Results to Date Regenerated Lodgepole Pine Project

Dick Dempster Research and Development Associate

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Purpose of Project

- Forecast and monitor the growth and yield of harvest-origin lodgepole pine, in relation to :
 - Site
 - Initial spacing of planted stock
 - Natural regeneration
 - Mortality
 - Vegetation control (weeding)
 - Density regulation (pre-commercial thinning)
- Provide improved basis for forecasting achievement of establishment and performance targets

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Allocation of Installations by Ecosite Categories

	Ecosite (and Edatope)	WC	SW	Installations
1	Bearberry/lichen/hairy wild rye (submesic/subxeric, medium-poor)	b,c	b	18 (3 groups of 6)
2	Labrador tea –mesic (<i>mesic-poor</i>)	d	С	18 (3 groups of 6)
3	Billberry/cranberry/sarsaparilla/rhododendron (mesic-medium)	e	d	30 (5 groups of 6)
4	Honeysuckle/fern (subhygric-rich)	f	e	18 (3 groups of 6)
5	Labrador tea-hygric (hygric-poor)	h	f	18 (3 groups of 6)
				102 Installations
			L	102 Installations

<u>Treatment</u>	<u>Description</u>
Spacing	 control (no planting) 816 stems/ha 1111 stems/ha 1600 stems/ha 2500 stems/ha 4444 stems/ha
/egetation management	 no treatment (control) weed pre-commercially thin weed and p.c.t





Measurements

Measurement Category	Growing Season					
	0	1	2	3	4	5
Site	Х					
Planting density	х					
Coniferous density		х		Х		Х
Coniferous stocking		х		х		
Competition – shrubs and herbs	(x)	х	х	х		X
Competition – deciduous trees	(X)	х	Х	Х		X
Size and growth	х			х		
Mortality		х	Х	Х	х	X
Health	х	х		Х		X
Age						х

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Crop Performance at 5 Years

Effect of Controlled Factors (Site, Planting Density, Vegetation Management)

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- Height and diameter growth:
 - Soil nutrient regime
 - Site preparation method
 - Site index (of fire-origin stand)
- Mortality
 - Site preparation method
 - Climate
 - Insects
- Natural regeneration
 - Site preparation methodInitial cone count

 - Latitude (-), elevation (+), slope percent (+)
 - Size of deciduous competition
 - Shrub-herb percent cover and height

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	Model Input
Inputs	
Site	Medium
Planted stems per ha	2000
Treatment	Weed
Age	5
Percent annual mortality (if known)	2

	Model Output
Estimates	
Total stems per ha	1800
Average height (cm)	97.0
Number of stems >=30cm	1791
Number of stems >=80cm	1333
Number of stems >=130cm	185
Average ground line diameter (cm)	2.67
Total root collar basal area per ha (m²)	1.094
Proportion of BA in stems >=30cm	1.00
Proportion of BA in stems >=80cm	0.90
Proportion of BA in stems >=130cm	0.21
Average height of largest 1000 trees per ha	115.9
Average height of largest 100 trees per ha	147.1
Height-diameter ratio	36.3
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	More Model	Output
Inputs		
Site	Rich	Rich
Planted stems per ha	1600	1600
Treatment	Leave	Weed
Age	5	5
Estimates		
Total stems per ha	1440	1440
Average height (cm)	128.1	125.8
Number of stems >=30cm	1439	1439
Number of stems >=80cm	1339	1337
Number of stems >=130cm	711	669
Average ground line diameter (cm)	2.93	3.47
Total root collar basal area per ha (m2)	1.04	1.46
Height-diameter ratio	43.7	36.3
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- Pros for planting:
 - Timely achievement of regeneration targets
 - Uncertainty of natural regeneration
 - Perceived positive AAC effect from shortened regeneration delay
 - Only way to re-stock rich and wet sites?
 - Species conversion
- Cons against planting:
 - Investment cost
 - Risk of mortality / failure
 - AAC benefit may be false
 - Longer regeneration delay may be beneficial (e.g. by reducing MPB, RCW risks)

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