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GOUDIE, JAMES W.
INTERIM MANAGED STAND
YIELD TABLES: INTERIOR
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INTERIM MANAGED STAND YIELD TABLES

INTERIOR LODGEPOLE PINE

ESTABLISHMENT DENSITY AND JUVENILE SPACING

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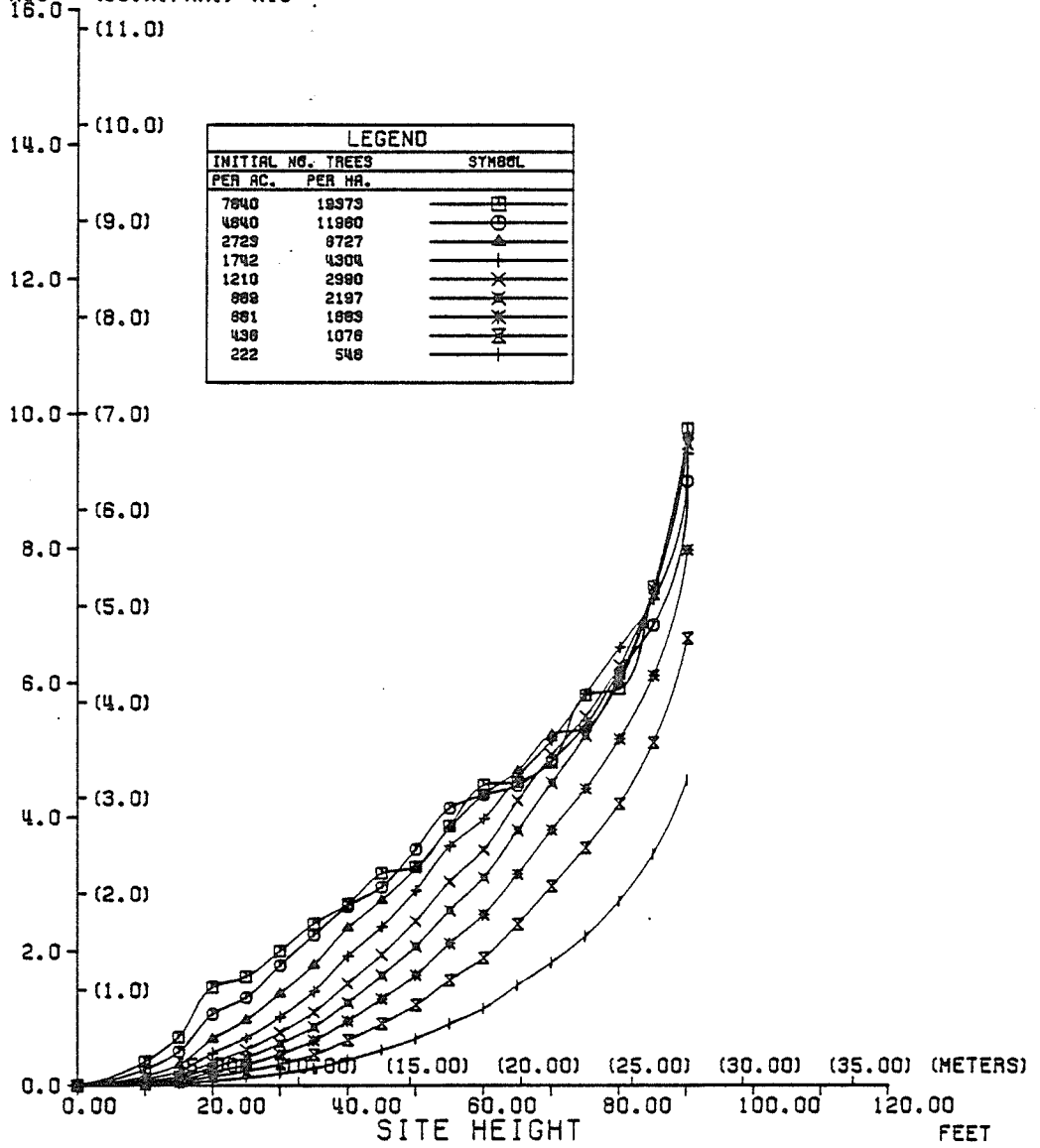
James W. Goudie

Research Branch
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TOTAL VOLUME
 CU.FT./AC. X10³ (CU.M./HA.) X10²



