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INOCULATION OF green [*Alnus crispa*] alder WITH *FRANKIA*-ECTOMYCORRHIZAL FUNGAL INOCULANT UNDER COMMERCIAL NURSERY PRODUCTION CONDITIONS

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ABSTRACT

We examined the feasibility of producing container Alnus crispa (Ait.) Pursh (Betulaceae) seedlings (green alder) inoculated with a pure culture of Frankia sp., Brunchorst strain AvcI1 and an ectomycorrhizal fungus, Hebeloma crustuliniforme (Bull. ex st. Amans) Quél. in a commercial nursery setting. Alders are actinorhizal plants that fix atmospheric nitrogen in a symbiotic association with Frankia species and can also form mycorrhizal associations. Frankia inoculation significantly increased seedling biomass, number of nodule lobes, nodule weight, and plant nitrogen content of green alder at the end of nursery culture compared with control or "Hebeloma only" treatments. Improved seedling growth, root nodulation, and nitrogen nutrition achieved in this study was attributable to Frankia inoculation, suggesting Frankia inoculation in nursery may be beneficial for the production of superior alder seedlings to use in reclamation work. Actinorhizal plants have the potential to enhance plant establishment on disturbed sites and to improve soil fertility and stability. Seedlings inoculated with Hebeloma only or in combination with Frankia did not show any visible ectomycorrhizal colonization, suggesting H. crustuliniforme may not be compatible with green alder under these experimental conditions. This study demonstrated the suitability of producing large-scale inoculated alder seedlings in commercial nurseries without altering regular nursery operations.

Quoreshi AM, Roy S, Greer CW, Beaudin J, McCurdy D, Khasa DP. 2007. Inoculation of green alder (Alnus crispa) with Frankia-ectomycorrhizal fungal inoculant under commercial nursery production conditions. Native Plants Journal 8(3):271–281.

KEY WORDS

growth and root nodulation, inoculation, seedling production, container nursery, nitrogen fixing

NOMENCLATURE

Plants: USDA NRCS (2007)
Fungi: IFP (2007)