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ABSTRACT BOOK

LIBRO DE RESÚMENES

Integrated approaches to evaluate the productivity of *Tuber melanosporum* in a model plantation

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Abstract

Natural production of *Tuber melanosporum* is almost exclusively in France, Spain and Italy, which are the main distribution areas for this species. Cultural practices have been developed in many countries throughout the world. Nevertheless cultivation requires long-term investments: production usually begins 6–10 years after seedling inoculation. The fruiting body is usually collected in the burned area, an area devoid of vegetation near or around the host trees, where the truffle competes with other ectomycorrhizal fungi (Napoli et al., 2010). Nevertheless, potential truffle yield remains highly unpredictable. The genome sequencing of the ectomycorrhizal fungus *Tuber melanosporum* has revealed that the fruiting body production depends on the availability in the soil of two mycelia with opposite mating types (Martin et al., 2010; Rubini et al., 2011). This finding has suggested that seedlings produced for truffle-culture programs have to be inoculated with both the mating types. In order to investigate if the productivity is also correlated to a certain amount of *T. melanosporum* in the soil, in addition to the co-presence of mating type genes, we set up a protocol in a model plantation presenting productive and unproductive trees. The quantity of *T. melanosporum* in soil samples was assessed by quantitative PCR (qPCR) on ITS region and its mating types were searched. Results showed that mating type genes were detected in the stand under productive trees and when more than 0.3 ng of *T. melanosporum* DNA was present (Zampieri et al., 2012). Up to now the establishment of a *T. melanosporum* plantation has been exclusively based on soil features. In future, the proposed analyses can help truffle operators in the management of their plantation by attesting the occurrence of *T. melanosporum*, after seedling inoculation and before the harvest of the fruiting bodies.

References

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KEYWORDS

Tuber melanosporum, mating type genes, truffle-ground soil, qPCR.