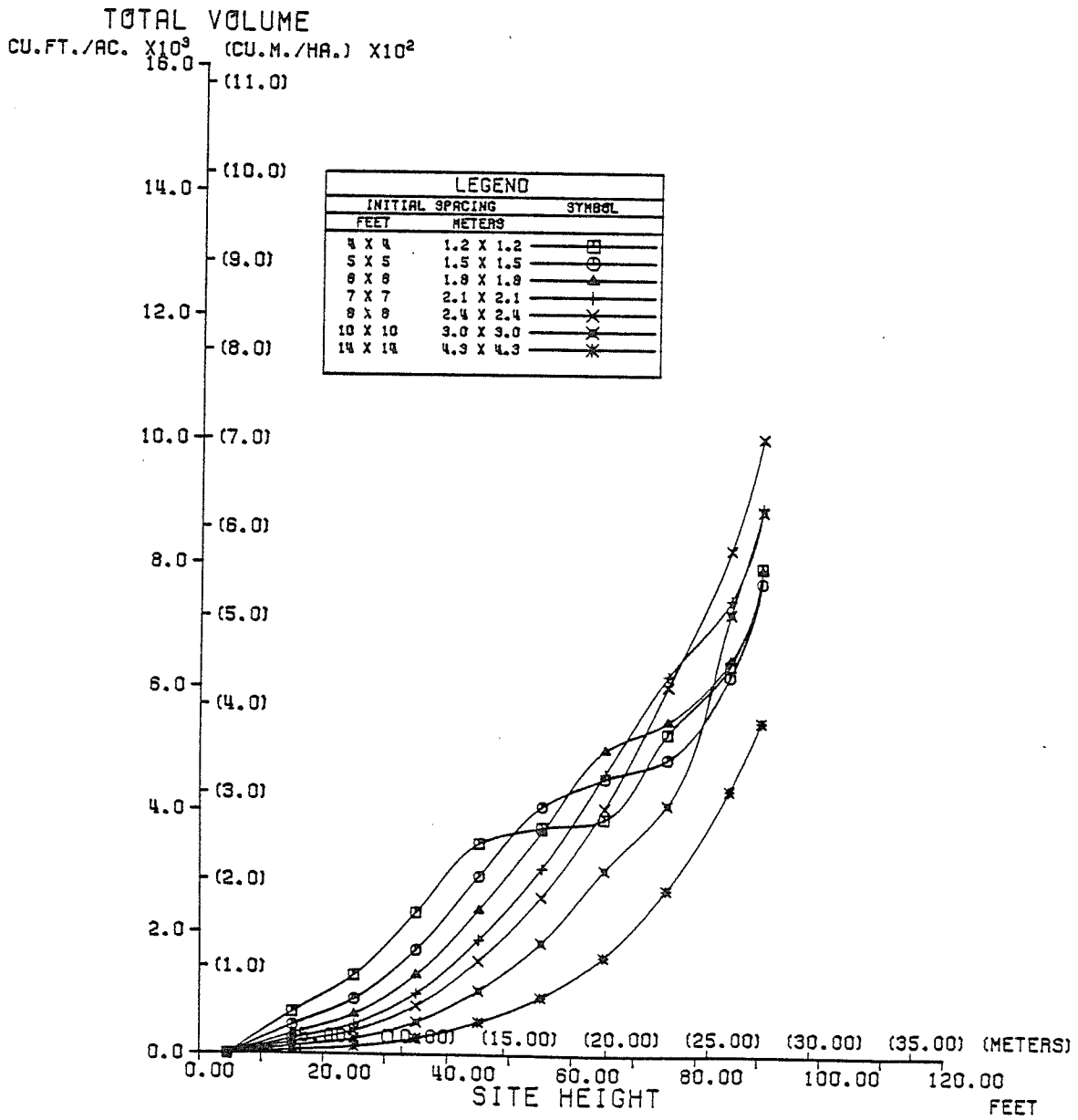


Figure 6. Total cubic volume versus site height for seven planting densities.

