

Publication

Tracking the carbon source of arbuscular mycorrhizal fungi colonizing C-3 and C-4 plants using carbon isotope ratios ($\delta^{13}\text{C}$)

Journal Article (Originalarbeit in einer wissenschaftlichen Zeitschrift)

ID 2270313

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Year 2013

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Journal Soil biology & biochemistry

Volume 58

Pages / Article-Number 341-344

Keywords Arbuscular mycorrhizal fungi, Carbon source, C-13 signature, Fatty acid C16:1 omega 5, Common mycorrhizal networks

Arbuscular mycorrhizal fungi (AMF) may colonize several plant species simultaneously, thus receiving their carbon from different plants. In previous work, we have used microcosms with flax (a C-3 plant) and sorghum (a C-4 plant), connected to a common mycorrhizal network, in order to track the carbon source of AMF, making use of the distinct C-13/C-12 isotope compositions of C-3 and C-4 plants (Walder et al., 2012). Here we compare three methods for analysing the stable carbon isotope composition of AMF. Bulk carbon isotope analysis of washed extraradical mycelium is possible, but has the drawback of potential contamination from non-mycorrhizal sources. Bulk carbon isotope analysis of isolated AMF spores yields more reliable results but is rather tedious. We explain, in some detail, a more refined analysis based on the extraction of lipids from soil, followed by analysis of an AMF biomarker, the fatty acid C16:1 omega 5.(C) 2013 Elsevier Ltd. All rights reserved.

Publisher Pergamon Press

ISSN/ISBN 0038-0717

edoc-URL <http://edoc.unibas.ch/dok/A6205325>

Full Text on edoc No;

Digital Object Identifier DOI 10.1016/j.soilbio.2012.12.008

ISI-Number WOS:000317158300040

Document type (ISI) Article