



Juvenile Spacing Workshop

Participant's Workbook



Ministry of Forests
Forest Practices Branch

Acknowledgements

These materials were developed by Symmetree Consulting Group Ltd. through consultation with the Forest Practices Branch, Forest Site Management Section.

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Contents

Acknowledgements	ii
Workshop Objectives	v
Learning Objectives	v
Target Audience	v
Agenda	vi
Lesson 1 Why Space?	1
Lesson 2 Stand Selection and Post-treatment Densities	9
Lesson 3 SMP and Project Development Issues	11
Lesson 4 Spacing – Contract Monitoring	17
Appendices	
Appendix 1 Biological Criteria for Ranking Stands for Spacing	A1 • 1
Appendix 2 Field Guidelines for the Selection of Free Growing Stands to Space	A2 • 1
Appendix 3 Considerations for Spacing Prescriptions and Projects	A3 • 1
Appendix 4 Incorrect Selection of Leave Trees During Spacing may Result in Potential Productivity Losses	A4 • 1

Workshop Objectives

The primary objectives of the workshop are to:

1. Discuss where and why juvenile spacing is done in the province;
2. Review the Ministry of Forests suggested stand selection procedures;
3. Identify information sources to aid in selecting post-treatment densities;
4. Show how spacing is to be handled in the Stand Management Prescription;
5. Discuss how to create spacing prescriptions to meet a range of objectives; and
6. Review contract monitoring.

Learning Objectives

After taking this workshop, participants should:

- ▲ Understand that higher level plans in SPs drive spacing prescriptions;
- ▲ Understand the stand selection methodologies and decision criteria;
- ▲ Be aware of information sources to help choose post-spacing densities;
- ▲ Be aware of how spacing fits into the SMP; and
- ▲ Understand how to monitor a spacing contract.

Target Audience

This workshop has been designed for people who are responsible for preparing or monitoring juvenile spacing prescriptions. It is meant to provide clarification of the *Spacing Guidebook*. It is not recommended for those familiar and comfortable with the contents of the spacing guidebook and juvenile spacing implementation in general.

Juvenile Spacing Workshop

Agenda

Introductions

During the introduction the facilitator will:

- ▲ introduce themselves and any others that may be presenting the session;
- ▲ outline the purpose of the workshop;
- ▲ allow the group to get to know one another better;
- ▲ review the contents of the workbook; and
- ▲ describe the agenda of the workshop and provide information on logistics for the day (i.e., coffee, lunch arrangements, washroom locations, etc.)

Why Space?

- ▲ Links to higher level plans
- ▲ Some possible objectives for spacing

Coffee

Stand Selection Process and Post-treatment Densities

- ▲ Appendix 1 – Biological criteria for ranking stands for spacing
- ▲ Field Guidelines for the Selection of Stands for Juvenile Spacing
- ▲ Issues relating to post-treatment densities

Lunch

Spacing and the SMP

- ▲ Project development issues

Coffee

Contract Administration

- ▲ Inspection methodology

Wrap-up

Why Space?



Lined writing area consisting of 25 horizontal lines.

Why Space?



Why Space?



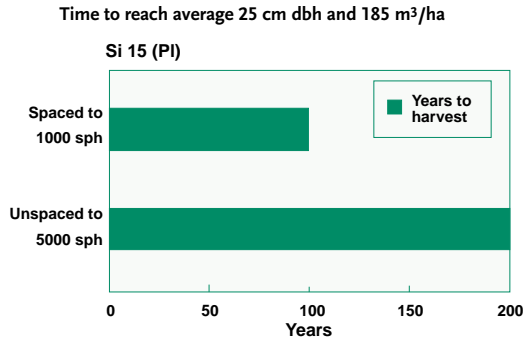
Notes

Horizontal lines for taking notes.



Why Space?