QUADRATIC MEAN DIAMETER

IN. $\times 10^0$ (CM.) $\times 10^0$

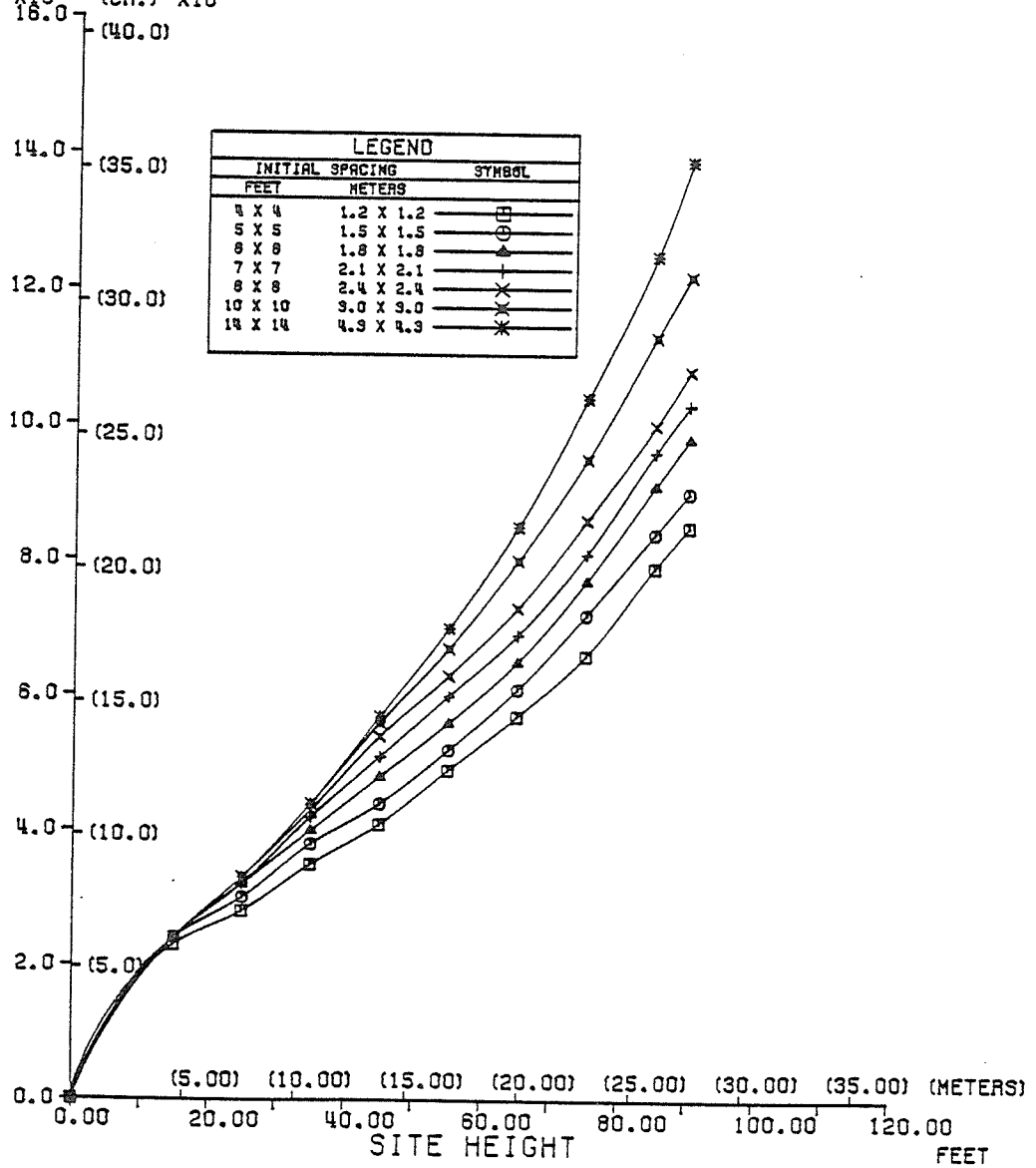


Figure 8. Quadratic mean diameter versus site height for seven planting densities.

APPENDIX 01 - METRIC MEASURE YIELDS OF MANAGED STANDS OF LODGEPOLE PINE IN BRITISH COLUMBIA.
TREES ESTABLISHED AT 1.8 BY 1.8 METERS SQUARE SPACING.

STIFF TREES	AVERAGE HEIGHT ALL TREES	MERC. TOP	DIA. (CM.)	QUAD. ARITH.	BASAL AREA	TOTAL CURIC VOLUME MORTALITY MERCH.	TREES PER HECTARE	CROWN COVER (%)	AVERAGE CROWN DIMENSIONS		
									WIDTH	AREA	LENGTH
0	0	0	0.0	0.0	0.0	0.0	2989	0	0.0	0.0	0.0
5	4	0	6.1	5.8	8.43	23.38	2943	64	5.3	1.5	4.0
8	6	0	8.1	7.9	14.49	46.10	2913	88	7.6	1.8	6.1
11	9	1	10.2	10.2	23.69	85.27	2883	96	8.3	2.1	6.7
14	12	2	12.2	11.9	33.45	166.73	2851	98	8.5	2.1	6.4
17	14	5	14.2	14.0	42.01	255.19	2686	98	9.0	2.1	6.4
20	17	8	16.5	16.3	48.35	347.87	2288	92	9.9	2.1	6.4
23	20	12	19.6	19.6	45.02	380.75	1480	75	12.4	2.4	6.4
26	23	16	23.1	23.1	45.80	450.98	1082	69	15.8	2.7	7.0
27	24	17	24.9	24.6	52.25	552.28	1082	74	17.0	3.0	7.3

QUAD. = QUADRATIC
 ARITH. = ARITHMETIC
 M. = METERS
 CM. = CENTIMETERS
 HA. = HECTARE
 SQ.M. = SQUARE METERS
 MERCH. = MERCHANTABLE VOLUME (0.30-M. STUMP, 10.2-CM. TOP INSIDE BARK, ALL TREES)

APPENDIX B1 - METRIC MEASURE YIELDS OF MANAGED STANDS OF LODGEPOLE PINE IN BRITISH COLUMBIA.
TREES ESTABLISHED AT 2.1 BY 2.1 METERS SQUARE SPACING.

---AVERAGE HEIGHT---		AVERAGE		BASIL		---CUBIC VOLUME---		TREES		AVERAGE	
SITF		---DIAMETER---		AREA		TOTAL		PER		CROWN	
TREES		QUAD.		APITH.		MORTALITY		COVER		WIDTH	
TOP		APITH.		APITH.		MERCH.		AREA		LENGTH	
(M.)	(M.)	(CM.)	(CM.)	(SQ.M./HA.)	(SQ.M./HA.)	(SQ.M.)	(%)	(SQ.M.)	(M.)	(M.)	(M.)
0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0
5	4	6.1	5.8	6.18	17.30	0.37	52	6.0	1.8	4.0	4.0
8	6	8.1	8.1	11.34	34.52	0.69	79	4.8	2.1	6.4	6.4
11	9	10.7	10.4	19.24	70.58	1.52	90	10.6	2.1	7.6	7.6
14	12	13.0	12.7	28.01	132.73	2.09	95	11.2	2.4	7.9	7.9
17	14	15.2	15.0	36.71	213.52	4.07	96	11.7	2.4	7.9	7.9
20	17	17.5	17.3	46.35	321.15	9.82	96	12.4	2.4	7.9	7.9
23	20	20.6	20.6	52.58	432.85	61.45	89	14.0	2.7	7.6	7.6
26	22	24.4	24.4	54.78	518.83	174.88	72	17.9	2.7	7.9	7.9
27	23	26.2	25.9	61.41	623.80	181.55	80	17.2	3.0	7.9	7.9

QUAD. = QUADRATIC
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 MERCH. = MERCHANTABLE VOLUME (0.30-M. STUMP, 10.2-CM. TOP INSIDE BARK, ALL TREES)

APPENDIX B1 - METRIC MEASURE YIELDS OF MANAGED STANDS OF LODGEPOLE PINE IN BRITISH COLUMBIA.
TREES ESTABLISHED AT 2.4 BY 2.4 METERS SQUARE SPACING.

