

Accepted Manuscript

Title: Edaphic properties related with changes in diversity and composition of fungal communities associated with *Pinus radiata*

Authors: Sarah L. Addison, Katrin Walbert, Simeon J. Smaill, Audrius Menkis



PII: S0031-4056(17)30229-9
DOI: <https://doi.org/10.1016/j.pedobi.2017.12.002>
Reference: PEDOBI 50520

To appear in:

Received date: 11-10-2017
Revised date: 13-12-2017
Accepted date: 17-12-2017

Please cite this article as: Addison, Sarah L., Walbert, Katrin, Smaill, Simeon J., Menkis, Audrius, Edaphic properties related with changes in diversity and composition of fungal communities associated with *Pinus radiata*. *Pedobiologia - International Journal of Soil Biology* <https://doi.org/10.1016/j.pedobi.2017.12.002>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Edaphic properties related with changes in diversity and composition of fungal communities associated with *Pinus radiata*

Sarah L. Addison^{1*}, Katrin Walbert¹, Simeon J. Smaill², Audrius Menkis³.

¹Scion, Private Bag 3020, Rotorua, New Zealand.

²Scion, PO Box 29237, Christchurch, New Zealand.

³Department of Forest Mycology and Plant Pathology, Uppsala BioCenter, Swedish University of Agricultural Sciences, P.O. Box 7026, SE-75007 Uppsala, Sweden.

*Author for Correspondence:

Sarah L. Addison

Email: sarah.addison@scionresearch.com

Phone: +64 7 343 5546

Highlights:

- Edaphic properties had a huge effect on ECM community structure across six sites
- Soil pH contributed to differences in fungal communities between sites
- Diverse taxa were found with very few shared between roots and surrounding soils
- Furthers the understanding between natural and forest populations

ABSTRACT

Effective symbiosis with ectomycorrhizal (ECM) fungi is important for the successful growth and establishment of *Pinus radiata*. However, the structure of ECM communities varies across soil (edaphic) and environmental conditions, and thus affects the potential range of symbiotic associations. To improve our understanding of these factors, we characterised the range of ECM fungi present across six sites varying in edaphic properties. We also assessed ECM fungi in root tips of *P. radiata* planted two years earlier at these sites to assess the extent in overlap between root and soil ECM communities. The structure of the ECM community varied substantially with site. Across all sites, correlations were identified between soil pH and metrics describing ECM community structure in both soil and root samples, indicating soil pH was contributing to the differences in the fungal communities between sites. Mineralisable nitrogen, soil carbon, and phosphorus content also varied with site, but were not significantly related to descriptors of the ECM communities. Root tips and surrounding soils shared some taxa but were inhabited by diverse communities of fungi, and a number of ECM *P. radiata* associations unique to New Zealand were identified. It is possible that the establishment of

Download English Version:

<https://daneshyari.com/en/article/8392499>

Download Persian Version:

<https://daneshyari.com/article/8392499>

[Daneshyari.com](https://daneshyari.com)