THE GREGG THINNING TRIALS
Established 1963/64: 7 year old fire origin (1956) Lodgepole pine. Low Site

OBJECTIVE:

Density affects Lodgepole pine tree growth and stand development. This study was designed to evaluate spacing effects on early stand growth on poor, medium and high sites and to develop size-density and yield relationships as a basis for density management guidelines. Established by the Canadian Forest Service, now maintained in partnership with the Foothills Growth and Yield Association

Technical Description

Plots: Size varied with density, designed to achieve 100 pine trees per plot. In 1996, two "control" plots were established. Semi-randomized complete block design, with two replicate blocks of treatment. Best tree within 46 cm of grid centre selected. Hand Treated, standing dead trees were felled and removed.

Remeasured in 1996 (Weldwood of Canada), 2001 (Weldwood), 2006 (FGYA)

Next measurement 2011.

Site Description

Soil: Eluviated eutric brunisol developed on glaciofluvial terrace gravels – shallow organic – rapidly drained.

Ecosite: UF d1 – Pine/ Ledum

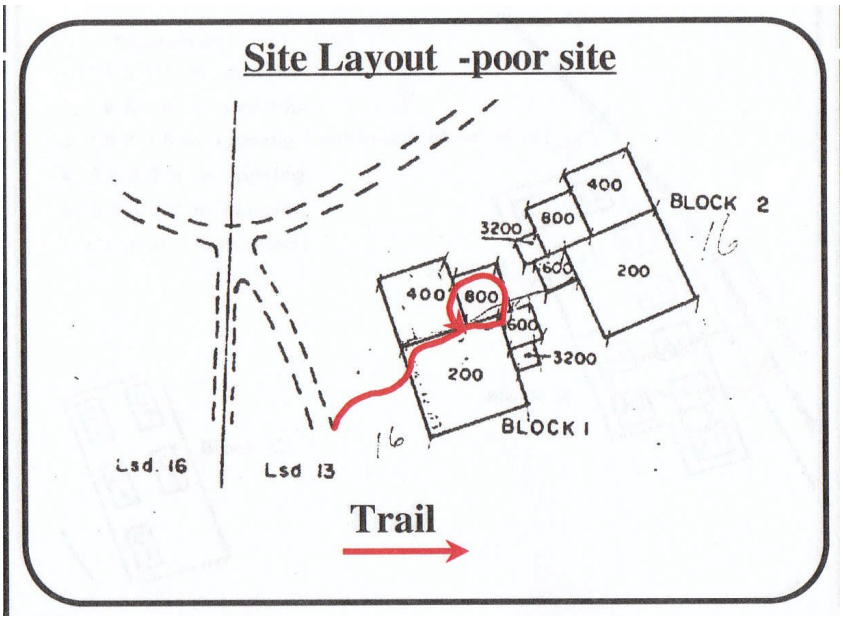
Stand Origin: Stand originated after 1956 Wildfire

Present Stand Age (2010) – 54 Years

Treatments

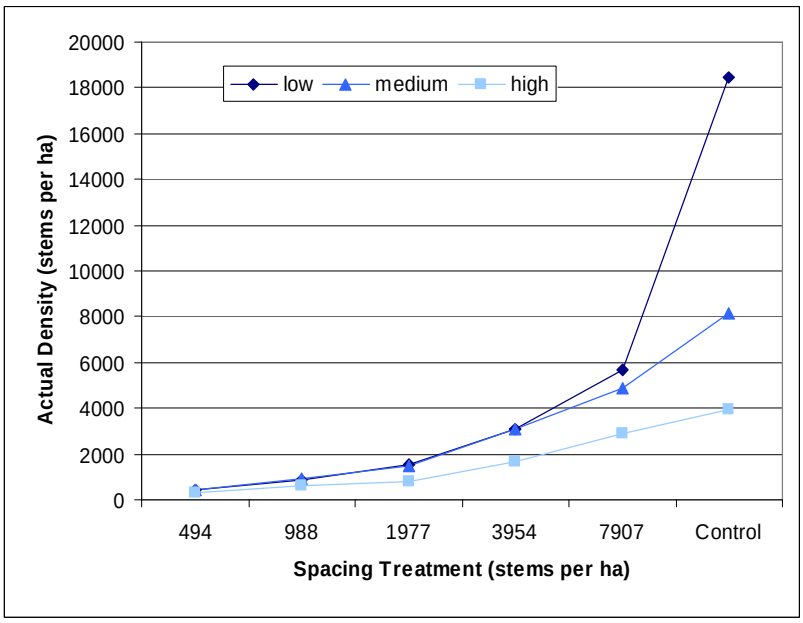
1. Control
2. 7907/ha (3200/ac)
3. 3954/ha (1600/ac)
4. 1977/ha (800/ac)
5. 988/ha (400/ac)
6. 494/ha (200/ac)