---AVERAGE HEIGHT---		AVERAGE		---DIAMETER---		BASAL		---CUBIC VOLUME---		TREES		AVERAGE	
SITE ALL MERCH.		QUAD. ARITH.		AREA		TOTAL		MORTALITY MERCH.		PER		CROWN DIMENSIONS---	
TREES	TOP	ARITH.	CM.	(C.A.)	(M.)	(C.A.)	(M.)	(SQ.M./HA.)	(SQ.M.)	(%)	HECTARE	(SQ.M.)	(M.)
0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	1682	0.0	0.0
5	4	6.1	5.8	4.78	4.78	13.36	0.17	0.0	0.0	42	1665	6.2	1.8
8	6	8.4	8.1	8.98	8.98	26.82	0.39	0.64	0.64	69	1655	10.3	2.1
11	9	10.9	10.9	15.73	15.73	56.26	0.60	22.32	22.32	84	1648	12.6	2.4
14	12	13.7	13.5	24.04	24.04	108.85	1.19	67.73	67.73	91	1638	13.8	2.4
17	14	16.0	15.7	32.58	32.58	181.16	2.16	135.05	135.05	94	1603	14.5	2.7
20	17	18.5	18.3	42.45	42.45	282.55	4.98	235.22	235.22	96	1554	15.2	2.7
23	20	21.8	21.6	53.28	53.28	420.33	22.80	376.53	376.53	94	1408	16.5	2.7
26	22	25.7	25.4	62.99	62.99	575.72	71.65	535.93	535.93	89	1218	18.1	3.0
27	23	27.4	27.2	71.60	71.60	701.84	71.65	660.53	660.53	90	1218	18.4	3.0

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MERCH. = MERCHANTABLE VOLUME (0.30-M. STUMP, 10.2-CM. TOP INSIDE BARK, ALL TREES)

APPENDIX B1 - METRIC MEASURE YIELDS OF MANAGED STANDS OF LODGEPOLE PINE IN BRITISH COLUMBIA.
TREES ESTABLISHED AT 3.0 BY 3.0 METERS SQUARE SPACING.

SITE TREES	AVERAGE HEIGHT		AVERAGE DIAMETER		BASAL AREA	CUBIC VOLUME		TOTAL MORTALITY	CROWN COVER	AVERAGE CROWN DIMENSIONS	
	TOP	MERCH.	QUAD.	AFITH.		---CUBIC	MERCH.			AREA	WIDTH
(M.)	(M.)	(CM.)	(CM.)	(SQ.M./HA.)	(SQ.M./HA.)	(CUBIC METERS/HECTARE)	(%)	(SQ.M.)	(M.)	(M.)	
0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	
5	4	6.1	5.8	3.10	8.64	0.03	27	6.2	1.8	4.0	
8	6	8.4	8.1	5.92	17.55	0.0	49	11.2	2.4	6.4	
11	9	11.2	10.9	10.63	37.32	0.0	65	14.9	2.7	8.8	
14	12	14.2	14.2	17.15	74.47	0.0	76	17.4	3.0	10.7	
17	14	17.0	17.0	24.66	129.08	0.0	84	19.3	3.4	11.9	
20	17	20.3	19.8	34.02	211.23	0.63	89	20.7	3.0	12.5	
23	20	24.1	23.9	45.98	336.54	6.70	90	22.3	3.4	12.8	
26	22	28.7	28.4	59.27	503.25	25.51	90	24.3	3.4	13.1	
27	23	31.0	30.7	67.81	619.53	31.65	894	24.8	3.7	13.1	

QUAD. = QUADRATIC
AFITH. = ARITHMETIC
M. = METERS
CM. = CENTIMETERS
HA. = HECTARE
SQ.M. = SQUARE METERS
MERCH. = MERCHANTABLE VOLUME (0.30-4. STUMP, 10.2-CM. TOP INSIDE BARK, ALL TREES)

APPENDIX 01 - METRIC MEASURE YIELDS OF MANAGED STANDS OF LODGEPOLE PINE IN BRITISH COLUMBIA.
TREES ESTABLISHED AT 4.3 BY 4.3 METERS SQUARE SPACING.

