

Production and outplanting success of nutrient-loaded aspen seedlings

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Abstract

Quality aspen (*Populus tremuloides* Michx.) nursery seedlings are difficult to produce. In this thesis I explored methods to improve the nutrient status (loading) of aspen seedlings. Tissue nutrient concentrations doubled in seedlings treated with a shoot growth inhibitor (SGI) compared to exponential fertilization which resulted in poor quality (small) seedlings with lower nutrients. Nutrient loaded and standard feed SGI seedlings were outplanted on a reclamation site in two capping materials (peat-mineral-mix (PMM) and salvaged forest floor). Superimposed were also four different fertilizer regimes. Loaded aspen seedlings always outperformed standard seedlings, grew better on PMM capping material, and a controlled release fertilizer had a longer lasting effect on seedling growth than the immediate release fertilizer. These differences continued in the second growing season. SGI treatment allows for the production of nutrient loaded aspen seedlings, produces uniform and quality seedling stock, and can reduce broadcast fertilization needs on reclamation sites.