

FINAL REPORT

RNX 7603

WOOD BULLET -
FERTILIZER TRIAL

SILVICULTURE BRANCH
81-04-15

SILVICULTURE TRIALS and TESTS

REPORT SX RNX 7603

INTERIM

FINAL

DATE 81-04-15

TITLE Wood Bullet-Fertilizer Trial

Report Prepared by:

P.E. Robson (Signature)

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Report & Distribution Approved by:

R.G. Brown (Signature)

R.G. Brown (Typed)

(a) Wide Distribution

(b) Limited

(i) Internal - Branch only

(ii) External - Designated

(iii) Ministry Only

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Approved:

Manager (Signature) R.C. Jones

(Typed) R.C. Jones

FINAL REPORT

1. Trial No.

RNX 7603

2. Location

Statlu Creek, Chehalis River, approximately 15 km northwest of Harrison Mills, Chilliwack District, Vancouver Region.

3. Object

- (a) To compare the growth and survival of seedlings grown in 10 cm wood bullets with those grown as PSB 211.
- (b) To assess the effects of adding slow-release fertilizer to the soil mix on the growth and survival of seedlings produced in wood bullets and in PSB 211's.

4. Treatment and Code

- (a) 10 cm Wood Bullet and Osmocote
(19 - 6 - 12 + 118)* = WC
- (b) PSB 211 Styroplug and Osmocote
(14 - 14 - 14 + 118)* = SC
- (c) PSB 211 Styroplug with no slow
release fertilizer = SS

(d) The last digit of the code refers to the planting sequence.

5. Plot Layout

8 plots x 6 planted lines x 50 trees per line = 2400 trees in total.
The original intent of a third planting was not realized so that there are three lines per plot unplanted.

- * 19 - 6 - 12 releases in 3 - 4 months; 118 releases 10% of its elements in the first 6 months and the remainder in the next 18 months. The higher N component is to provide for soil organisms in their decomposition of the container.
14 - 14 - 14 + 118 is same as the above but with less nitrogen.

6. Planting Dates

October 6 - 8, 1976.
May 31 - June 2, 1977.

7. Assessments

June 1 - 2, 1977 of the first planting only.
October 3 - 4, 1977 of both plantings.
October 26, 1978 of both plantings.
May 20 - 21, 1980 of both plantings.

8. Seedlot

Douglas fir 92H3/B1/2048/914 m from Shawatum Cr., S.Z. 1060.

9. Site Factors

(a) Biogeoclimatic subzone = CWH x b - m

(b) Seed zone = 1050

(c) Elevation = 840 - 1080 m

(d) Former stand = HcB \oplus 75
75

(d) Slope = 30 - 50%

(f) Aspect = Plots 1, 2, 6, 7 South
Plots 3 and 8 North
Plots 4 and 5 East

(g) Topography = Upper slope

(h) Soil texture = Clay loam and gravel

(i) Organic layer = 2 - 10 cm

(j) Planting in: Rotten Wood = 8%
Duff = 5
Mineral Soil = 87

(k) Vegetative competition = Light (fireweed)

(l) Slash cover = 21 - 50%.

10. Weather etc. at Planting

<u>Date</u>	<u>Soil Conditions</u>	<u>Weather</u>
76-10-6/8	Uniformly damp	Sunny and warm; no rain
77-05-31	Wet - overly wet.	Cloudy, cool, heavy rain.

11. Condition of Stock at Planting

<u>Season of Planting</u>	<u>Stock Type Code</u>		<u>Height/cm</u>
Fall, 1976	ss1	Thrifty, hardened off, fair root development.	18.0
Fall, 1976	sc1	Thrifty, hardened off, good root development.	18.5
Fall, 1976	wc1	Good, of plantable size, not as sturdy as plugs, some root intergrowth.	9.4
Spring, 1977	ss2	All thrifty and of good form but flushing: many tops broken in planting.	18.7
	ss2		21.4
	wc2		11.5

