



Regenerated Lodgepole Pine Project Directory

Overview



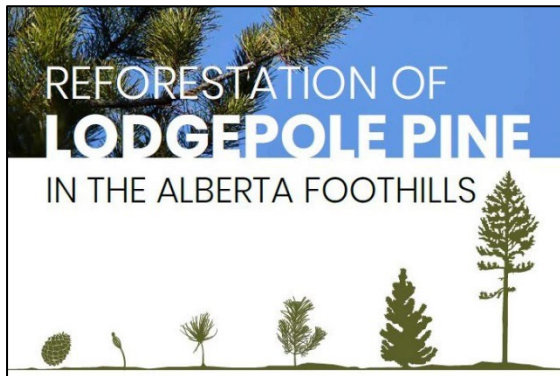
In the year 2000, 9 forest management agreement holders formed, and became [partners](#) in, the Foothills Growth and Yield Association (FGYA). The FGYA established the Regenerated Lodgepole Pine (RLP) trial, to monitor the effects of planting, vegetation management, and pre-commercial thinning on the development of lodgepole pine regenerated after harvesting. In 2015, the FGYA was incorporated within the Forest Growth Organization of Western Canada ([FGrOW](#)) as the Foothills Pine Project Team. The portion of the Team's research dealing with the RLP trial, together with related analyses and modelling of post-disturbance regeneration, became the Regenerated Lodgepole Pine (RLP) Project.

Over the two decades following establishment of the RLP trial, the Project, with input from many [people](#), accumulated a substantial amount of knowledge on the regeneration phase of lodgepole pine post-harvest stand development. Follow the links provided below to explore the resulting publications and media. Links and brief descriptions are listed by media type and descending publication date. Media types are categorized as follows.

- [Tools and apps](#): include a regeneration model providing a decision support tool (FRIPSY) for forestry professionals, and an interactive StoryMap for informing a broader audience;
- [Manuals and guides](#): field manuals describing past and future procedures for measurement and maintenance of the RLP trial, and a comprehensive guide for FRIPSY users;
- [Audio-visual presentations](#): FRIPSY training videos and downloadable PowerPoint presentations;
- [Peer reviewed papers](#): articles about the RLP trial, stand dynamics following mountain pine beetle disturbance, climate effects on tree disease and mortality, and related best management practices;
- [Reports](#): technical documents including a description of the RLP trial establishment, assessments of crop performance at various stages of the trial's regeneration phase, and information about supplementary projects which were used to augment the trial data;
- [QuickNotes](#): primarily notes on progress and interim results of the RLP trial.

For further information, or if you are unable to open any of the links in this document, please contact: info@fgrow.ca

Tools and Apps



Interactive StoryMap

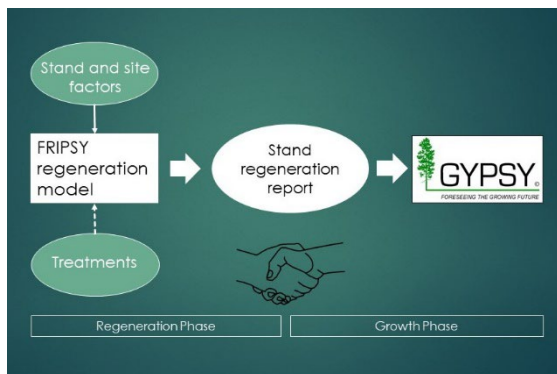
June 2022

Reforestation of lodgepole pine in the Alberta foothills

Overview of the effects of harvesting, mechanical site preparation, planting, herbicide application, and pre-commercial thinning on the regeneration, growth, and yield of lodgepole pine. Includes an interactive map of the RLP trial installations. A companion booklet is also available.

