

IMPACT OF DIFFERENT THINNING REGIMES ON WOOD PROPERTIES AND CARBON SEQUESTRATION IN WHITE SPRUCE (*PICEA GLAUCA*) PLANTATIONS

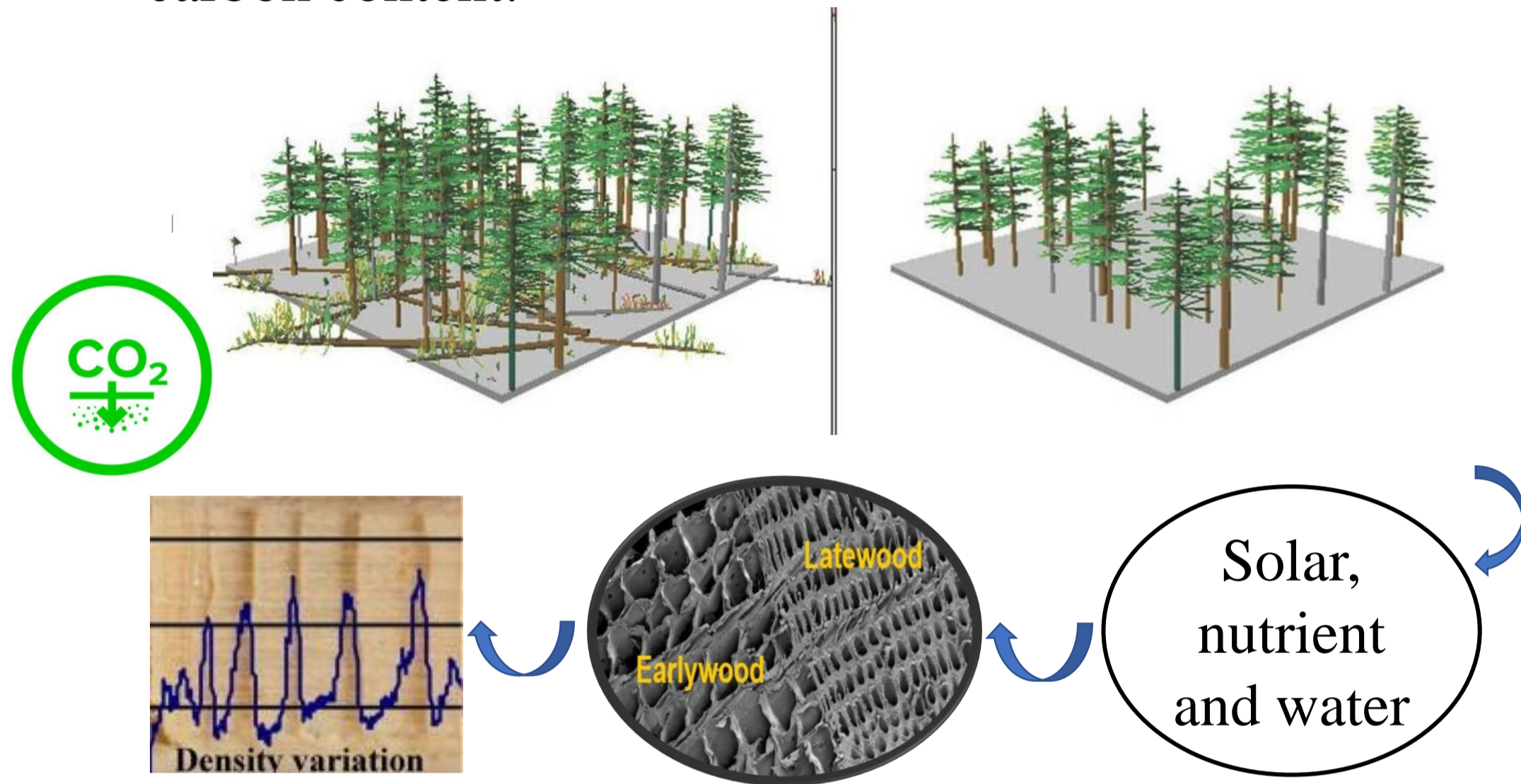
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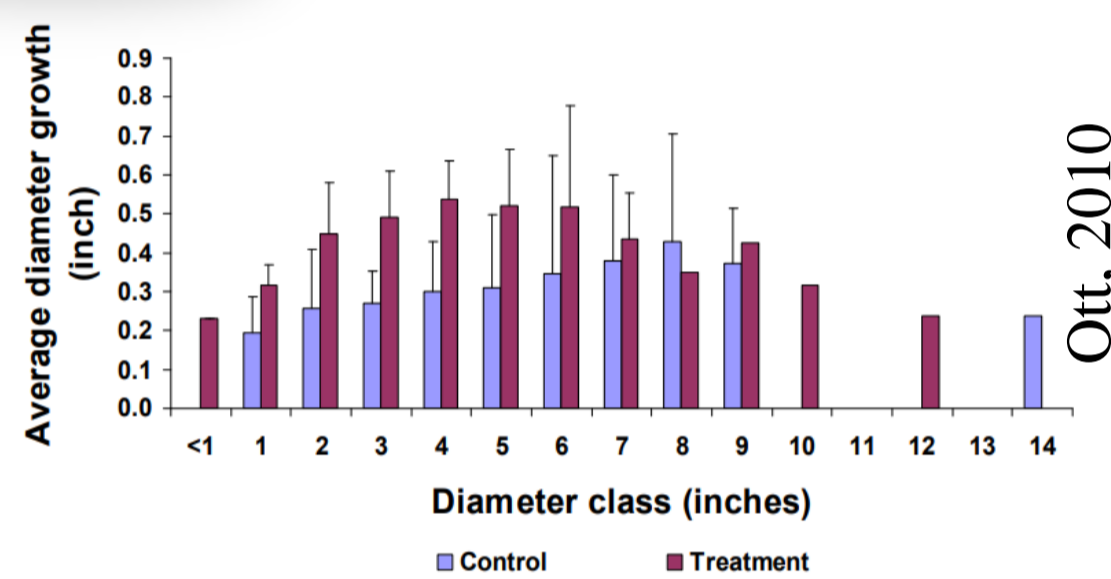
Context