12. Results

Table 1: Percent Survival of Douglas fir, Grown as Three Treatments and Planted Spring and Fall, After 1, 2, and 3 Growing Seasons

Growing Seasons after Planting:	One		Two		Three	
	Fall	Spring	Fall	Spring	Fall	Spring
Wood Bullet and Osmocote:	93	99	90	89	88	84
PSB 211 and Osmocote:	94	99	92	95	87	93
Standard PSB 211:	91	98	84	91	77	87
Averages:	93	99	89	92	84	88

Comments

- (a) With the possible exception of the fall planted standard plug, all treatments have survived satisfactorily.
- (b) Spring planted stock has generally survived better than the fall planted.
- (c) There has been, on the average, a falldown in survival of 10% over 3 seasons.
- (d) Osmocote treated PSB 211 has better survival than the untreated.
- (e) The addition of slow-release fertilizer was generally beneficial in promoting survival and growth in both plugs and wooden bullets, a fact already noted from RNX 7506 which also tested Douglas fir grown as the same two stock types.

The use of osmocote is now an operational alternative in the production of container grown Douglas fir.

Table 2: Total Height (cm) at Establishment and After 3 Growing Seasons of Douglas fir Grown as 3 Treatments, and Planted Spring and Fall

	At Establishment		After 3 Growing Seasons		Increment	
	Fall	Spring	Fall	Spring	Fall	Spring
Wood Bullet and Osmocote	9	12	27	25	18	13
PSB 211 and Osmocote	19	21	40	37	21	16
Standard PSB 211	18	19	33	33	15	14
Averages	15	17	33	32	18	14 cm

Comments

- (a) Douglas fir is not the first choice of species for this site which is better suited to hemlock, cedar, and balsam. The lack of height growth, as noted above, could be a reflection of this fact.
- (b) PSB 211 and Osmocote grew better than the others in terms of both total height and increment.
- (c) Since no unfertilized wood bullet was provided as control, there is no way of assessing the affect of slow-release fertilizer on growth. However, its 3-year growth is comparable to that of the standard plug.
- (d) Height growth of fall planted stock is generally superior to that of the spring planted, a reversal of survival results.

Table 3: Status - Percent in Each Condition Class (Good, Fair, Poor) of the Three Types of Stock, by Season of Planting, at First and Final Assessment

Season of Planting	First Assessment						Final Assessment					
	Fall			Spring			Fall			Spring		
	Status*	G	F	P	G	F	P	G	F	P	G	F
Wood Bullet and Osmocote	40	35	25	98	1	1	99	1	0	98	1	1
→ PSB 211 and Osmocote	39	35	26	96	3	1	99	1	0	98	1	0
Standard PSB 211	23	37	40	95	3	2	97	3	0	97	2	1

* Good: Vigorous, without defect.
 Fair: With minor defect(s) that can be outgrown.
 Poor: With a serious defect; unlikely to live.

Comments

- (a) Most of the fall planted stock at first complete assessment was noted as other than Good, based on appearance. This was particularly true of the standard plug.
- (b) On the other hand, nearly all the spring planted stock (95%+) was classed as Good at the end of its first growing season.
- (c) However, after three years, the fall planted had recovered to the point where its quality was judged to be essentially the same as the spring planted.
- (d) There was no appreciable difference in quality between any stock type at final assessment: most (95+) were classed as Good.

Table 4: Causes of Death and Injury, Expressed as Percentages of the Totals Tallied, at First and Final Assessment

Assessed After	Death					Injury				
	Drought	Brow-sing	Frost	Smoth-ering	Basis No. Trees	Drought	Brow-sing	Frost	Smoth-ering	Basis No. Trees
1 Growing Season	98	0	2	0	89	37	62	0	1	494
3 Growing Seasons	4	11	85	0	71	0	29	67	4	554