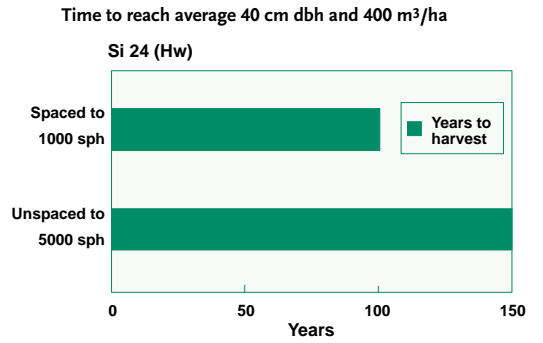
Interior Example



It is a matter of timing!

Why Space?

Coastal Example

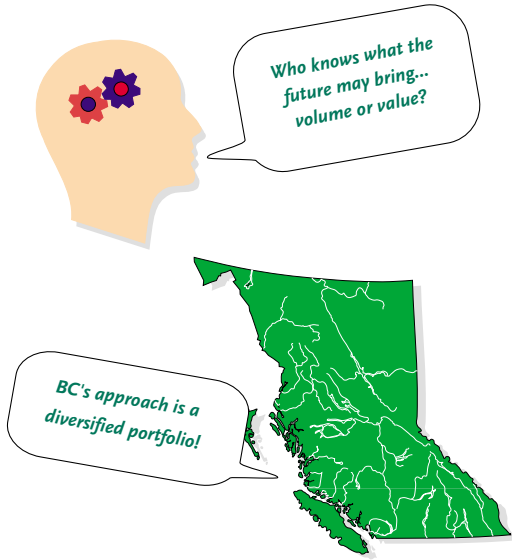


It is a matter of timing!

Notes

A vertical column of 20 small green dots is positioned to the left of the notes section. To the right of the dots are 18 horizontal lines for writing notes.

Spacing to Meet Higher Level Plans






JUVENILE SPACING WORKSHOP 1 • 6

Notes

Spacing to Meet Higher Level Plans

For example:

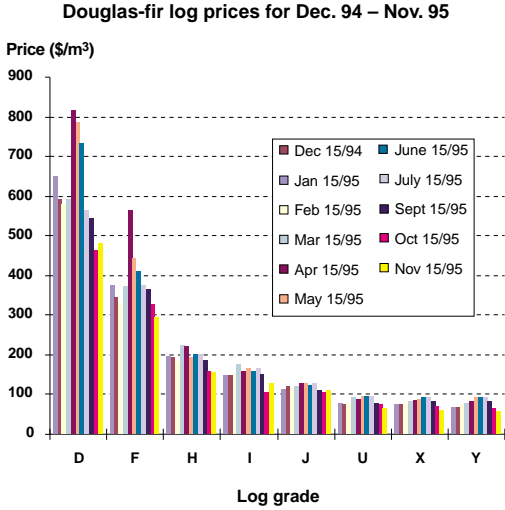
Soo TSA Product Objectives			
Site index (BHA 50)	Stand objectives	Desired log grades	Grade criteria
13-17	Target height 25 m  Target 250 trees/ha >30 cm dbh and 150 trees/ha >17.5 cm dbh	6 m top	} Min. top db 10 cm Min. length 3.8-5 m Max. knot size 4-14 cm 50-75% lumber/ 35% merch.
		5-10 m U grade log	
5-12 m J grade sawlog			
0.3 m stump			
18-22	Target height 30 m  Target 250 trees/ha >30 cm dbh and 150 trees/ha >17.5 cm dbh	6 m top	} Min. top db 16 cm Max. knot size 6 cm Min. length 5 m 75% lumber/ 50% merch.
		5-10 m U grade log	
5-12 m J grade sawlog			
0.3 m stump			
23-27	Target height 35 m  Target 125 trees/ha >45 cm dbh and 375 trees/ha >30 cm dbh	6 m top	} Min. top db 38 cm Max. knot size 4-8 cm Min. length 5 m Min. 2.5 rings/cm outer 1/3 50-75% lumber/ 65% merch.
		5-10 m U grade log	
5-12 m J grade sawlog			
5-12 m H grade sawlog 0.3 m stump			

