



### 9.7 Macrofungi from *Castanea sativa* Mill. and *Quercus pyrenaica* Wild.: Evaluation of mycorrhizal vs nonmycorrhizal fungi biodiversity – Project AGRO 689

Baptista, P.<sup>1</sup>, Sousa, M.J.<sup>1</sup>, Dias, R.<sup>2</sup>, Matos, M.<sup>1</sup>, Rodrigues, P.<sup>1</sup>, Martins, A.<sup>3</sup>

<sup>1</sup>CIMO - Escola Superior Agrária de Bragança, Quinta de Santa Apolónia 5301-855 Bragança - Portugal, <sup>2</sup>PNM – Parque Natural de Montesinho - Portugal, <sup>3</sup>Escola Superior Agrária de Bragança, Quinta de Santa Apolónia 5301-855 Bragança - Portugal

The present work concerns results from the Project AGRO 689 on evaluation of macrofungi biodiversity associated with chestnut and oak trees in the northeast of Portugal (Trás-os-Montes), a region where these species have important social and economical roles. The study of relative abundance of mycorrhizal and nonmycorrhizal species and of edible vs non edible mushrooms are also main goals of this work. Ecological and economical impacts of edible fungi harvesting, including the impact on mycorrhizal and nonmycorrhizal species, are also under evaluation. Field work took place from October 2004 to December 2005. Total macrofungi were collected weekly during autumn and spring and monthly during the rest of the year, in five plots of 100m<sup>2</sup> each per habitat. Identification and quantification of carpophores were made. Along the two years, 17 species belonging to 11 genera were collected in chestnut tree habitat. The distribution of species by functional groups shows a dominance of mycorrhizal species (59%). During the same period, oak tree habitat showed 59 species belonging to 27 genera. In contrast with chestnut tree habitat, the distribution by functional groups in oak habitat showed a slight dominance of saprotrophic species (49%). The reduced macrofungi biodiversity here shown will be discussed taking into account the particular climatic conditions in the northeast of Portugal during the main growing seasons of the current study.

### 9.8 A comparison of the effects of fire and clearcutting on the mycorrhizal colonization and growth of *Pseudotsuga menziesii* var. *glauca* seedlings

Barker, J.S.<sup>1</sup>, Simard, S.W.<sup>1</sup>, Jones, M.D.<sup>2</sup>, Durall, D.M.<sup>2</sup>

<sup>1</sup>Department of Forest Sciences, University of British Columbia, Vancouver BC V6T 1Z4, <sup>2</sup>Biology and Physical Geography Unit, UBC Okanagan, Kelowna V1V 1V7

This study aims to compare the impact of wildfire severity with clearcutting on Douglas-fir regeneration. The study consists of five treatments that compare a range of disruptions to the soil organic layer and host vegetation: high severity burn, low severity burn, clearcut, screefed clearcut, and undisturbed forest. Seed beds were sown at four replicates of each treatment in late spring of 2004. Germinants were assessed monthly for growth and mycorrhizal colonization. Germination was highest in clearcuts and low severity burns, intermediate in the high severity burns, and lowest in the undisturbed stands. After two growing seasons, high severity burn seedlings had the highest mean shoot biomass while the low severity seedlings had the highest foliar % N and P. Seedlings growing in the undisturbed stands had the highest percentage of ectomycorrhizal roots and highest ectomycorrhizal diversity while the lowest of both occurred in the high severity burns.

### 9.9 Patterns in activity, richness, and community composition of arbuscular mycorrhizal fungi in a Sonoran Desert riparian area, Verde River, Arizona

Beauchamp, V.B.<sup>1</sup>, Stromberg, J.C.<sup>2</sup>, Stutz, J.C.<sup>3</sup>

<sup>1</sup>School of Life Sciences, Arizona State University, Tempe, AZ, <sup>2</sup>School of Life Sciences, Arizona State University, Tempe, AZ, <sup>3</sup>Department of Applied Biological Sciences, Arizona State University, Mesa, AZ

In the semi-arid riparian zones of the western United States the effects of river regulation on overstory *Populus* populations is well understood, but less is known about impacts to other aspects of riparian ecosystems including the herbaceous community and their associated arbuscular mycorrhizal fungi (AMF). In this study, floodplain soil texture and chemistry, herbaceous cover and richness, and AMF richness and colonization were compared between unregulated and regulated reaches of the Verde River, Arizona and along a lateral gradient from the river margin to the uplands. When compared to the unregulated reach, the regulated reach had sandier soil and lower nutrient concentrations along with lower herbaceous cover and a higher proportion of annual species. Despite these differences, AMF colonization, richness and community composition were similar between reaches. AMF species richness declined with stand age and distance from the active channel and was positively related to perennial species cover and richness and gravimetric soil moisture. Distance from the channel, forest age, annual species cover, perennial species richness, and exchangeable potassium all play a role in structuring the AMF community in this riparian area. Most AMF species were found across a range of soil conditions, but a subset of species tended to occur more often in hydric areas. This group of riparian affiliate AMF species includes several not previously encountered in the surrounding Sonoran desert.