- Stand density management is one of the most important and widely used silvicultural tools that directly influence tree growth, wood quality and carbon content.



White Spruce:

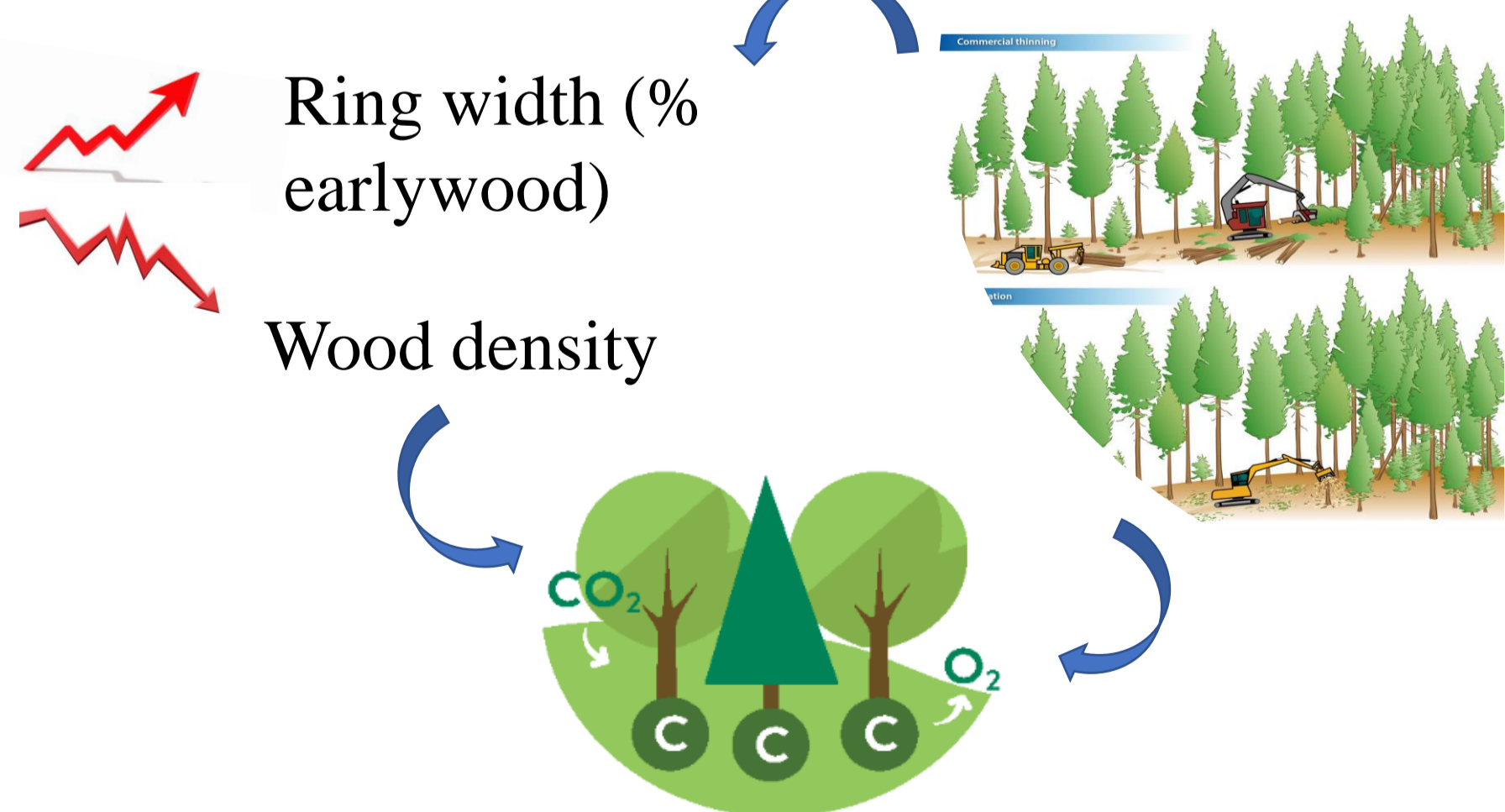
- Conifer tree species native to the northern temperate and boreal forests of North America
- Growth is highly sensitive to spacing



- Growth-ring characteristics and carbon dynamics associated with 4 thinning regimes (control, thinning from below, release of 50 crop trees (CT) and release of 100 CT in white spruce plantation will be assessed.