SITE TREES	AVERAGE HEIGHT		AVERAGE DIAMETER		BASAL AREA	CUBIC VOLUME		TREES PER HECTARE	CROWN		AVERAGE DIMENSIONS	
	(M.)	(M.)	(CM.)	(CM.)		TOTAL	MORTALITY		COVER	AREA	WIDTH	LENGTH
(M.)	(M.)	(CM.)	(CM.)	(SQ.M./HA.)	(SQ.M.)	(M ³ /HA.)	(%)	(%)	(SQ.M.)	(M.)	(M.)	(M.)
0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0
5	4	6.1	5.8	1.56	4.39	0.0	548	0.0	6.4	1.8	4.0	4.0
8	6	8.4	8.1	3.01	8.90	0.0	548	0.40	11.7	2.4	6.4	6.4
11	9	11.2	10.9	5.42	18.97	0.0	548	6.03	16.8	2.7	8.8	8.8
14	12	14.5	14.0	8.95	38.16	0.0	548	24.49	21.1	3.0	11.6	11.6
17	14	17.8	17.3	13.41	67.16	0.11	543	51.29	24.8	3.4	13.7	13.7
20	17	21.6	21.1	19.61	113.07	0.32	538	95.52	28.0	3.7	15.8	15.8
23	19	26.4	25.9	28.65	189.54	1.39	526	240.40	31.0	4.0	17.4	17.4
26	22	31.7	31.2	40.50	303.06	5.41	511	282.13	33.7	4.0	18.9	18.9
27	23	35.3	34.8	47.73	380.76	10.62	489	359.05	35.8	4.3	19.5	19.5

