Post-Harvest Stand Development Conference

Development of Alternative Reforestation Standards

January 31, 2006

Richard Briand, RPF
West Fraser Mills Ltd
Overview

- Who?
- What?
- Where?
- When?
- Why?
- How?
Who?

- 6 FMA holders
  - West Fraser (Alberta Divisions):
    » Blue Ridge Lumber
    » Hinton Wood Products
    » Slave Lake Pulp
    » Sundre Forest Products
  - Alberta Newsprint Company
  - Sundance Forest Industries

- Silviculture practitioners, growth & yield/timber supply analysts, management planning foresters – all working together!
Who?

- Total Area: 3.5 million ha
- Total Conifer AAC: 5.3 million m³
- Total Deciduous AAC: 1.2 million m³
- Combined represents ~28% of Alberta’s approved AAC
- 12 forest products companies & many smaller operators
What?

- Develop regeneration standards which are tied to the growth and yield projections used in FMA specific forest management plans
Where?
When?

- **Stage 1 (1 year duration)**
  - Due: May 1, 2006

- **Stage 2 - (4 year duration)**
  - Due: May 1, 2010
Why?

- Demonstrate sustainability
- Soon to be government requirement
- Had concerns with some aspects of the current system (i.e. FTG definition)
How?

- Establish operational link to current timber supply analysis yield expectations

- Two related issues:
  - What do the models say we need to achieve? (work back from rotation age targets)
  - What will our current treatments produce? (work forward using regen survey data)
<table>
<thead>
<tr>
<th>Base Strata</th>
</tr>
</thead>
<tbody>
<tr>
<td>I    Deciduous   (D)</td>
</tr>
<tr>
<td>II   Hardwood/Pine (DC)</td>
</tr>
<tr>
<td>III  Hardwood/Spruce (DC)</td>
</tr>
<tr>
<td>IV   White Spruce/Hardwood (CD)</td>
</tr>
<tr>
<td>V    Pine/Hardwood (CD)</td>
</tr>
<tr>
<td>VI   Black Spruce/Hardwood (CD)</td>
</tr>
<tr>
<td>VII  White Spruce pure or leading (C)</td>
</tr>
<tr>
<td>VIII Pine pure or leading (C)</td>
</tr>
<tr>
<td>IX   Black Spruce pure or leading (C)</td>
</tr>
</tbody>
</table>
Regeneration and Growth Phases

- Regeneration
- Performance
- Growth
- Rotation

Time
Linking Volume Yield Targets
Average versus Minimum Targets

![Graph showing frequency distribution with minimum and average targets indicated.](image)
Average and Minimum Yield Targets

**Average target:** the average yield per ha at rotation assumed for a stratum in the FMP and AAC

**Minimum target:** the minimum yield per ha assumed for any block within the stratum
Linking Density

![Graph showing the relationship between stand age (years) and stems per ha].

- **Stem age (years)**
  - 0
  - 10
  - 20
  - 30
  - 40
  - 50
  - 60
  - 70
  - 80

- **Stems per ha**
  - 0
  - 500
  - 1000
  - 1500
  - 2000
  - 2500

The graph shows a decreasing trend in stems per ha as stand age increases.
Stocking Effect on Density

PS = percent stocking at establishment
Competition Effect on Density

SDFaw = aspen stand density factor
Stand Models under Development for Linking Performance and Yield Targets

- **Height**
  - Re-fitted height-SI-age models - use PSP trajectories, solve site tree replacement issue, include regeneration data, based on total (versus breast-height) age

- **Stocking**
  - Percent stocking-age-SI models - direct link to conventional regeneration surveys, address spatial effects, provide basis for spatial modeling

- **Density**
  - Non-spatial and spatial mortality functions predicting changes in stems per ha over time from current or initial density, site quality and stocking

- **Competition**
  - Mixed species mortality models - describe stand density dynamics over time, as impacted by current or initial density, site quality, stocking, and species mixtures
  - Mixed species percent stocking models – describe changes in stocking of a target species over time, as impacted by stocking of target and competing species, and site quality
  - Diameter increment models – predict increment of a target species in relation to its age, site index, initial or current density and diameter, spatial distribution, and the abundance and spatial distribution of other species
Implementation

- Policy issues
- Technical
  - More focus on assembling & standardizing data
  - Develop tools for reporting & analysis
  - Training – new survey systems, different things to measure
- Communication
  - Government
  - Company staff
  - Contractors
  - Public
- Corporate
  - Costs (revise expectations = revise budget)
  - Silviculture Information System
…and it takes a lot of time

- Time and labor intensive process
- 150-200 person-days / company expected for the first approximation
- + consultant time / costs
- Not trivial, but valuable results
Questions?