Objectives/ Hypothesis

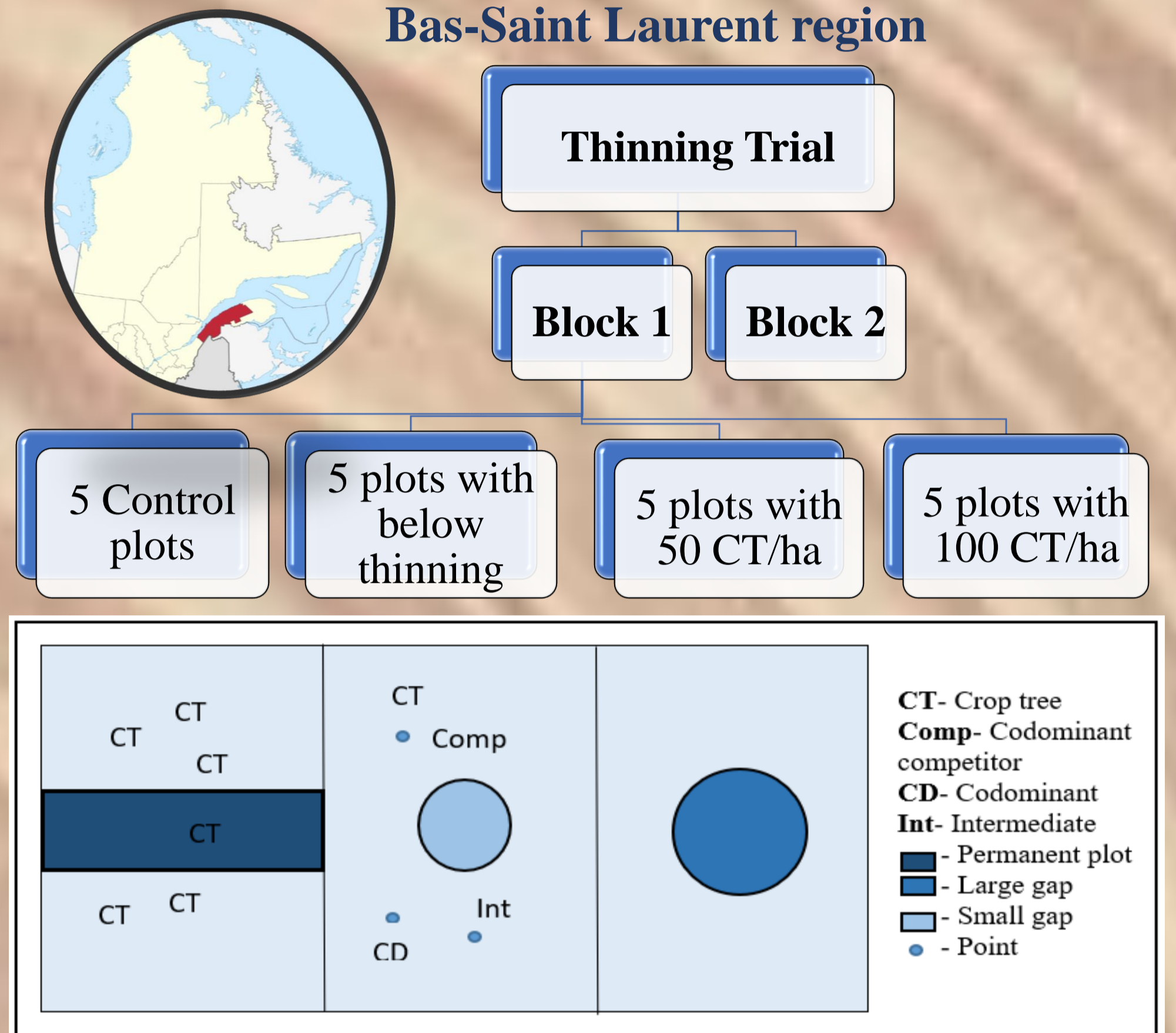
- Construct a relationship between thinning regimes and growth-ring characteristics
- Estimate the amount of carbon contain in the tree level and plot level



Earlywood density decreases and % earlywood increases after commercial thinning, whereas, % latewood decreases, suggesting different ring densities for the same ring width.

