



# Foothills Growth and Yield Association

## ***Quick-Note # 1***

### **Activity Update**

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August 2002

One of the commitments included in the Foothills Growth and Yield Association's annual work plan for this year was the inception of a system of "quick-notes", or occasional newsletters, as a means of communicating progress and results to members and anyone else who might be interested in our program. Although we do not have any research results to share with you just yet, the last 6 months have seen a lot of activity. It seemed appropriate, therefore, that our first *Quick-Note* should be an activity update. The following notes are arranged according to the 6 projects contained in our business plan for the next 5 years.

#### ***Development and Management of the Association***

The Memorandum of Agreement among members of the Association requires a Coordinating Agency (the Foothills Model Forest) to administer the Association and a Director to plan, develop and manage the Association's program, as directed by a Steering Committee and with the assistance of a Technical Committee.

At its annual meeting on March 7, 2002, the Steering Committee (with representatives from all 11 member organizations and chaired by Hugh Loughheed) approved an annual work plan, plus associated contributions of funds and effort, for the period April 1, 2002 to March 31, 2003. It also approved contracting Dick Dempster as Director, and Rand McPherson as Field Coordinator, for the year, and endorsed and accepted a 5-year business plan.

The Technical Committee met collectively on March 6 and June 18, primarily to plan this year's fieldwork. Individual technical representatives and contractors have worked closely with the Field Coordinator and Director on an ongoing basis to coordinate implementation of the work.

At the Association's annual meeting in March, experts from Alberta, British Columbia, and the USA spoke on the subject of "*Lodgepole Pine Management and Research: Are We on the Right Track?*" At its Research Forum held in Edmonton on March 20, the Foothills Model Forest included a presentation on the Association: "*A Cooperative Approach to Assessing the Growth of Managed Forest Stands*". The Forest Resource Improvement Association of Alberta (FRIAA) featured the Association in its first quarterly newsletter *Branching Out*, in an article entitled "*Growth and yield studies critical to sustainability of pine forests*". If you would like more information on these presentations (or the projects mentioned below) check our web site [www.fmf.ab.ca/pro.html](http://www.fmf.ab.ca/pro.html) and / or e-mail [dick\\_dem@telusplanet.net](mailto:dick_dem@telusplanet.net).

#### ***Lodgepole Pine Regeneration***

The purpose of this project is to forecast and monitor the growth and yield of lodgepole pine, regenerated after harvesting, in relation to site, initial spacing of planted stock, natural ingress, mortality, competing vegetation (brush), and density regulation (pre-commercial thinning).

Installation of the field trial, initiated in 2000, was completed this Spring. A total of 102 installations, each 1 ha in area and consisting of 4 treatment plots, has been planted at 6 initial densities on 5 site types throughout the members' 9 forest management areas. Three contractors (Apical Forestry Consulting, MCH Forestry, and West Sky Resource Consultants) are monitoring growth, survival, health and competing vegetation. Rand McPherson and the companies' technical representatives are auditing their work. Based on data collected in the last 6 weeks, we have scheduled 19% of the planted area for herbicide treatment within the next month. This is necessary to keep vegetative competition on half of each installation below

threshold levels, and will allow future assessment of competition effects on productivity. All operations are being conducted in accordance with government guidelines, a rigorous experimental design, a detailed project proposal, and a herbicide project authorization issued by Alberta Sustainable Resource Development.

### ***Comparison of Pre-harvest and Post-harvest Site Indices***

The purpose of the comparison is to provide credible and reliable forecasts of post-harvest site index.<sup>1</sup> We are using two complementary approaches: contemporaneous paired-plot sampling of regenerated and parent stands, and analysis of true time-series data from permanent sample plots (PSPs) measured before and after harvesting. Two Association members (Weldwood and Weyerhaeuser) are providing PSP data from stands that have been harvested and monitored over a long period of time. The other members are supporting a contract for paired-plot sampling of 50 cut-blocks being undertaken by Normko Resources. Regeneration in the selected blocks has reached at least 5 years breast-height age, and portions of the original parent stand of each block still exist on the same soil moisture and nutrient regime (thus allowing comparison of development in the parent and regenerated stand). The contract will be completed by the end of September, and it is our intention to complete analyses and report results by March 2003.



*Sampling on either side of stand boundaries such as this is one method being used by the Association to compare the productivity of natural and managed stands.*

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<sup>1</sup> Site index is an important measure of the potential timber productivity of a site based on the height development of the largest trees least affected by competition. We usually base our estimates on historic data from fire-origin stands, but there is evidence that stands regenerated after harvesting differ in productivity. It is therefore important that we understand how managed stands are developing, and will develop, relative to natural stands.

### ***Cooperative Management of Historic Research Trials***

This project will provide forest managers the continued benefit of long-term field trials established along the Eastern Slopes over the last 50 years, primarily by the Canadian Forest Service (CFS). The Association, the Northern Forestry Centre of the CFS, and the Land and Forest Division (LFD) of Alberta Sustainable Resource Development have in the last month finalized an agreement for maintenance and protection of the field installations, a synthesis of results to date, and ongoing measurement and analysis. The Association will undertake periodic re-measurements of the trials. (We will not be able to begin these measurements in earnest until next year, but are working with the CFS this field season to upgrade plot demarcation, assess measurement requirements, and check ecological classification of the sites.) Jim Stewart of the CFS will lead analysis and synthesis of results. The LFD has retained and funded Thompson Nunifu as an assistant analyst to edit and compile the historic data.

### ***Regional Yield Estimators***

This is a collaborative study between the Association and the LFD to develop compatible yield and growth estimation techniques for lodgepole pine ecosystems.<sup>2</sup> We are hopeful that these will provide an improved basis for crop planning, evaluation of regeneration standards, and productivity estimation. Technical experts from LFD and the Association have met twice to scope the work and develop the technical approach. Weyerhaeuser, Sunpine and the LFD are providing data sets for initial analysis. LFD's Greg Greidanus is currently compiling the data. Modeling work will commence in September, led by Shongming Huang of LFD, whose innovative research and development of the GYPSY<sup>3</sup> growth and yield projection system has laid the groundwork for this project.

### ***Nutrition and Density Management***

In 2001 the Association commissioned the Alberta Research Council to provide an expert review, identifying the knowledge gaps and feasibility of operational fertilization and thinning in fire origin lodgepole pine stands. The resulting report is in the final stages of review and editing, and we hope to make it available soon for download from the Association's web site. The authors are Barry White and David McNabb of ARC, and Scott Chang and Victor Lieffers of the University of Alberta. They have reviewed our ability to predict stand response following density management and fertilization, identified the tools that are available or needed for accurate prediction, and provided recommendations and guidelines for future research. The Association will use their report for prioritizing and designing trials in nutrition and density management.

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<sup>2</sup> Traditionally, inventory yield estimates (such as "stand volume tables" and "stock and stand tables") have usually been developed independently of "yield curves" and growth models forecasting growth and yield over time. The proposed integrated approach will allow generation of dynamic volume, stock and stand tables compatible with current inventory estimates but capable of forward and retrospective projection.

<sup>3</sup> Shongming Huang, Dave Morgan, Grant Klappstein, Jack Height, Yuqing Yang, Greg Greidanus, 2001, *GYPSY, a growth and yield projection system for natural and regenerated stands within an ecologically based, enhanced forest management framework: yield tables for seed-origin natural and regenerated lodgepole pine stands*, Alberta Sustainable Resource Development Pub. No. T/485, Edmonton, Alberta.