[View StoryMap](#)

[Download booklet](#)



Tool and App

August 2022

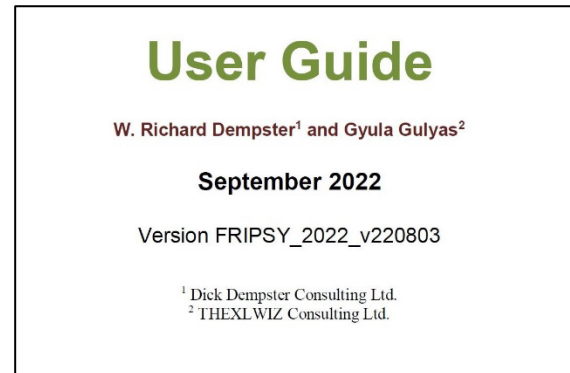
Foothills Reforestation Interactive Planning System (FRIPSY)

Quantitative planning tool designed to encourage and facilitate application of research undertaken by the RLP Project, assist silviculturists in selecting reforestation treatments, and support timber supply planning.

[View Webpage](#)

[Download App](#)

Manuals and Guides



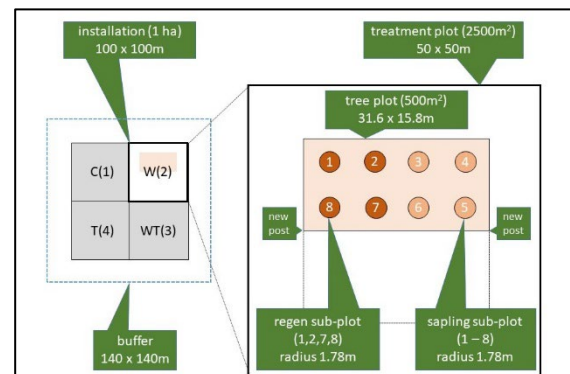
Guide

January 2023

FRIPSY (Foothills Reforestation Interactive Planning System) user guide

Contains instructions for the use of FRIPSY, a description of system design and structure, and statistical details of the incorporated regeneration sub-models.

[Download](#)



Manual

February 2023

Regenerated lodgepole pine trial field manual for growth phase measurements and maintenance

Design and specifications for the revised plot layout, measurements, data formats, maintenance, and quality control required for ongoing growth monitoring of the trial. A measurement schedule for the period 2022 to 2026 is appended to the manual.

[Download](#)

Manuals and Guides (continued)



Manual
July 2019

Regenerated lodgepole pine trial field manual for growth phase transition measurements and maintenance

Describes measurements, maintenance, and quality control applied during the transition between regeneration and growth phases of the trial, from 2015 to 2020.

[Download](#)

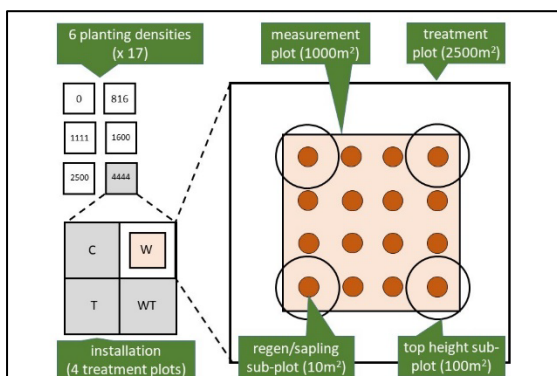


Manual
May 2013

Regenerated lodgepole pine trial field manual thinning supplement

Supplement to the regeneration phase field manual, describing methodology for the trial's pre-commercial thinning treatment.

[Download](#)



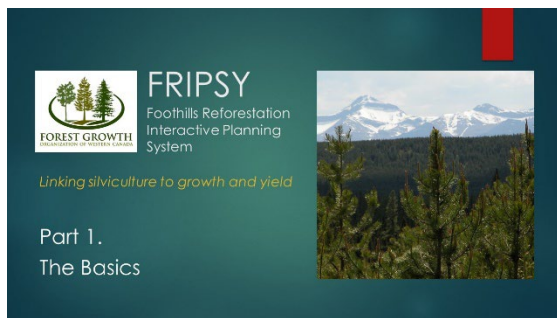
Manual
June 2014

Regenerated lodgepole pine trial field manual for regeneration phase measurements and maintenance

Describes plot layout, measurements, maintenance, and quality control that were applied during the regeneration phase of the trial, up to 2014.