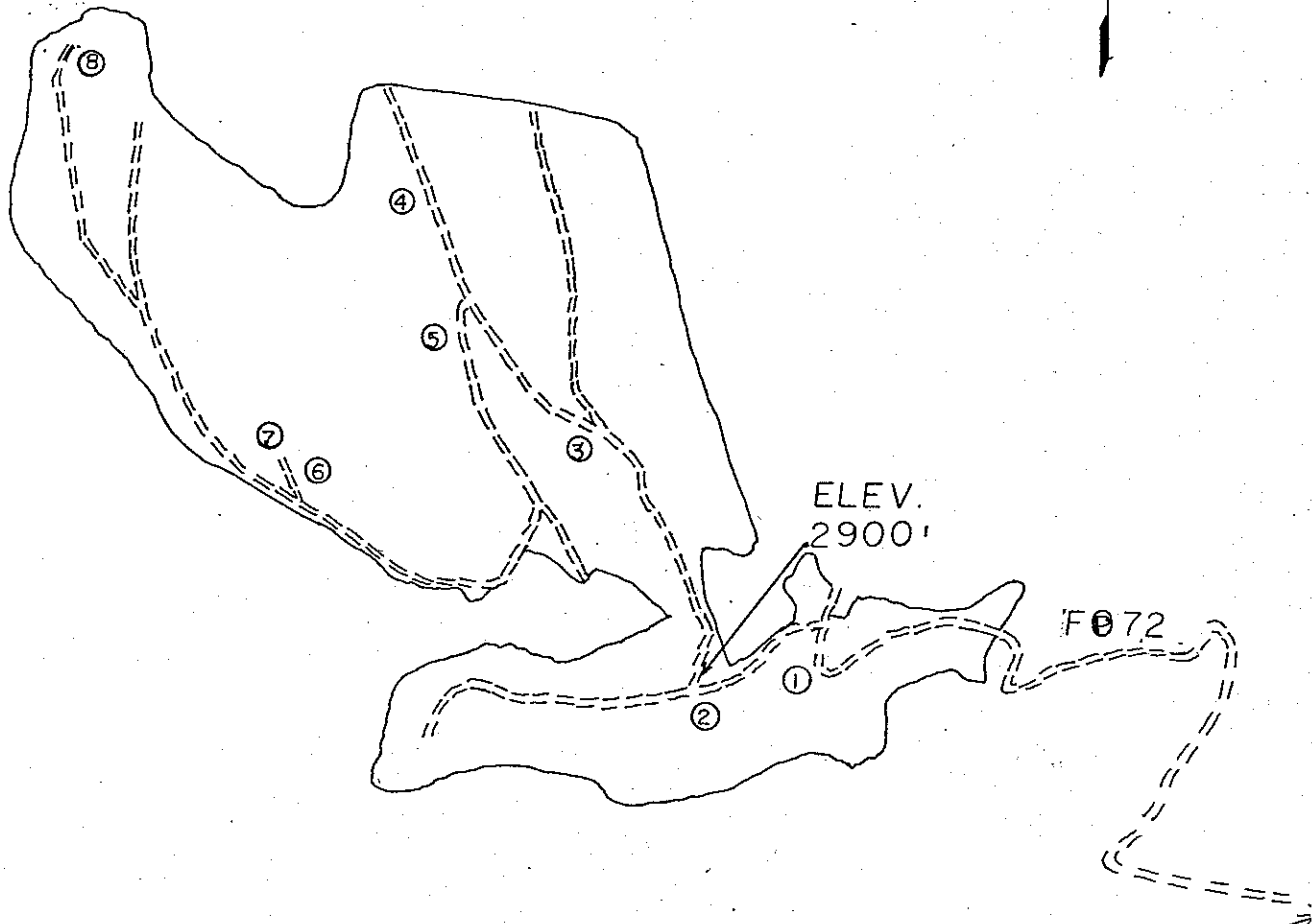
Comments

- (a) Assessment of the reasons for injury and death is subjective.
- (b) The prime cause of death in the year after planting is drought. After initial mortality, the main cause of death is frost.
- (c) The main causes of injury in the first year after planting are drought (37%) and browsing (62%). After 3 years, the main causes are browsing (29%) and frost (67%).