Site Layout



Interpretations / Reference

1 Stand Density is impacted by Site Quality

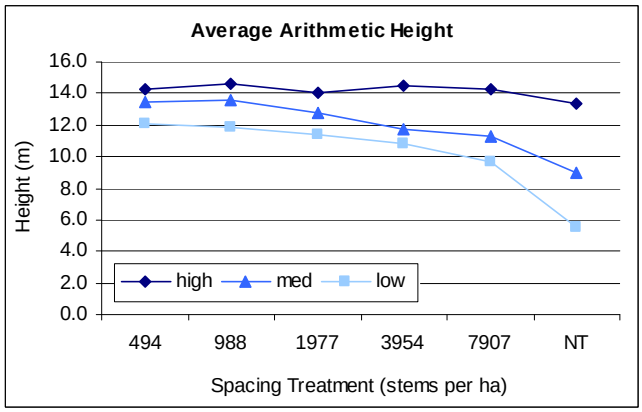


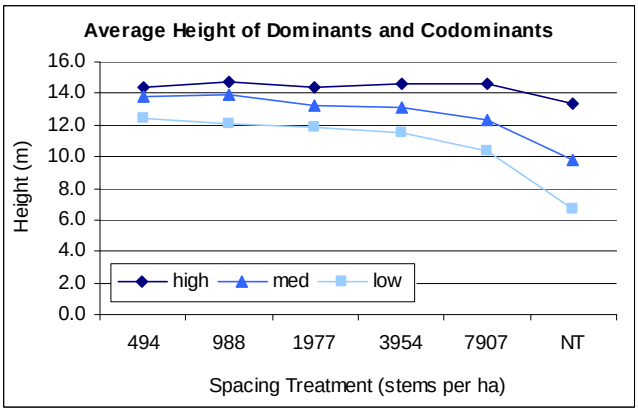
Low productivity sites, such as this one do not self-thin as efficiently as high productivity sties. This observation is also evident in examining sites of similar ages that originated from reforestation, and has particular significance when contemplating precommercial thinning.

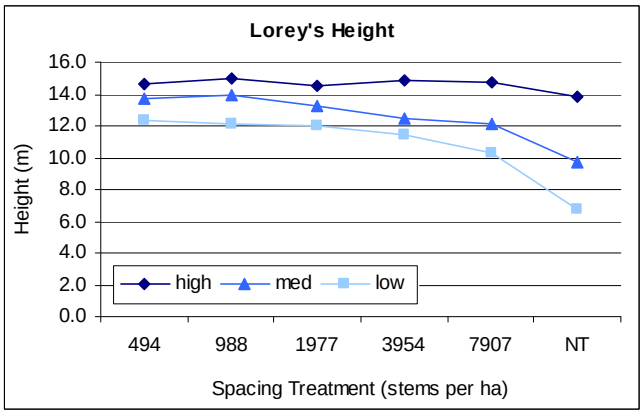
Figure 1

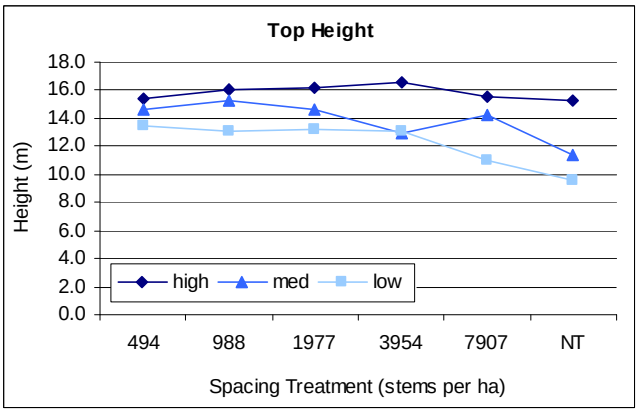
2 Height Development is a function of Site and Stand Density

Arithmetic average height, average height of dominants and co-dominants and Lorey's height (average height weighted by basal area) showed a decreasing trend as density increased on the medium and low sites. Top height showed a similar trend on the low site, but the trend was less clear on the medium site (Figure 2). On the high site, heights were similar across all spacing treatments.









Discussion:

The results show remarkable parallels to those from the earlier paired-plot comparisons between post-harvest and fire-origin stands. The primary cause of the observed height growth responses is most likely a reduction in density-induced repression. Our findings also support previous suggestions by researchers in Alberta and B.C. that:

- Regeneration practices following harvesting that moderate densities while maintaining or improving site occupancy are likely to increase fibre production relative to that of untreated fire-origin stands;
- The main opportunities for spacing or pre-commercial thinning of lodgepole pine are on poorer sites where stands tend to demonstrate both higher densities of natural regeneration and less ability to release from the resulting height repression;
- On better sites, where these risks are lower, spacing may be ineffective or counter productive, and management should place more emphasis on ensuring full site occupancy and control of inter-specific competition.