[Download](#)

Audio-Visual Presentations



Video

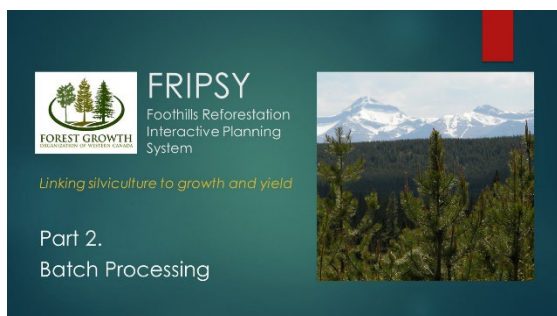
November 2022

FRIPSY Tutorial Part 1: the basics

Training module introducing the Foothills Reforestation Interactive Planning System (FRIPSY), including input options and requirements, instructions for running the model in single-stand mode, and an explanation of outputs. A PowerPoint version is also available, with notes pages replacing the audio commentary.

[Watch video](#)¹

[Download PowerPoint](#)



Video

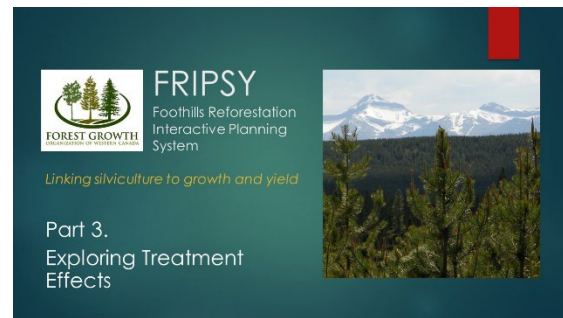
November 2022

FRIPSY Tutorial Part 2: batch processing

FRIPSY training module showing how to enter data and make runs in batch mode. A PowerPoint version is also available, with notes pages replacing the audio commentary.

[Watch video](#)¹

[Download PowerPoint](#)



Video

November 2022

FRIPSY Tutorial Part 3: exploring treatment effects

FRIPSY training module, exploring and demonstrating predicted effects of reforestation treatments on stand development. A PowerPoint version is also available, with notes pages replacing the audio commentary.

[Watch video](#)¹

[Download PowerPoint](#)



Video

March 2021

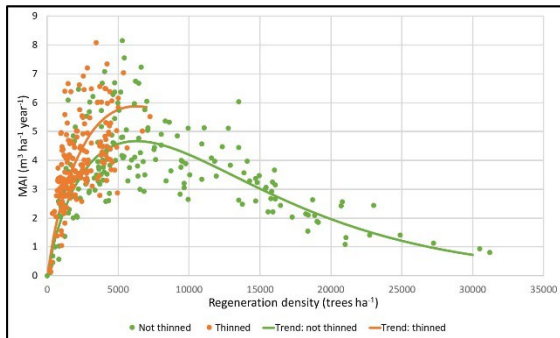
Foothills Reforestation Interactive Planning System: linking silviculture to growth and yield

Webinar from the FGrOW Spring 2021 Series, discussing why linking reforestation practice to growth and yield is important, what is missing for this purpose in existing predictive models, how FRIPSY works, and what more needs to be done.

[Watch video](#)

¹ Videos are displayed on YouTube. If resolution is poor, click on the YouTube settings icon and select a higher quality level.

Peer Reviewed Papers



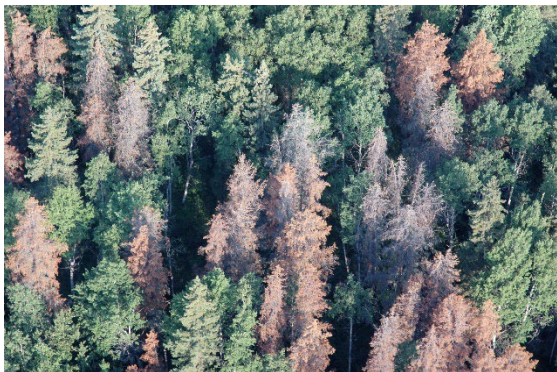
Peer Reviewed Paper

2022

Effects of planting, vegetation management, and pre-commercial thinning on the growth and yield of lodgepole pine regenerated after harvesting in Alberta, Canada

Data collected 17 to 20 years after establishment of the RLP trial, at the end of the regeneration phase of stand development, were tested for effects of planting, vegetation management and pre-commercial thinning, and projected to rotation age. Results are compared with those from research elsewhere, and discussed in relation to their implications for forest management.