RNX 7603
WOOD BULLET FIELD TRIAL
STATLU CREEK

SCALE. 20 CH. 1 INCH

ATLAS REF. 92 G-8E



ELEV.
2900'

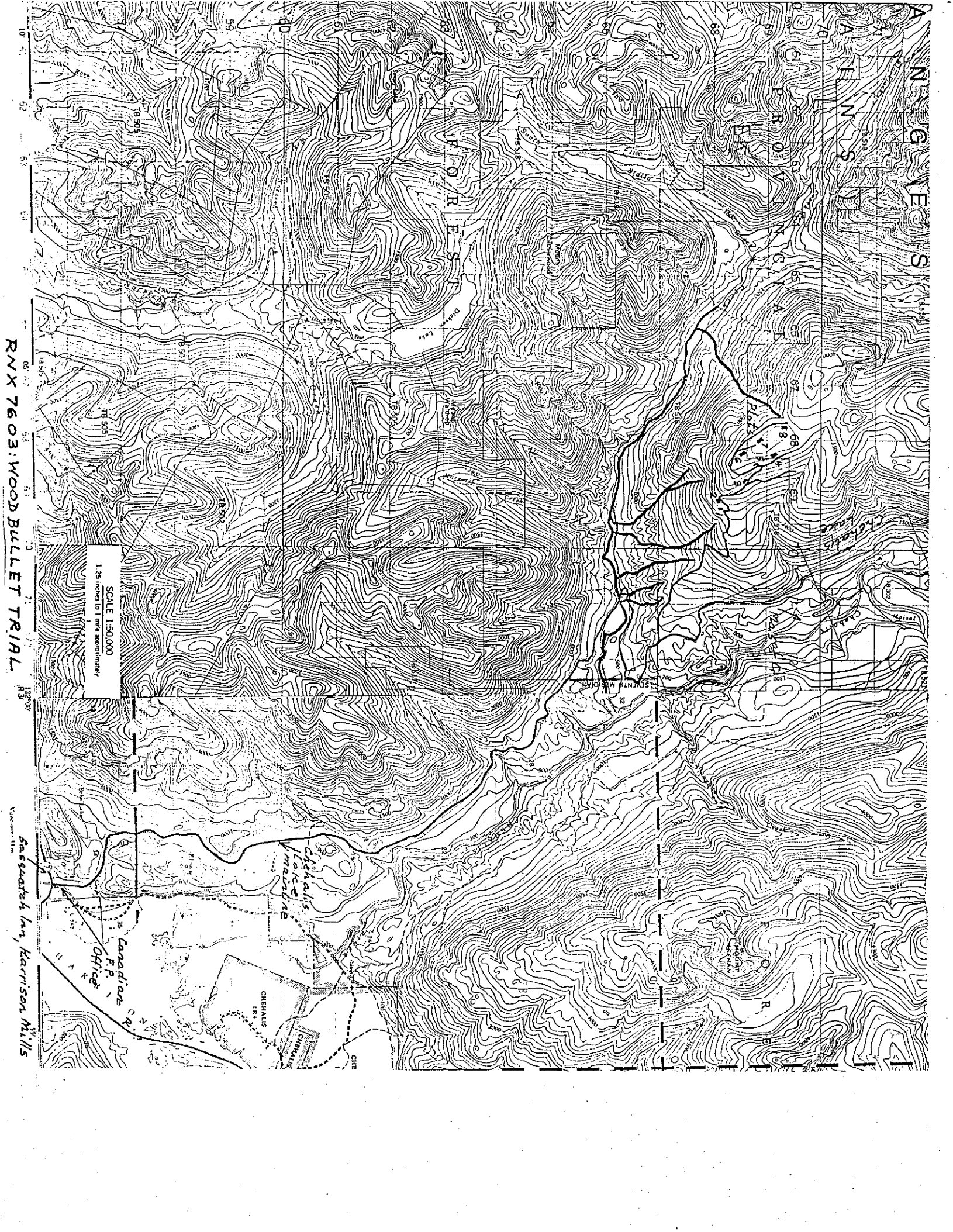
F072

GUYLINE RD.