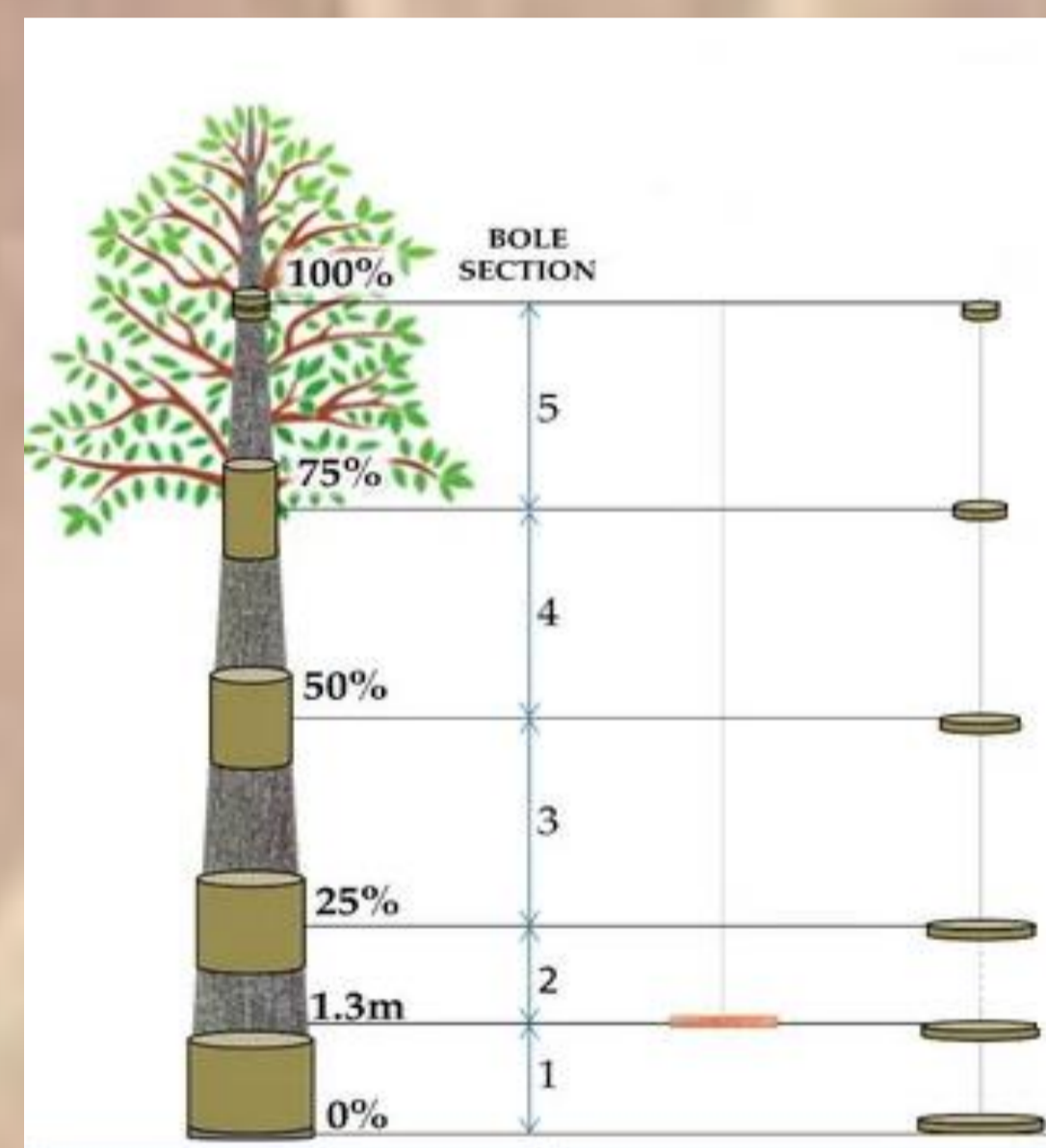
Methods

Bas-Saint Laurent region



Experimental unit with three experimental sub-units

140 sample trees; measured DBH and height; extracted six discs from each tree



Extract ring density and ring width

- ANOVA and pair-wise comparison
- Will use the volume model developed by Pregent et al., (2010) and measured wood density to calculate the CO₂ sequestration

Contribution

- Help to understand the effect of different thinning regimes on the growth-ring and CO₂ sequestration, so that the managers will have a better information to choose the appropriate option.

References:

- Ott, R. A. (2010). Effects of Pre-Commercial Thinning on Stand Composition, Stand Structure, and White Spruce Diameter Growth in White Spruce Stands in Interior Alaska. January, 16.
- Prégent G, Picher G, Auger I (2010) Tarifdecubage, tables de rendement et modèles de croissance pour les plantations d'épinette blanche au Québec. Gouvernement du Québec, Québec. Mémoire de recherche forestière no. 160. 73 p.