QUAD. = QUADRATIC

ARITH. = ARITHMETIC

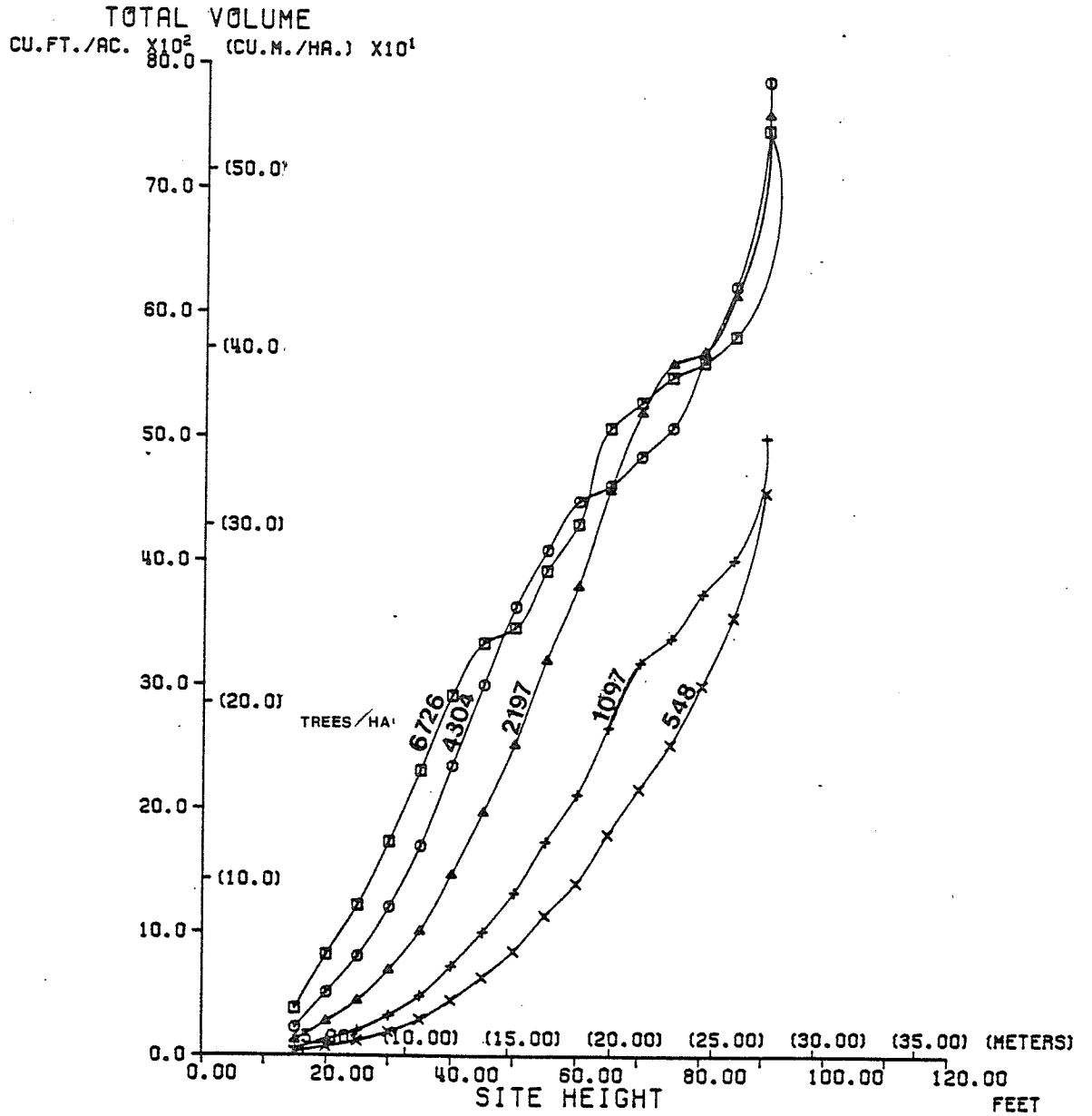
M. = METERS

CM. = CENTIMETERS

HA. = HECTARE

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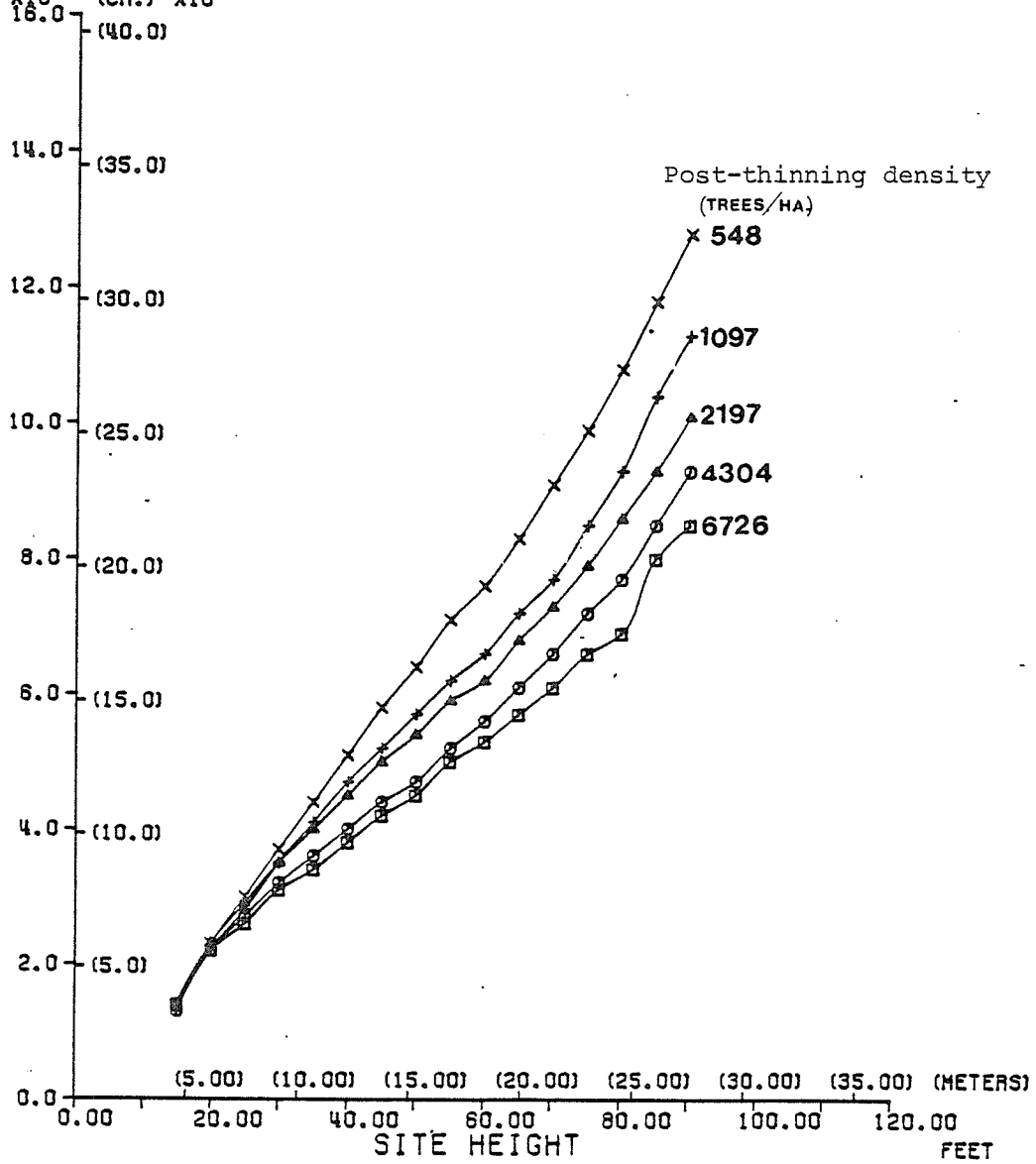
MERCH. = MERCHANTABLE VOLUME (0.30-N. STUMP, 10.2-C.V. TOP INSIDE BARK, ALL TREES)



Total volume versus site height showing the effects of juvenile spacing of lodgepole pine to five density levels at 4.6 meters of site height. Crop trees were selected on the basis of spacing and vigor. Numbers on the curves indicate post-thinning trees per hectare.

QUADRATIC MEAN DIAMETER

IN. $\times 10^0$ (CM.) $\times 10^0$



Quadratic mean diameter versus site height showing the effects of juvenile spacing to five density levels at 4.6 meters of site height. Crop trees were selected on the basis of spacing and vigor.

APPENDIX 11 -- METRIC YIELDS OF MANAGED STANDS OF LODGEPOLE PINE IN THE ALBERTA FOOTHILLS. TREES WERE ESTABLISHED AT 18829 TREES PER HECTARE IN A MODIFIED RANDOM DISTRIBUTION AND THINNED FROM BELOW TO 4265 TREES PER HECTARE (1.5 X 1.5 METER AVERAGE SPACING) WHEN THE STAND REACHED 4.6 METERS OF SITE HEIGHT

