

BOOK OF ABSTRACTS

'MIXED AND PURE FORESTS IN A CHANGING WORLD'

Session 1
MIXED STANDS

Session 2
CARBON AND BIOMASS MODELLING

Session 3
SUSTANABILITY OF FOREST STANDS

Session 4
FORESTS AND CHANGES



9 789726 1699804

MIXED AND PURE FORESTS IN A CHANGING WORLD

MIXED AND PURE FORESTS IN A CHANGING WORLI

IUFRO CONFERENCE 2010 6-8 October
University of Trás-os-Montes e Alto Douro
Vila Real Portugal

BOOK OF ABSTRACTS
edited by
Domingos Lopes
Margarida Tomé
Margarida Liberato
Paula Soares

© Copyright University of Trás-os-Montes e Alto Douro, 2010

Impressão

Tipografia Lousanense, Lda

Impresso em papel NAVIGATOR 80 g/m2 oferecido pelo grupo Portucel Soporcel

Coordenação científica

Domingos Lopes

Edição

Domingos Lopes

Margarida Tomé

Margarida Liberato

Paula Soares

Design

Sandra Costa

Tiragem de 100 exemplares

Setembro de 2010

ISBN: 978-972-669-980-4

MICROBIAL BIOMASS AND N MINERALIZATION IN MIXED PLANTATIONS OF BROADLEAVES AND NITROGEN-FIXING SPECIES

Pereira, E. L. ¹, S. A. P. Santos¹, M. Arrobas¹, A. M. B. Claro², A. L. Magalhães², M. S. Patrício¹

¹Centro de Investigação de Montanha - CIMO, IPB - Polytechnic Institute of Bragança, ESAB, Quinta Sta. Apolónia, Apartado 1172, 5301-855 Bragança, Portugal.

²IPB - Polytechnic Institute of Bragança, ESAB, Quinta Sta. Apolónia, Apartado 1172, 5301-855 Bragança, Portugal

* Corresponding author: epereira@ipb.pt

The present study was conducted in a 10-year-old trial of mixed plantation located in the Northeast of Portugal. This study was developed in the three following treatments: pure of *Robinia pseudoacacia*; pure of *Prunus avium* and mixed of *Prunus avium* × *Robinia pseudoacacia*. To better understand the benefit of the consociation of an N-fixing species (*Robinia pseudoacacia*) with broadleaves quality timber production (*Prunus avium*), we compared the soil microbial biomass carbon and nitrogen, soil respiration and N-mineralization of these three situations. Net mineralization or immobilization of N in field soils is calculated from measured changes in the mineral-N content of largely undisturbed soil isolated inside tubes *in situ*. Soil microbial biomass carbon (SMB-C) and nitrogen (SMB-N) were determined by fumigation-extraction method. We also determined the ratio of SMB-C to soil organic carbon (Cmic/Corg) as an indicator of soil organic matter quality or availability, and the metabolic quotient (qCO₂) as a measure of microbial efficiency. Microorganisms are generally considered as the driving force or catalyst behind the decomposition process. In this sense, the magnitude Microbial biomass C (MBC) may indicate potential rate of C flux. Indeed, MBC is commonly described as a living or active pool in models that simulate organic C turnover in soils, and the size of this pool directly affects the model outputs. Soil enzymes are mostly of microbial origin and are closely related to microbial biomass. Desidrogenase is one of the most frequently used enzyme tests for the measurement of total microbial activity in soil. This was the methodology used in this study.