

ISSN: 00212210
DOI: 10.1560/IJEE.56.1.35
Document Type: Article
Source Type: Journal

Evaluation of essential oil antifungal activity against mycorrhizal fungi- the case of *Laurus nobilis* essential oil

Hassiotis, C.N.

Department of Natural Environment and Forestry, Technical University of Larissa, 43100 Karditsa, Greece

Abstract

Mycorrhiza is regarded essential for plant growth, especially in regions where precipitation and nutrient availability are low. Hundreds of aromatic plant species, which contain essential oils, are growing naturally around the Mediterranean. The plant essential oils are known for their antimicrobial properties. The aim of this study was to investigate whether the aromatic *Laurus nobilis*, abundant in the Mediterranean region, can influence the development of two mycorrhizal species, *Glomus deserticola* and *Glomus intraradices*, and how this effect can influence the growth of the host plant. The major compounds of *L. nobilis* essential oil were 1.8 cineole, sabinene, α -pinene, eugenole, α -terpinyl acetate, and β -pinene. Both mycorrhizal fungi colonized successfully the host plants, positively influencing their growth. *G. deserticola* presented higher infection level than *G. intraradices*. Addition of *L. nobilis* oil into substrates resulted in mycorrhiza inhibition, and the level of inhibition was analogous with the amount of added essential oil. The fungi were benefited by the aromatic compounds up to 15 mg of essential oil per L of soil. However, 30 and 60 mg L⁻¹ of essential oil were able to create significant inhibition in mycorrhiza development and to restrict the host growth. Since the presence -of aromatics in the Mediterranean region could create such ecological problems, the elimination of aromatic plant litter before reforestation is suggested, to give the opportunity for mycorrhiza establishment and successful development of new plants.

Language of original document

English

Author keywords

allelopathy; AMF; ecology; essential oil; *Laurus nobilis*; mycorrhiza

Index Keywords

GEOBASE Subject Index: abundance; allelopathy; antimicrobial activity; essential oil; evergreen tree; growth rate; growth response; host plant; infectious disease; inhibition; mycorrhiza; nutrient availability; precipitation intensity; reforestation

Regional Index: Mediterranean Region

Species Index: Fungi; *Glomus*; *Glomus deserticola*; *Glomus intraradices*; *Laurus*; *Laurus nobilis*