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Evaluating fibre attributes of Spruce and Aspen

The researchers characterized spruce and aspen trees of three densities, compared them and analyzed the relationships between competition and wood fibre properties. They went on to determine the key differences in wood fibre properties between trees and locations.

PROJECT TITLE
Evaluating the impact of stand composition and inter-tree competition on fibre attributes of spruce and aspen grown in mixedwood stands

ORGANIZATION
University of Northern British Columbia

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1 May 2018

END DATE
31 March 2020

COLLABORATORS
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The team's main objective was to characterize the fibre attributes of coniferous and deciduous trees growing in mixedwood stands (consisted of hardwood and softwood) which vary by density. The attributes include wood density, wood stiffness, fibre coarseness, ring widths and orientations, and fibre orientations.

By the end of the project, researchers would have a clear understanding of the competition between select trees. The two-year project's activities included:

- Sampling and selecting spruce and aspen from different plantations
- Analyzing and comparing their cores to evaluate their individual traits
- Conducting a thorough statistical analysis of all recorded data to find the relationship between competition and fibre properties at each location

Significant differences were found in properties and responses to treatment between spruce and aspen. For example, the findings indicate that ring width decline outweighs the effects of competition among trees. Overall, the researchers concluded that spruce is more sensitive to competition than aspen.

This project supports diversified forests. Such forests provide benefits for wildlife and biodiversity; makes canadian forests more resilient to disturbances such as climate change, forest fires and insect outbreaks; and reduce the need for herbicides. This project offers forest managers practical data for better, better informed decision-making that considers First Nations, wildlife, and biodiversity needs. The data include information on softwood and hardwood growth, fibre attributes, and wood quality from pure and mixedwood stands.

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