SITE TREES	AVERAGE HEIGHT		AVERAGE DIAMETER		BASAL AREA	CUBIC VOLUME		TREES PER HECTARE	CROWN DIMENSIONS			
	(M.)	(M.)	(CM.)	(CM.)		TOTAL	MORTALITY		COVER	AREA	WIDTH	LENGTH
(M.)	(M.)	(CM.)	(CM.)	(SQ.M./HA.)	(SQ.M./HA.)	(CUBIC METERS/HECTARE)	(%)	(SQ.M.)	(M.)	(M.)		
5A	4	3.3	3.0	3.74	16.00	45.45	0.0	4265	29	1.6	0.9	2.7
6	5	5.6	5.3	10.15	36.00	45.73	0.0	4225	69	4.1	1.5	3.7
8	6	6.9	6.6	15.36	56.40	46.33	0.0	4185	86	5.1	1.5	4.3
9	7	8.1	7.9	20.89	84.22	47.42	1.16	4146	94	5.5	1.5	4.6
11	9	9.1	8.9	26.41	118.78	47.71	17.25	4106	96	5.7	1.8	4.6
12	10	10.2	9.9	32.24	164.19	49.58	45.93	3985	96	6.0	1.8	4.6
14	12	11.2	10.9	37.13	210.09	52.90	83.72	3827	96	6.2	1.8	4.6
15	13	11.9	11.9	40.99	254.32	60.72	132.16	3627	95	6.4	1.8	4.6
17	14	13.2	13.0	41.94	286.32	92.17	184.61	3069	89	7.1	1.8	4.6
18	16	14.2	14.0	42.86	314.00	116.25	227.41	2710	86	7.8	1.8	4.9
20	17	15.5	15.5	40.41	322.86	178.86	256.56	2112	77	9.0	2.1	4.9
21	19	16.8	16.8	41.49	339.42	226.08	298.07	1754	76	10.1	2.1	5.2
23	20	18.3	18.3	36.82	355.66	274.49	327.03	1396	66	11.7	2.4	5.8
24	22	19.6	19.6	39.79	394.90	309.29	356.04	1314	70	13.1	2.4	5.8
26	23	21.6	21.3	40.57	435.17	361.56	402.63	1116	67	14.7	2.7	6.4
27	25	23.6	23.6	47.11	550.68	373.83	519.15	1077	69	15.8	2.7	6.4

QUAD. = QUADRATIC
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1 A DESIGNATES AMOUNT REMAINING AFTER THINNING

APPENDIX 11 - METRIC YIELDS OF MANAGED STANDS OF LODGEPOLE PINE IN THE ALBERTA FOOTHILLS. TREES WERE ESTABLISHED AT 1829 TREES PER HECTARE IN A MODIFIED RANDOM DISTRIBUTION AND THINNED FROM BELOW TO 2164 TREES PER HECTARE (2.1 X 2.1 METER AVERAGE SPACING) WHEN THE STAND REACHED 4.6 METERS OF SITE HEIGHT

SITE TREES	AVERAGE HEIGHT		AVERAGE DIAMETER		BASAL AREA	CUBIC VOLUME		TREES PER HECTARE	CROWN		AVERAGE	
	(M.)	(M.)	(CM.)	(CM.)		TOTAL MORTALITY	HECTARE		COVER	AREA	WIDTH	LENGTH
5A	4	0	3.6	3.3	2.12	8.64	39.35	2164	16	1.8	0.9	2.7
6	5	0	5.8	5.6	5.69	19.46	39.52	2147	42	4.8	1.5	4.0
8	6	0	7.4	7.1	9.03	31.35	39.55	2132	60	6.9	1.8	5.2
9	8	0	8.9	8.6	12.95	48.62	40.01	2115	74	8.7	2.1	6.1
11	9	1	10.2	9.9	16.95	70.63	40.58	2097	79	9.4	2.1	6.4
12	10	2	11.4	11.4	21.66	102.56	40.83	2083	83	9.9	2.1	6.4
14	12	3	12.7	12.4	26.05	137.71	41.12	2065	84	10.1	2.1	6.4
15	13	4	13.7	13.5	30.24	176.37	41.55	2050	85	10.1	2.1	6.4
17	14	5	15.0	14.7	34.84	224.26	43.51	2001	85	10.6	2.1	6.4
18	15	7	15.7	15.7	38.53	265.96	46.16	1952	85	10.8	2.4	6.4
20	17	9	17.3	17.0	42.62	320.06	56.44	1823	83	11.2	2.4	6.4
21	18	10	18.5	18.5	45.17	364.10	76.05	1660	80	11.9	2.4	6.4
23	20	12	20.1	19.8	45.60	391.70	112.24	1448	74	12.6	2.4	6.4
24	21	13	21.8	21.8	43.25	398.77	182.93	1156	65	14.0	2.7	6.4
26	22	16	23.6	23.6	43.15	430.26	234.72	976	61	15.4	2.7	6.7
27	24	18	25.7	25.7	49.08	531.93	245.57	943	62	16.1	2.7	6.7

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APPENDIX 11 - METRIC YIELDS OF MANAGED STANDS OF LODGEPOLE PINE IN THE ALBERTA FOOTHILLS. TREES WERE ESTABLISHED AT 1829 TREES PER HECTARE IN A MODIFIED RANDOM DISTRIBUTION AND THINNED FROM BFLOW TO 1065 TREES PER HECTARE 1 3.0 X 3.0 METER AVERAGE SPACING) WHEN THE STAND REACHED 4.6 METERS OF SITE HEIGHT

