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Root and shoot growth of *Pinus strobus* x *P. wallichiana* somatic plants is influenced by the nitrogen composition of the germination medium

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Somatic embryogenesis (SE) in conifers has proven to be an useful biotechnological tool for species conservation and mass propagation, but to make it commercially viable, adaptive research is required to convert laboratory protocols into plantation reality. Hybrid white pines are of interest to forest industry in North America due to the potential resistance to white pine blister rust (*Cronartium ribicola*). Somatic embryos of many pine species are typically germinated on the same nutrient medium as used for earlier stages of SE. For most of the genotypes of white and hybrid white pine, the time required for the plantlets to grow a 2 cm root takes approximately five to six months at which time the plantlets can be potted and transferred to a greenhouse. The survival of plants is however sketchy and not always reliable. In order to accelerate and improve the root growth and survival of the plants in a greenhouse a study was initiated on the manipulation of the nitrogen composition of the germination medium. We were interested in learning whether the pine somatic seedlings had a preference for organic or inorganic forms of N during the germination step and root growth. Experiments have been conducted to determine the uptake and content of ¹⁵N in those roots by submerging them in a hydroponic solution for two hours. The somatic seedlings' root growth was dramatically affected by the N composition of the medium as well as it did affect the uptake of ¹⁵N. To follow up the nitrogen metabolism in somatic seedlings, we have performed microarray and qPCR analysis for nitrogen or nitrogen-related metabolism genes. The results of the analysis will be discussed.