TURNOFF 10 MILE ON
CHEHALIS RD.

LEGEND: ① PLOT LOCATIONS

RWX 7603: WOOD BULLET TRIAL



SCALE 1:50,000
1.25 inches to 1 mile approximately

SAS QUARTERS, HARRISON MILLS



PLANTING
AREA



PLOT ONE



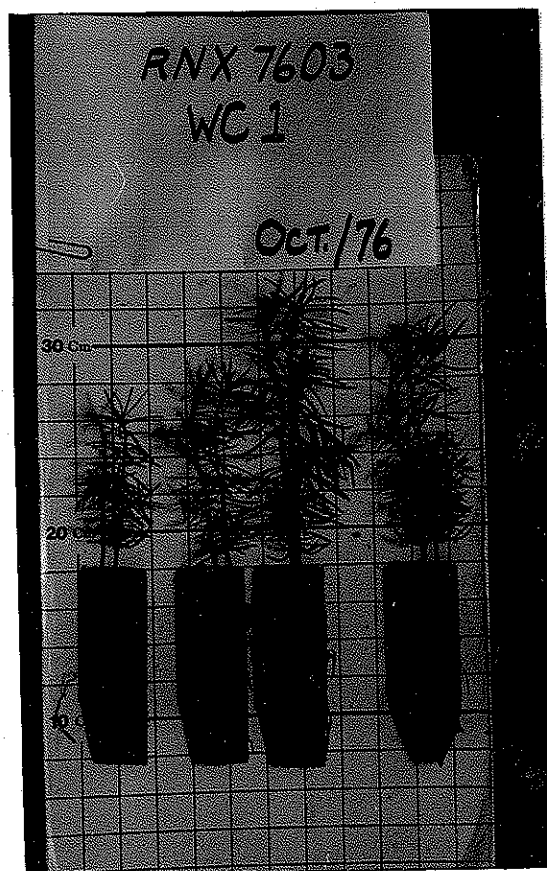
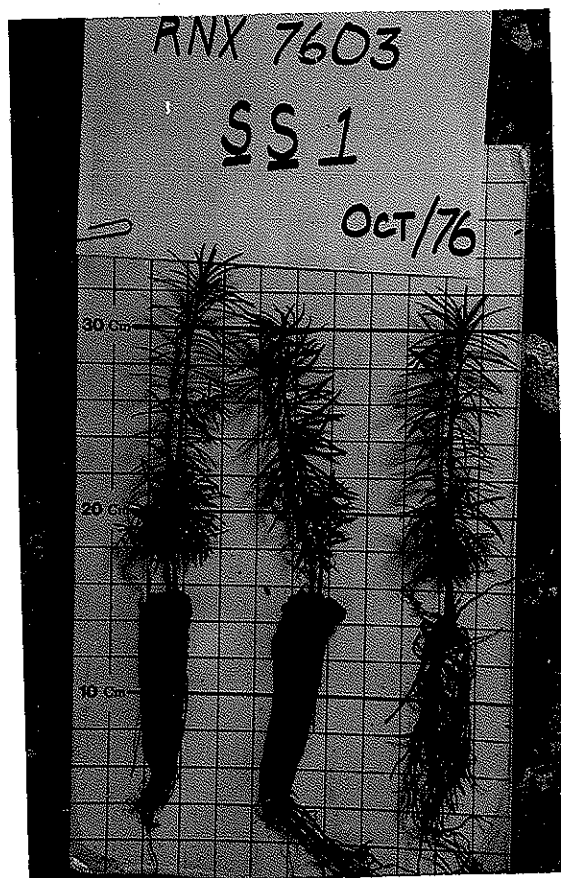
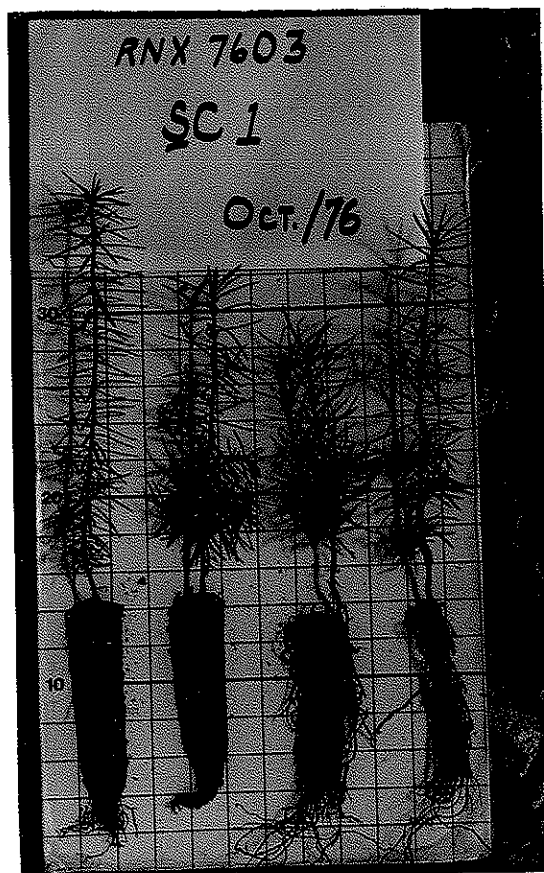
PLOT EIGHT