[View document](#)



Peer Reviewed Paper

2021

Growth and yield of lodgepole pine stands disturbed by mountain pine beetle in the Lower Foothills of Alberta

Permanent sample plots attacked by mountain pine beetle were monitored over the decade following the 2006 outbreak in western Alberta. Changes in stand structure

and dynamics are reported, and future stand development projected. Implications of harvesting are discussed relative to natural succession.

[View document](#)



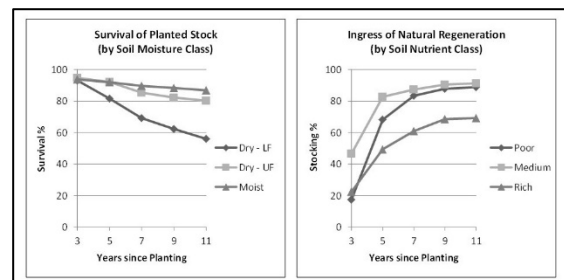
Peer Reviewed Paper

2017

Impact of climate on juvenile mortality and *Armillaria* root disease in lodgepole pine

Mortality and health of regeneration during the 12 years following harvest were monitored and evaluated. Results are described in relation to climate, site and silvicultural treatments, with emphasis on susceptibility of planted stock to *Armillaria* root disease.

[View document](#)



Peer Reviewed Paper

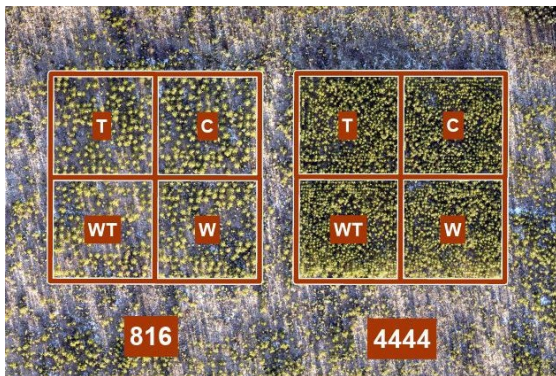
2014

A discussion of best management practices for reforestation following harvesting of lodgepole pine in the Alberta foothills

Alberta forest managers reviewed results of the RLP trial, and their implications for reforestation practice. Observations and recommendations of the group are summarized.

[View document](#)

Reports



Report

October 2021

Regenerated lodgepole pine trial final regeneration phase report

Technical report summarizing analyses of data collected at the end of the trial's regeneration phase, between 2017 and 2020. It includes descriptions and discussion of analytical methods, results, and recommendations for continued monitoring of the trial.

[Download](#)



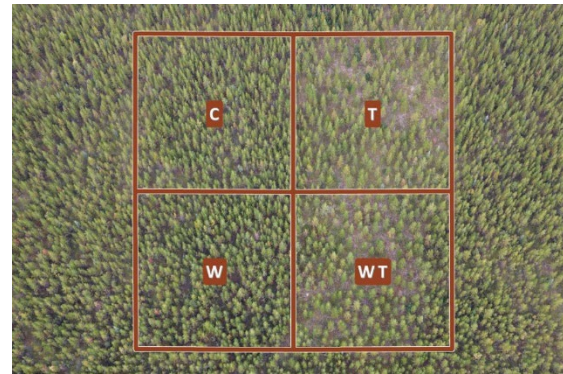
Report

February 2020

Effects of harvesting and site preparation methods on juvenile stand development of lodgepole pine

