

**Timber Growth and Value Program
Recommended Research Topics
2005/06**

September 2004

NOTE : The Forest Science Board has focused the funding for the 2005/06 Call for Proposals to a subset of the themes and topics listed in this document. Please refer to the cover letter from the Forest Science Board posted on the FSP web site.

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Timber Growth and Value Program Advisory Committee Recommended Research Topics 2005/06

Introduction

This document presents the recommendations of the Timber Growth and Value Program Advisory Committee (TPAC) to the Forest Science Board regarding research eligible for funding under the 2005/06 FIA Forest Science Program.

The following research themes and topics are recommended as priority areas of research and will serve as reference material to support a call for proposals in September 2004, as well as for identification of priority long-term installations eligible for infrastructure funding. In the longer term they will be used as a foundation for the development of the five-year research program strategy. Please note that no priority ranking is implied by the numbering of research topics.

Note that the FSB has focused research funding in the 2005/06 call for proposals to six of the 13 research topics recommended by the TPAC.

1.0 Basic research on tree growth and stand development

Description

Improve the understanding of basic biological processes such as competition for light, nutrients and moisture, and the resulting allocation of carbon that regulates tree growth and stand development. This information is needed to improve operational models and decision-support tools.

1.1 Complex stands (Funding Priority for 2005/06)

Complex stands include multiple species, stands with structural diversity, and mixed stands of conifers and hardwoods.

Priority areas for research:

- species interactions
- light level effects related to tree and stand growth in multi-storied stands
- partial cutting and variable retention
- natural regeneration
- mortality

1.2 Early stand growth

This topic includes critical processes and dynamics of early stand establishment and growth that affect crop tree performance.

Priority should be given to research on the following species:

- Subalpine fir (*Abies lasiocarpa*)
- Western Redcedar (*Thuja plicata*)
- Yellow cedar (*Chamaecyparis nootkatensis*)

1.3 Old stands

Old stands include those being retained for non-timber purposes, or that remain in inventory for long periods due to the age structure of a management unit.

As successional processes and natural disturbance regimes are topics covered under the Sustainability Program, priority areas for research in this theme area are:

- volume loss
- mortality

2.0 Design and analysis of silvicultural systems

Description

Comparing silvicultural systems and management regimes at the stand, landscape and forest levels to maximize timber volume and value while providing specific non-timber values of interest.

Proposals in this theme should include field experiments with sound experimental design that support estimating the impacts of various silvicultural treatments and their interactions on timber and non-timber values.

2.1 Complex stands (Funding Priority for 2005/06)

Development and monitoring of silvicultural systems for complex stands (multi-species, structurally complex) at multiple scales (stand, landscape and forest).

Priority areas for research:

- maintenance of complex stand conditions for the co-production of timber and specific non-timber values such as wildlife habitat and NTFPs
- the relationship between residual stand structure and understory recruitment and development

2.2 Even-aged stands

Development and monitoring of silvicultural systems designed for efficient, high-yield timber production while providing for joint production of specific non-timber values of interest including wildlife habitat and NTFPs.

Priority areas for research:

- Assessment and analysis of ongoing fertilization experiments or trials (but not the initiation of new trials)
- high density stands
- genetic realized-gain trials

3.0 Growth and yield modeling/predictions

Description

Developing and improving models and decision support tools that predict tree and stand characteristics related to the production of timber volume and value and to non-timber values, with priority on models that support the provincial Timber Supply Review. This research may also include estimating and evaluating the impacts of management decision impacts on timber at multiple scales (stand, landscape, and forest).

3.1 Complex stands (Funding Priority for 2005/06)

Models of complex stands, including those with multiple species and stands with structural diversity.

Priority areas for research:

- partial cutting and variable retention
- boreal mixedwood (spruce-pine-aspen)
- IDF in south-central BC
- fire maintained stands
- high elevation stands (MH, ESSF)

3.2 Wood quality

Modeling effects of stand management regimes on wood properties, grades and value.

3.3 Estimating impacts (Funding Priority for 2005/06)

Estimating or quantifying the impacts of management decisions on timber and non-timber outputs, evaluated at multiple scales (stand, landscape and forest).

4.0 Timber losses to environmental factors (wind, drought, insects, and disease)

Description

Finding methods to predict and mitigate timber losses due to environmental factors; in particular linkages with growth and yield models (existing or under development).

4.1 Stand and forest dynamics following MPB (Funding Priority for 2005/06)

Research aimed at understanding and quantifying how stands will develop following MPB attack. Basic research regarding post-attack stand dynamics and succession.

Priority should be given to research in the following areas:

- Quantification of stand and forest change and development following MPB attack, and impacts on timber supply.
- Evaluating and estimating timber growth implications on residual trees and regenerated stands, in the understory, and in clearcut openings. Includes species interactions related to the scale and pattern of harvesting.
- Residual stand development with and without treatments (including small and large-scale salvage) under various levels of attack.

4.2 Estimating losses (Funding Priority for 2005/06)

Biologically robust, agent-specific models which move beyond models that estimate simple overall proportional reductions.

4.3 Mitigating losses

Strategies and management practices that mitigate losses at an appropriate operational scale and in a cost effective manner. This topic spans areas from silvicultural practices to resistance research and tree breeding, and deals with losses from factors such as root rots, pine rusts, pine mistletoe, windthrow, and drought.

5.0 Analytical techniques and models for strategic analysis

Description

Development of new tools and the improvement of existing tools to support analysis of timber and non-timber forest product (NTFP) supply, or the joint production of timber and non-timber values for resource analysis or local land-use planning.

5.1 Data integration

Techniques for integrating various data sources for strategic analyses, e.g., forest inventory, remote sensing, GY, and non-conventional data layers such as NTFP and tourism.

5.2 Tools and techniques

Development of new tools, and the improvement of existing tools to support analysis of timber and NTFP supply, or the joint production of timber and non-timber values for resource analysis or local land-use planning.