From the perspective of wildlife habitat, the diversity increases with lower spacings and the regeneration of ground lichens, an essential winter food of Woodland Caribou is already advancing in these plots, whereas it is not evident in the control plots.

Reference

Established 1963 by R. F. (Bob) Ackerman, Canada Department of Forestry

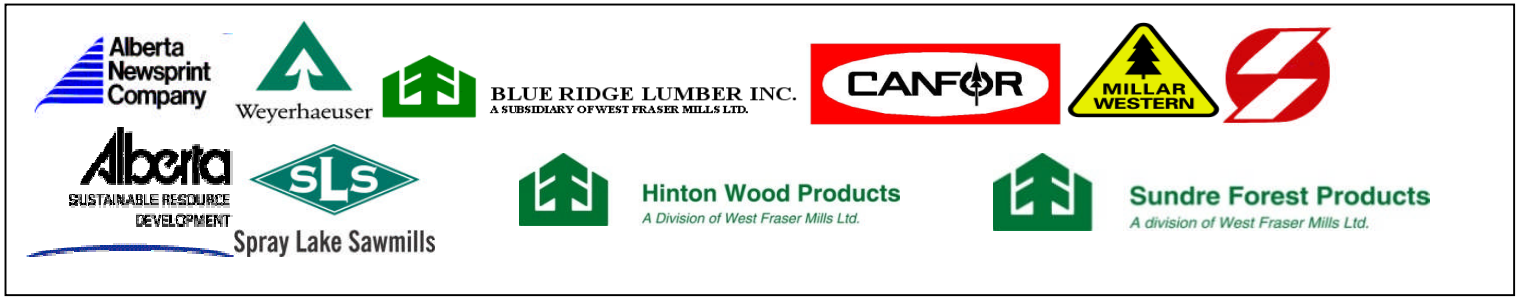
Information Reports: 1981 – Wayne Johnston
1991 – NOR-X-322 - Richard Yang

Long-term Lodgepole Pine Silvicultural Trials in Alberta: History and Current Results – J.D.Stewart, T.N. Jones & R.C. Noble – Northern Forestry Centre, CFS. 2006

FGYA Quicknote #10: 2008 – Sharon D. Meredith

Gregg Burn Trials 1963: Rephotography Project 1999	
	
Block 1: Low Site - 200 Trees/acre 1965	Low Site - 200 trees/acre 1999
	
Block 2: Low Site - 800 Trees/acre 1965	Low Site - 800 Trees/acre 1999
	
Block 2: Low Site - 3200 trees/acre 1965	Low Site - 3200 Trees/acre 1999

The Foothills Growth and Yield Association

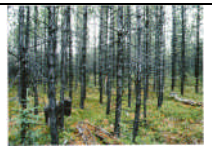


The Foothills Growth and Yield Association (FGYA) is a collaborative research initiative of nine Alberta Forest Management Agreement holders, Alberta Sustainable Resource Development and the Foothills Research Institute. Since it began in 2000, the FGYA has established and maintained a number of projects, all focused on forecasting and validating the growth and yield of Lodgepole pine in Alberta.

Poster layout – proposed

PHOTO RETROSPECTIVE

Gregg Burn Trials 1963: Rephotography Project 1999

	
Block 1: Low Site - 200 Trees/acre 1965	Low Site - 200 trees/acre 1999
	
Block 2: Low Site - 800 Trees/acre 1965	Low Site - 800 Trees/acre 1999
	
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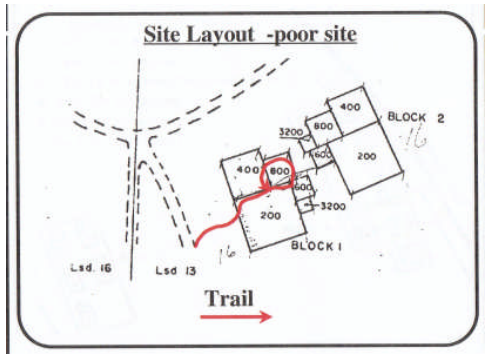

INTERPRETATIONS

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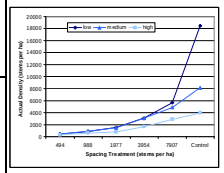

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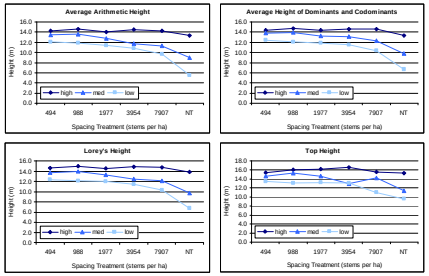

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The Foothills Growth and Yield Association

Description with Logos

Reference