration practices. *Mycologia* 104:988-997.

Weber, A., J. Karst, B. Gilbert and J. P. Kimmins. 2005. *Thuja plicata* exclusion in ectomycorrhiza-dominated forests: testing the role of inoculum potential of arbuscular mycorrhizal fungi. *Oecologia* 143:148-156.

Running title: Arbuscular mycorrhizal *Glomeromyceta* in *Thuja plicata*

*Corresponding Author:

E-mail: vbarbas@for.auth.gr; antbio@yahoo.gr