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Abstract

Growing trembling aspen and white spruce intimate mixtures: Early results (13–17 years) and future projections

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Controlled mixtures of trembling aspen (*Populus tremuloides* Michx.) and white spruce (*Picea glauca* [Moench] Voss) were established in 1989 at two locations in the Boreal White and Black Spruce (BWBS) biogeoclimatic zone in northeastern British Columbia. The initial study design of three aspen treatment densities of 0, 5000, and 10000 stems per hectare was expanded by reducing existing densities of aspen on a subset of plots to 1000 and 2000 stems per hectare. A random-coefficients regression model was used to analyze height and diameter growth trends for aspen and spruce 13–17 years after establishment. White spruce grown without aspen had significantly greater rates of height and diameter growth. There were no significant differences in spruce growth between the 5000 and 10000 aspen stems per hectare treatments. Differences in spruce height and diameter growth did not consistently display a pattern of declining growth as aspen density increased from 1000 to 10000 stems per hectare. Aspen responded to aspen density reduction by increased diameter growth of the remaining stems.

The Mixedwood Growth Model was used to predict future growth of the experimental stands. Yield projections indicated that a total productivity gain of 21% may be achieved for mixtures compared to a pure spruce scenario. Over the range of conditions studied, spruce comprised approximately 40% of the total volume in mixed stands. These initial results will improve the assessments of the relative contributions that pure- and mixed-species management regimes may offer to achieving forest-level objectives.

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