Notes



Spacing to Meet Higher Level Plans

Log values by grade

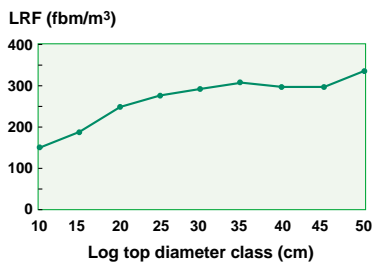


JUVENILE SPACING WORKSHOP 1 • 8

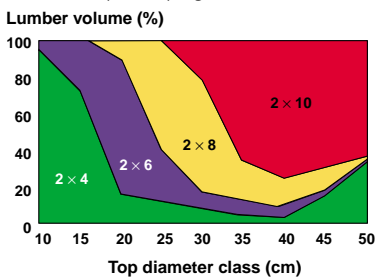
Notes

Spacing – Some More Reasons

Lumber recovery



Lumber dimension yields by log size

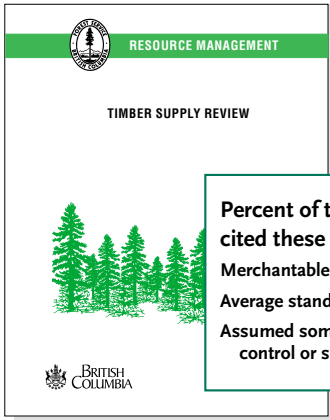


Source: Jozsa and Middleton, 1994. SP-34, pg. 36.

Notes

Spacing to Meet Higher Level Plans

Survey results from 29 TSA and TFL timber supply analyses



Percent of the 29 TSRs that cited these attributes:	
Merchantable volume objectives	75%
Average stand diameter objectives	35%
Assumed some form of density control or spacing	66%

Notes

Lesson 3

SMP and Project Development Issues

Considerations to Make your Spacing Project a Success

The relevance of spacing to the SMP:

Key sections of the SMP:

- B-1:** Shows the linkages to higher level plans.
- B-2:** Has boxes to complete for each potential stand management objective.
- C:** Summarizes stand and site feature data for each standards unit.
- D:** The “story” of the stand that describes stand structure over the long term.

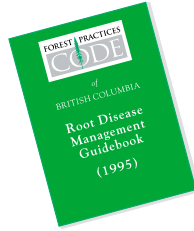
Other Notes:

Forest Health and the SMP

Must calculate incidence by agent

FOREST HEALTH		AGENT OCCURRENCE			
SU	AGENT CODE	AGENT NAME	% INCID.	AREA (ha)	SU
A	DRA	<i>Armillaria ostoyae</i>	4	36	
MANAGEMENT OBJECTIVES					
The objective is to avoid accelerating the spread of the pathogen through stand tending activities. The goal is to keep the % incidence between 5–10% throughout the rest of the rotation.					

Note: For any incidence of an agent – refer to the relevant forest health guidebook.



Example: *Armillaria* root rot

- 1–5% in a silviculture survey and you must do a formal survey
- 2–5% – alternate treatment level
 - District manager will usually only approve spacing for free growing
 - Pop-up space (high cost)
 - Alternate species (susceptible species must be <20%).

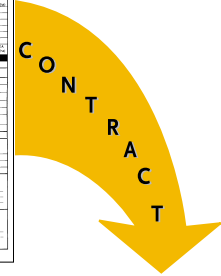
JUVENILE SPACING WORKSHOP 3 • 2

Notes

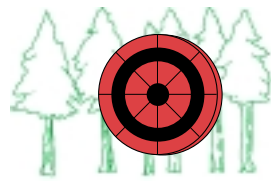
SMP and the Spacing Contract

The spacing contract must keep the SMP on target.

