

Forest Co-op Growth Intercepts Project

Growth Intercept Models for Young Jack Pine and Black Spruce in Northern Ontario

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What is a growth intercept?

- Growth intercept (GI) is defined as average annual height growth above breast height
- Typically height growth is averaged over a 5-year period

What is a growth intercept model?

- It is a model that links site index to average height growth
- It can be used to estimate site index from the average annual height growth

Why growth intercept model?

- We have site indices (SI) to estimate site productivity for natural stands in NW Ontario
- Can we apply these site indices developed for natural stands to plantations?
- Do plantations grow faster than natural stands that we harvested on the same site?

Variable growth intercept

- Growth intercept is good only for trees with obvious annual whorls such as red pine.
- Variable growth intercept model relates the average annual height growth of trees to site index

The advantages of Variable GI model

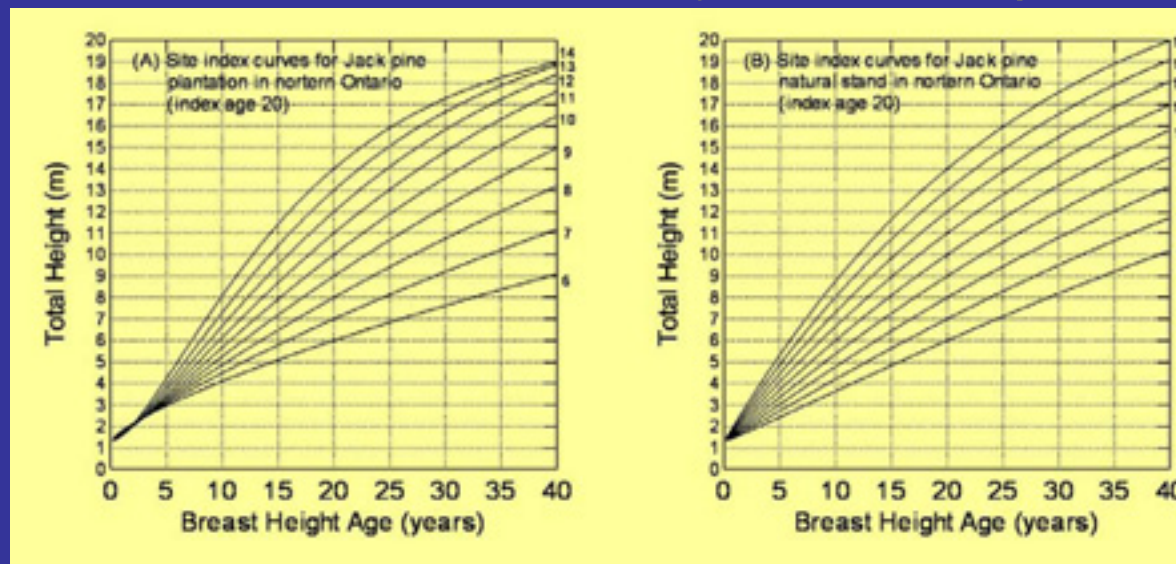
- Developed specifically for estimating site index
- Intended for young natural stands or young plantations
- Not constrained to pass through the site index at index age

We have done in 2004 and 2005

- We sampled 64 jack pine plantations
- Finished stem analysis on all sampled trees
- Used published jack pine site index data (Carmean and Lethall 1989)
- Developed growth intercept models for jack pine for boreal Ontario

We have done

- We have produced a manuscript titled “Comparison of height growth and growth intercept models of jack pine plantations and natural stands in northern Ontario”
- It has been accepted by CJFR (in press)



We are planning to do

- In 2006 sample black spruce plantations
- Sample more black spruce natural stands nearby the plantations
- Collect soil samples from each plot
- Finish stem analysis on sample trees
- Basic soil physical and chemical analysis
- Collect silvicultural records of black spruce plantations (as much as possible)
- Deliver transfer workshop in July

Question to answer

- How can we assess site quality at an early age for natural and planted Sb, and Pj
- How we link this assessment to our forest inventory and FMP process
- Growth and yield are affected by changes in climate, silviculture and genetics
- Can we improve site productivity through silviculture (site preparation, vegetation management, ...)?
- Develop growth intercept models linking silviculture practice and soil characteristics