SITE TREES	AVERAGE HEIGHT		AVERAGE DIAMETER		BASAL AREA	CUBIC METERS/HECTARE		TOTAL MORTALITY	CUBIC VOLUME	TREES PER HECTARE	CROWN COVER (%)	AVERAGE CROWN DIMENSIONS	
	(M.)	(M.)	(CM.)	(CM.)		(SQ.M./HA.)	(M.)					(M.)	AREA
5A	4	0	3.3	3.3	0.94	3.89	29.99	0.0	0.0	1055	7	1.8	0.9
6	5	0	5.6	5.6	2.62	8.92	29.99	0.0	0.0	1055	20	4.6	1.5
8	6	0	7.1	7.1	4.22	14.43	30.03	0.0	0.0	1030	29	7.1	1.8
9	8	0	8.9	8.6	6.29	22.85	30.04	1.62	1.62	1030	40	9.6	2.1
11	9	1	10.4	10.2	8.55	33.99	30.12	9.40	9.40	1020	46	11.0	2.4
12	10	2	11.9	11.7	11.35	50.80	30.12	26.07	26.07	1020	51	12.2	2.4
14	12	3	13.2	13.0	14.08	70.18	30.12	44.21	44.21	1020	53	12.9	2.4
15	13	5	14.5	14.2	16.76	92.29	30.12	65.02	65.02	1020	55	13.3	2.4
17	14	6	15.7	15.5	19.91	121.42	30.12	92.52	92.52	1020	56	13.5	2.4
18	15	7	16.8	16.5	22.57	148.02	30.12	117.94	117.94	1020	56	13.5	2.4
20	17	9	18.3	17.8	25.99	186.19	31.67	156.76	156.76	998	57	14.0	2.7
21	18	10	19.6	19.3	28.98	222.84	36.03	194.06	194.06	963	56	14.2	2.7
23	19	12	21.6	21.3	28.98	236.71	64.98	212.73	212.73	795	51	16.1	2.7
24	20	13	23.6	23.4	29.95	261.91	91.08	240.82	240.82	684	48	17.2	3.0
26	22	15	26.4	26.2	29.84	281.04	130.46	263.36	263.36	548	43	19.3	3.0
27	23	17	28.7	28.4	34.15	349.84	138.13	332.15	332.15	526	42	19.7	3.0
28	24	19	31.0	30.7	39.46	428.64	156.67	406.67	406.67	498	40	21.0	3.0
29	25	21	33.3	33.0	45.19	528.04	175.17	492.67	492.67	432	38	22.3	3.0
30	26	23	35.6	35.3	51.46	648.04	193.67	598.67	598.67	372	36	23.6	3.0

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 MERCH. = MERCHANTABLE VOLUME (0.30-M. STUMP, 10.2-CM. TOP INSIDE BARK, ALL TREES)

1 A DESIGNATES AMOUNT REMAINING AFTER THINNING

APPENDIX II - METRIC YIELDS OF MANAGED STANDS OF LODGEPOLE PINE IN THE ALBERTA FOOTHILLS. TREES WERE ESTABLISHED AT 1829 TREES PER HECTARE IN A MODIFIED RANDOM DISTRIBUTION AND THINNED FROM BELOW TO 541 TREES PER HECTARE (4.3 X 4.3 METER AVERAGE SPACING) WHEN THE STAND REACHED 4.6 METERS OF SITE HEIGHT

SITE TREES	AVERAGE HEIGHT---		AVERAGE		BASAL AREA	CUBIC VOLUME-----		TREES PER HECTARE	CROWN DIMENSIONS---			
	(M.)	(M.)	DIAMETER-- QUAD. ARITH.	TOP MERC.		TOTAL MORTALITY	MERC.		COVER	AREA	WIDTH	LENGTH
5A	3	0	3.6	3.3	0.51	2.16	22.36	541	4	1.8	0.9	2.7
6	5	0	5.8	5.8	1.51	5.10	22.36	541	12	5.5	1.5	4.0
8	6	0	7.6	7.4	2.48	8.45	22.36	541	19	8.5	2.1	5.2
9	7	0	9.4	9.1	3.78	13.60	22.36	541	26	11.9	2.4	6.7
11	9	2	11.2	10.9	5.28	20.66	22.36	541	32	14.7	2.7	7.6
12	10	3	13.0	12.7	7.25	31.60	22.36	541	38	17.2	2.7	8.2
14	11	4	14.7	14.5	9.22	44.54	22.36	541	40	18.4	3.0	8.5
15	13	5	16.3	16.0	11.15	59.37	22.60	533	42	19.5	3.0	8.8
17	14	6	18.0	17.5	13.48	79.56	22.60	533	43	19.7	3.0	8.8
18	15	8	19.3	18.8	15.38	97.83	22.98	523	43	20.2	3.0	9.1
20	17	9	21.1	20.6	18.00	125.39	23.53	516	44	20.9	3.0	8.8
21	18	11	23.1	22.6	20.19	151.31	27.21	481	43	22.0	3.4	9.1
23	19	12	25.1	24.6	22.11	176.67	32.84	449	42	23.4	3.4	9.4
24	21	14	27.4	27.2	24.42	209.93	40.05	415	42	24.6	3.7	9.4
26	22	16	30.0	29.7	26.89	248.58	50.70	383	40	25.9	3.7	9.4
27	23	18	32.5	32.3	31.73	319.12	50.70	383	40	25.9	3.7	9.4

QUAD. = QUADRATIC
 ARITH. = ARITHMETIC
 M. = METERS
 CM. = CENTIMETERS
 HA. = HECTARE
 SQ.M. = SQUARE METERS
 MERC. = MERCHANTABILITY

1 A DESIGNATES AMOUNT REMAINING AFTER THINNING