STAND MANAGEMENT PRESCRIPTION		FOREST DISTRICT	
MANAGEMENT OBJECTIVES		CONTRACT	DATE
		□ SINGLE	□ MULTI-AREA
1. FOREST MANAGEMENT PLAN			
2. FOREST MANAGEMENT PLAN			
3. FOREST MANAGEMENT PLAN			
4. FOREST MANAGEMENT PLAN			
5. FOREST MANAGEMENT PLAN			
6. FOREST MANAGEMENT PLAN			
7. FOREST MANAGEMENT PLAN			
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25. FOREST MANAGEMENT PLAN			
26. FOREST MANAGEMENT PLAN			
27. FOREST MANAGEMENT PLAN			
28. FOREST MANAGEMENT PLAN			
29. FOREST MANAGEMENT PLAN			
30. FOREST MANAGEMENT PLAN			





The contract and the SMP must be closely linked. How do you do it?



Linking the SMP to the contract:

The Structure of Schedule C

 BRITISH COLUMBIA Ministry of Forests		Silviculture Contract FOR: Juvenile Spacing
Silviculture Contract Admin. No. DUD 35 96 022E	Attachment to Contract Dated the 31st day of July, 1995	
Schedule C		
PART 1: Spacing and Density		
a) Inter-tree distance at the edge of a void shall be reduced to 1.1 m.		
b) 10% of the net treatable area will be left unspaced. These areas will be identified on photos and ribboned in the field.		
PART 2: Selection of Crop Trees		
a) The following species are shown in order of preference:		
1. Douglas-fir		
2. Lodgepole pine		
PART 3: Miscellaneous		
a) Slash height shall be left under 0.5 metres		
b) Every third skidtrail shall be kept free of slash, so as not to impede ungulate movement.		

Notes

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Considerations for Spacing Prescriptions and Projects

Exercise – Turn to your neighbour

List your questions or concerns relating to Code requirements, and:

- the development of an SMP and Schedule C for spacing; and
- project layout and development.

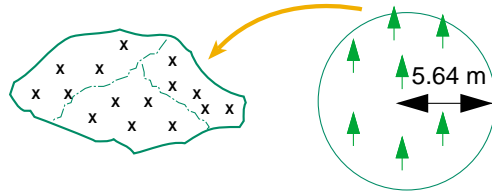
Consider:

- SMP procedures and policy
- fire management
- different stand types
- biodiversity
- other issues.

Questions, concerns and issues:

Survey Methods for Spacing Quality Inspections

- 1% sample with a minimum of 5 plots per payment area.



- Payment area – distinctly different work quality
- Usual pot size – 0.01 ha
- Larger plots for widely spaced, clumpy stands.

JUVENILE SPACING WORKSHOP 4 • 2

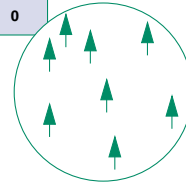
Notes



Examples of Inspection Plots

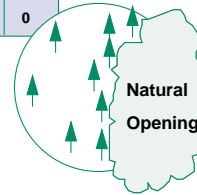
- Variation in inter-tree spacing

Total trees	Well-spaced trees	Allow. leave trees	Rework errors	Non-rework errors	Voids
8	8	8	0	0	0




- Dealing with natural openings

Total trees	Well-spaced trees	Allow. leave trees	Rework errors	Non-rework errors	Voids
9	9	9	0	0	0



