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Groundbreaking: Truffle (*Tuber borchii*) production time reduced by half

Anike N F, Isikhuemhen O S and Wain Wright L
North Carolina A&T State University, USA

Introduction: The acute decline in wild and world production, a burgeoning market, a hard to crack production system, and the limited understanding of biotic and abiotic interactions that lead to truffle fructification have contributed to desperate search for orchard (farm) raised truffles. To boost production, truffle orchards are planted using truffle mycorrhized seedlings and managed blindly for many years (5-9 years depending on species) with no guarantee of truffles. The long period of wait time and uncertainties that surround out-planted truffle seedlings are major set-backs to commercial truffle production. We hypothesized that aspects of truffle cultivation that are critical to productive orchard are linked to good quality seedling, orchard management practices that promote underground synthesis, and technologies that monitor and enhance healthy microbial competition in favor of truffle fungus.

Methods: Loblolly Pine (*Pinus taeda*), an economically important tree in North Carolina were selected as host plant for *T. borchii*. Certified mycorrhized pine seedlings of *T. borchii* were planted in two acres plot and managed systematically according to developed standard practices. Seedling quality was a measure of seedling overall health and the level of pine root mycorrhization by *T. borchii*.

Results: The quality of out-planted seedlings was exceptional with more than 90% colonization, which is way above 30-60% reported in literature. Pine growth parameters (height, width, and crown diameter) were higher in mycorrhized than non-mycorrhized tree. The ground-breaking result from this project was that *T. borchii* truffles were harvested in 2 years and 3 months from out-planted seedlings. This is the shortest production period ever reported compared to Europe 4-5 years and Australia 3 years.

Conclusions: Truffle production is possible and can be ramped up in the United States. In the long run Farmers/investor's and funding agencies could have increased interests in truffle production

Biography

Anike F N is an experienced Researcher and Educator with expertise in mushroom and fungal biotechnology. She conducts research and trains students in this field of study, authored and co-authored many peer reviewed journals and publications.

fnanike@ncat.edu

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