Unpublished final technical report for the Sundance site preparation trial, prepared for Edson and Hinton Woodlands, a division of West Fraser Mills Ltd. The trial was established in 2001 and re-measured in 2017. For further information contact:

info@fgrow.ca



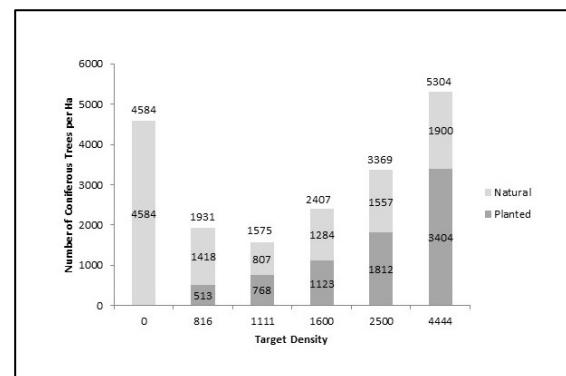
Report

September 2019

Regenerated lodgepole pine trial crop performance report 18-year results

Technical report describing results of measurements made in 2018. It includes an assessment of current growth and change rates, a review and recommendations concerning instability in growth and yield projections, and an addendum evaluating the effects of minimum height standards on such projections.

[Download](#)



Report

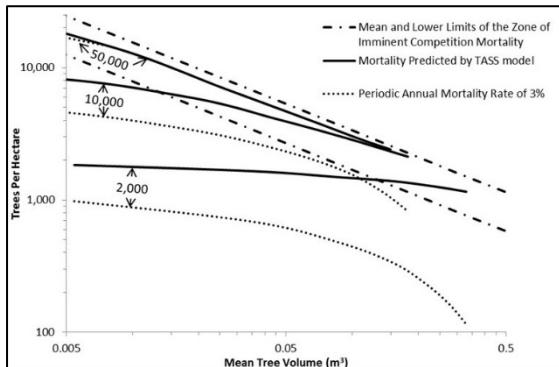
March 2015

Regenerated lodgepole pine trial crop performance report

Technical report describing results of measurements made in 2014. The stand age at this time equated to the end of the regeneration performance assessment period specified by the Reforestation Standard of Alberta. The report includes a description of stand conditions following completion of the pre-commercial thinning treatment.

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Reports (continued)



Report

March 2013

Application of lodgepole pine regeneration research to best management practices

Discussion paper based on proceedings of Best Management Workshop, Edmonton March 27, 2013.

[Download](#)



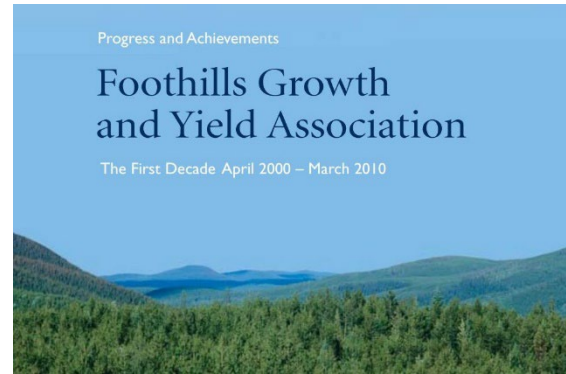
Report

February 2012

Regenerated lodgepole pine trial 10-year crop performance report

Technical report describing interim results of the trial, based on measurements made in 2011 (10 years after planting, average stand age 11 years since harvest).

[Download](#)



Report

May 2011

Progress and achievements of the Foothills Growth and Yield Association: the first decade April 2000 - March 2010

Overview of initial work undertaken by the Foothills Growth and Yield Association (FGYA) to expand understanding of lodgepole pine's growth in natural and regenerated stands.

[Download](#)



Report

November 2010

Effects of aspen competition on growth of lodgepole pine

Technical report of a study examining effects of aspen on lodgepole pine in western Alberta, based on single examinations of 18 installations within post-harvest stands across 3 ages classes.

[Download](#)

Reports (continued)



Report

June 2009

A growth and yield projection system (GYPSY) for natural and post-harvest stands

Alberta Sustainable Resource Development technical report describing the model used in FRIPSY to project stand development from 18 years after harvest to rotation age.

