

SOIL FUNGAL COMMUNITY COMPOSITION AND *Tuber melanosporum* MYCORRHIZA ABUNDANCE UNDER PRODUCTIVE AND NOT PRODUCTIVE TREES OF *Quercus* spp. IN ARGENTINA

María Belén Pildain¹²³, Carolina Barroetaveña¹²³, Beatrice Belfiori⁴, Claudia Riccioni⁴, Andrea Rubini⁴

¹Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Argentina

²Centro de Investigación y Extensión Forestal Andino Patagónico (CIEFAP), Esquel, Chubut, Argentina

³Universidad Nacional de la Patagonia San Juan Bosco (UNPSJB), Esquel, Chubut, Argentina

⁴CNR-IBBR: Institute of Biosciences and BioResources, Perugia Division

E-mail: mbpildain@ciefap.org.ar

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The edible ectomycorrhizal fungus Périgord black truffle (*Tuber melanosporum* Vittad.) is a highly priced non-wood forest product. In Argentina its production relies on *Quercus ilex* and *Q. robur* plantations where it is common to have productive and non-productive trees in the same orchard. We studied the relation of *T. melanosporum* mycorrhization with host, productive - non productive condition and slope in a 20 years orchard. *Tuber melanosporum* mycorrhization was evaluated by morphotyping and sequencing of root tips while the soil fungal communities were characterized by means of ITS metabarcoding. We found a higher mycorrhization level in *Q. robur* than in *Q. ilex* roots, where a high relative abundance of non-*T. melanosporum* EcM fungi was observed. High slope and non productive trees were associated with low percentage of root mycorrhization. Based on a high-throughput sequencing approach, soil fungal community showed a predominance of members of the phylum Ascomycota. *Tuber melanosporum* was the main species, except for *Q. ilex* in medium slope soil, where *Peziza* spp. were more abundant. Host species was the strongest driver of fungal community structure and composition, while slope status was the weakest. The diversity patterns inferred through the metabarcoding analysis were not concordant with those obtained through morphotyping for productive and non productive status, being the latter more accurate. Twenty years after establishment, no signs of loss of *T. melanosporum* were observed in soil, indicating that *T. melanosporum* can colonize and dominate the surrounding soil in mature *Quercus* plantation even if the production of truffles is low. Further investigations should be carried out to determine whether truffle mycelium growth and mating types presence and distribution in the soil may affect orchard productivity.

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