

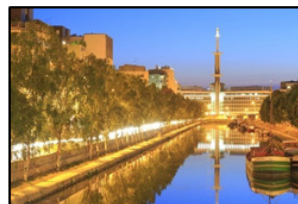


sfécologie 2018

International Conference on Ecological Sciences

22-25th October 2018

Couvent des jacobins, Rennes, France



Impact of intercropping cultures on truffle production and soil microbial communities in Mediterranean oak orchards

Alexandre Geoffroy *^{1,2,3}, Franck Richard³, Hervé Sanguin^{1,2}

- 1 CIRAD, UMR LSTM – Centre de coopération internationale en recherche agronomique pour le développement [CIRAD] – F-34398 Montpellier, France
- 2 LSTM, Univ Montpellier, CIRAD, IRD, INRA, Montpellier SupAgro – LSTM – Montpellier, France
- 3 UMR 5175 CEFE – CNRS - Université de Montpellier - Université Paul Valéry Montpellier 3 – EPHE – IRD - INSERM (CEFE) – Centre National de la Recherche Scientifique - CNRS – Campus CNRS, 1919 Route de Mende, F-34293 Montpellier, France

Truffle orchards are agroecosystems that play an economic, cultural and structural role in Mediterranean landscapes. In Southern France, some truffle growers associate secondary production in truffle orchards, such as the intercropping of aromatic and medicinal plants (AMP). Recent works described AMPs as acting positively on soil microbial activity. We hypothesized that this beneficial impact of AMPs may also improve truffle production through direct and indirect mechanisms involving biotic and abiotic soil parameters. The survey, conducted among truffle growers, indicates that AMP intercropping was mainly limited to lavender (*Lavandula hybrida*) production, and occasionally to rosemary (*Rosmarinus officinalis*) and thyme (*Thymus vulgaris*). According to one-third of the truffle growers, the production of truffles was improved and for 40% this intercropping allowed a contribution of organic matter and a protection against the drought. The study aimed at better testing this reported effect and exploring the mechanisms underlying this pattern by characterizing soil physicochemical and microbial community changes induced by AMP culture. A multidisciplinary approach associating microbiology and molecular ecology has been conducted in truffle orchards with a historical practice of AMP intercropping culture. We report a positive effect of AMP culture on *Tuber* populations, with no major change on soil microbial community diversity. Nevertheless, we identify microbial taxa indicators associated with truffle production and/or plant types. The investigation of a wider range of truffle-based agroecosystems may provide important guidelines for the development of intercropping culture to improve the productivity and sustainability of truffle orchards.

*Speaker