[Download](#)



Report

February 2004

Comparison of pre-harvest and post-harvest site indices

Technical report describing an extension to the RLP Project undertaken to provide interim forecasts of post-harvest site index, relative to pre-harvest values. The comparison was based on paired plots in adjacent fire-origin and post-harvest stands.

[Download](#)



Report

April 2003

Regenerated lodgepole pine trial establishment report

Comprehensive description of the trial's original objectives, participation, design, and installation. Appendices include details of each installation's establishment, and initial growth and yield projections for planted lodgepole pine.

[Download](#)

QuickNotes

QuickNote

February 2020

Effects of planting on the growth and yield of reforested lodgepole pine stands

Projected effects of planting on mean annual increment of lodgepole pine at rotation age.

[Download](#)

QuickNote

February 2020

Effects of weeding on the growth and yield of reforested lodgepole pine stands

Projected effects of weeding on mean annual increment of lodgepole pine at rotation age.

[Download](#)

QuickNote

February 2020

Effects of pre-commercial thinning on the growth and yield of reforested lodgepole pine stands

Projected effects of pre-commercial thinning on mean annual increment of lodgepole pine at rotation age.

[Download](#)

QuickNote

April 2017

Monitoring tree infection and mortality after mountain pine beetle attack

Rates of tree mortality occurring in permanent sample plots attacked by mountain pine beetle.

[Download](#)

QuickNote

June 2014

Stand dynamics after mountain pine beetle attack

Rationale, objectives and methodology for monitoring stand dynamics in permanent sample plots after mountain pine beetle attack.

[Download](#)

QuickNote

March 2012

Regenerated lodgepole pine trial 10-year results – possible implications for foothills forest management

Discusses implications of measurements made 10 growing seasons after planting.

[Download](#)

QuickNote

March 2012

Regenerated lodgepole pine trial 10-year results – tree mortality and health

[Download](#)

Summarizes tree mortality and health 10 growing seasons after planting.

QuickNote

March 2012

Regenerated lodgepole pine trial 10-year results – growth and natural regeneration

[Download](#)

Summarizes growth and natural regeneration observed 10 growing seasons after planting.

QuickNote

December 2008

Effects of climate on mortality of young planted lodgepole pine

[Download](#)

Interim analyses of the relationship between climate, and mortality of regeneration observed 5 growing seasons after planting of the RLP trial.

QuickNote

March 2008

Regenerated lodgepole pine project – fifth year results

[Download](#)

Initial assessment of the RLP trial data, based on measurements made 5 growing seasons after planting.

People



Bob Udell (above left) spearheaded the establishment of the FGYA and the RLP Project in 1999. Dr Dick Dempster (above right) served as the Project's scientific authority from its inception until 2022.



Rand McPherson (above) was the original Field Coordinator for the RLP trial.



Sharon Meredith (above right) oversaw much of the project management and field data collection. She was assisted in auditing fieldwork by Jerone Snively (above left).

Christian Weik of the Foothills Model Forest (now fRI Research) developed the database for the RLP trial. Bob Held of Sundre Forest Products and Julie Duval of the fRI Research

provided GIS and other data management support.

Gyula Gulyas (THEXLWIZ Consulting) assisted in the development and programming of FRIPSY. Shongming Huang of the Alberta Government Reforestation, Inventory and Biometrics Section led the team that developed GYPSY, and advised on its application.

Dr Philip Comeau of the University of Alberta undertook and reported supplementary research on effects of aspen on lodgepole pine growth. Drs Simon Landhausser and Tod Ramsfield, of the University of Alberta and Canadian Forest Service respectively, assisted in reviving, augmenting, and re-measuring the Sundance site preparation trial, which also provided important information supplementing the RLP trial.



Forestry consultants who worked over multiple years measuring the RLP trial included Apical Forestry, West Sky Resource Consultants, Deci-Con Consulting, Deep Valley Forestry, Bushmen Enterprises, and Tall Timber Resources.

Partners

Alberta Newsprint Company
Blue Ridge Lumber
Canfor Corporation
Edson Forest Products
Hinton Wood Products
Millar Western Forest Products
Spray Lake Sawmills
Sundre Forest Products
Weyerhaeuser Company