Notes

Contract Payment Calculations

 **CONTRACT SPACING
PAYMENT CALCULATIONS**

SPACING CONTRACT JS95DB0-001			CONTRACTOR ACE			
UNIT NO. A	EXAMINED BY J. Smith	DATE Y M D 94 05 16				
FOREST REGION Nelson (N)			FOREST DISTRICT Boundary (6)			
SUMMARY OF POST-SPACING EXAMINATION (from FS 749s)						
A	B	C	D	E	F	G
TOTAL NUMBER OF PLOTS OF TREES	TOTAL NUMBER SPACED TREES	NO. OF WELL- SPACED TREES	NO. OF ALLOWABLE LEAVE TREES	NO. OF REWORKABLE ERRORS	NO. OF NON- REWORKABLE ERRORS	VOIDS
10	70	66	68	5	0	
PAYMENT PERCENT CALCULATION						
SPACING PERCENT		$\frac{C}{D} \times 100 = \underline{\underline{97.06}}\%$ (If > 100%, enter 100%)				
ERRORS						
Reworkable Errors %		$\frac{E}{D} \times 100 = \underline{\underline{7.35}}\%$				
Non-reworkable Errors %		$\frac{F}{D} \times 200 = \underline{\hspace{2cm}}\%$				
Total Errors % = (Reworkable + Non-reworkable) $\underline{\hspace{2cm}}$ tolerance = 7.35 %						
*Tolerances allow for variable terrain or work conditions. A maximum of 5% is permitted, as specified in contract.						
PERFORMANCE QUALITY (P.Q.) = Spacing % - Total Errors % = 89.7 %						
The Performance Quality is applied into the following formula: Payment %** = $(PQ \times 1.08) \cdot \left(\frac{100 - (PQ \times 1.08)}{8}\right)^2$						
**Maximum of 100% Refer to back of card for a Juvenile Spacing Payment Quick Reference Guide.						
DEDUCTIONS \$			PAYMENT % = 95.66 %			
CONTRACTOR'S SIGNATURE <i>ABC Contracting</i>			MINISTRY OFFICER'S SIGNATURE <i>J. Brown</i>			

FS 767B HSP 945

Notes

Performance Quality vs Payment

**JUVENILE SPACING PAYMENT
QUICK REFERENCE GUIDE**

PQ %	PAY %	PQ %	PAY %	PQ %	PAY %
100.00	100.00	90.50	97.10	87.40	90.46
99.00	100.00	90.40	96.93	87.30	90.20
98.00	100.00	90.30	96.76	87.20	89.94
96.00	100.00	90.20	96.58	87.10	89.67
95.00	100.00	90.10	96.40	87.00	89.40
94.00	100.00	90.00	96.22	86.90	89.13
93.00	100.00	89.90	96.03	86.80	88.85
92.90	100.00	89.80	95.85	86.70	88.57
92.80	100.00	89.70	95.66	86.60	88.29
92.70	100.00	89.60	95.46	86.50	88.01
92.60	100.00	89.50	95.27	86.40	87.72
92.50	99.90	89.40	95.07	86.30	87.43
92.40	99.79	89.30	94.86	86.20	87.14
92.30	99.67	89.20	94.66	86.10	86.84
92.20	99.55	89.10	94.45	86.00	86.54
92.10	99.43	89.00	94.24	85.00	83.40
92.00	99.31	88.90	94.02	84.00	79.96
91.90	99.18	88.80	93.81	83.00	76.22
91.80	99.05	88.70	93.59	81.00	67.89
91.70	98.92	88.60	93.36	80.00	63.28
91.60	98.78	88.50	93.14	79.00	58.38
91.50	98.65	88.40	92.91	78.00	53.19
91.40	98.50	88.30	92.68	77.00	47.71
91.30	98.36	88.20	92.44	76.00	41.94
91.20	98.21	88.10	92.21	75.00	35.88
91.10	98.06	88.00	91.96	74.00	29.52
91.00	97.91	87.90	91.72	73.00	22.87
90.90	97.75	87.80	91.48	72.00	15.93
90.80	97.60	87.70	91.23	71.00	8.70
90.70	97.43	87.60	90.97	70.00	1.18
90.60	97.27	87.50	90.72	69.00	0.00

PQ = 89.70%
Pay % = 95.66%

Notes
