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Artificial Cultivation of Ectomycorrhizae *Truffle* spp.

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Mycorrhizae, or "fungus-roots," involve the intimate association of plant roots with specialized soil fungi. Certain European truffles including *Tuber melanosporum* (Perigord black truffle) and *T. aestivum* (Burgundy truffle), are valuable food commodities, selling for hundreds of dollars per kilogram worldwide. *Tuber* species grow mutualistically as ectomycorrhizae with the roots of compatible host trees including white and evergreen oaks (*Quercus* spp.) and hazels (*Corylus* spp.). Climatic and edaphic conditions for cultivating *T. melanosporum* are more constraining, but *T. melanosporum* also commands a much higher price. Truffles are cultivated by growing seedlings of compatible tree species in pasteurized substrate amended with truffle spores, maintaining the inoculated seedlings in the greenhouse until the mycorrhizal relationship is established and certified, planting the infected seedlings into appropriate and properly prepared sites, and managing the resulting truffieres (truffle orchards) to maintain the truffle infections and encourage truffle fruiting. Soil fumigation destroys mycorrhizal fungus populations, alternative pest control measures should be substituted whenever possible. Careful seedling manipulations and handling also will reduce damage to mycorrhizae. Soil disturbance should only be necessary to meet management goals so as to minimize disruption of delicate fungus soil networks. Fertilization can both foster and inhibit mycorrhiza development; appropriate levels are best determined by experience. Questions remain to be addressed at each step of the process in developing best management practices for truffle cultivation.

Key words: Ectomycorrhizae, perigord black truffle, *Quercus* spp., *Truffle*