RNX 7603

WC = WOOD BULLET & OSMOCOTE

SC = PSB 211 STYROPLUG & OSMOCOTE

SS = PSB 211 STYROPLUG WITH NO SLOW RELEASE FERTILIZER



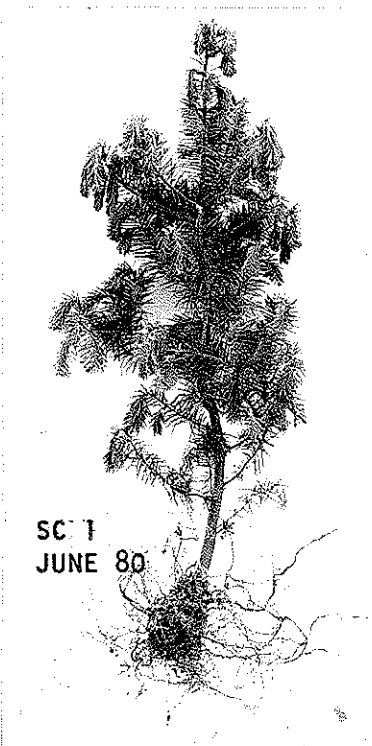
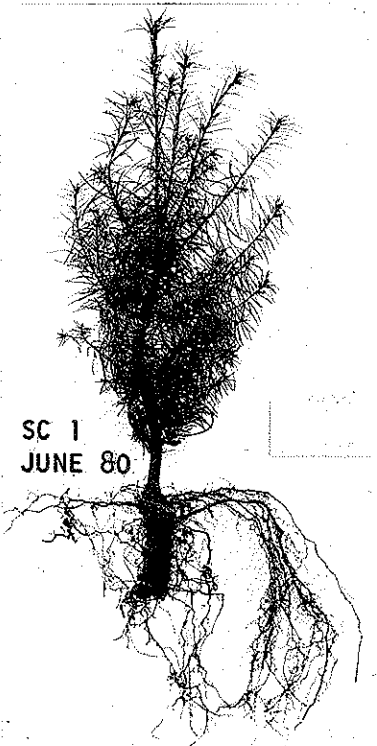
RNX 7603

AFTER FOUR GROWING SEASONS

WC = WOOD BULLET & OSMOCOTE

SC = PSB 211 STYROPLUG & OSMOCOTE

SS = PSB 211 STYROPLUG WITH NO SLOW RELEASE FERTILIZER





WC + 2
JUNE 80



WC 1
JUNE 80



WC 1
JUNE 80



SS 1
JUNE 80



SS 2
JUNE 80



SS 2
JUNE 80