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Objective:

The purpose of this trial was to:

- 1) monitor the temperature, humidity, and germination rate in the new germinator house at Surrey nursery, and
- 2) determine the effects of using plastic covers over stacked blocks as compared to uncovered stacks.

Method:

As per attached trial outline p. 5.

The five seedlots monitored in this trial were as follows:

	<u>Seedlots</u>	<u>Sowing date</u>	<u>Time in Germinator</u>
1.	Hw #3856	March 18, 1980	9 days
2.	Hw #3897	March 19, 1980	8 days
3.	Hw #3440	April 11, 1980	11 days
4.	Hw #3844	April 14, 1980	7 days
5.	Se #1819	April 8, 1980	6 days

Results

1. Climatic Monitor

Temperature for three seedlots are shown in Fig. 1, p. 4. Average daily maximums and minimums and their ranges were recorded for the germinator "standard stacks" and "plastic covered stacks" as well as the average probe temperature and their range taken at the bottom, middle and top of the stacks.

This data indicates quite a range in temperature as much as 25°C between the extremes of #3844 and 3440. However, mean temperatures were approximately 22°C in the standard stack and 24°C in the plastic covered stack. Spot checks with temperature probes also indicated higher readings under the covered stack. Also, as might be expected, there was a marked increase in temperature going from the bottom of each stack to the top. An increase of any where from 4 to 6°C was noted on the probes.

Unfortunately, only minimal data from the direct sown treatments was available. From Hw #3844, average temperatures were 7-9°C below the germinator.

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BARTLETT, K.J.  
SURREY GERMINATOR TEST:  
PRELIMINARY REPORT  
CBYJ c. 1 ma Main.....

Humidity data recorded on the hygrothermograph charts was generally "washed out". Nevertheless, information from #3844 (not shown), indicates humidities of 90-95% in the standard stack with frequent ranges from 70% to 100%. The plastic covered stacks appeared to be higher with an average of 95% and occasional drops to 85%.

2. Germination

Final germinator counts in Fig. 1, p. 4, did not reflect any definite patterns when comparing the three treatments. Nor did the temperature ranges encountered within stacks seem to reflect any patterns with germinator in this trial.

The most significant information comes from looking at the germination curves in Fig. 2, p.5. The four western hemlock seedlots showed substantial gains in early germination from the germinator treatments. The highest increases came from the earlier March sown seedlots #3856 and #3897 which, after three weeks from sowing, increased up to 82% in the germinator as indicated in the following table.

The April sown seedlots #3440 and 3844 also produced moderate germination increases of up to 29%.

Average Germinations Rates 3 Weeks from Sowing  
(Final germination in brackets)

Treatment	Hw				Se
	3856	3897	3440	3844	1819
1) Direct	5.7 (79.7)	17.2 (91.2)	43.4 (92.8)	10.1 (82.4)	77.1 (77.7)
2) Standard Stack	87.8 (94.6)	59.8 (93.2)	57.1 (90.7)	39.1 (88.8)	79.7 (79.7)
3) Plastic Covered Stack	83.1 (89.6)	42.0 (91.3)	53.6 (86.4)	37.9 (90.4)	81.9 (82.2)
	% Gain of "Stack" treatments over "direct"				
	78 - 82%	25 - 43%	10 - 14%	27 - 29%	2 - 4%

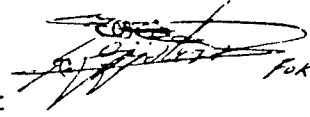
after three weeks. The single seedlot of Se #1819 resulted in only a minimal gain of 2-4%, perhaps due in part to lower minimum temperatures recorded for this seedlot.

Conclusions:

From the results of this trial I conclude that:

- 1) the use of a germinator will speed up the germination rate in Hw resulting in more uniform sized seedlings - this is especially applicable for early sown crops;
- 2) the variation in temperatures within the stacked blocks did not appear to correlate to germination response; and
- 3) there was no advantage to using plastic covers over stacks despite slightly higher humidities and temperatures.

K.J. Bartlett  
Silviculture Branch



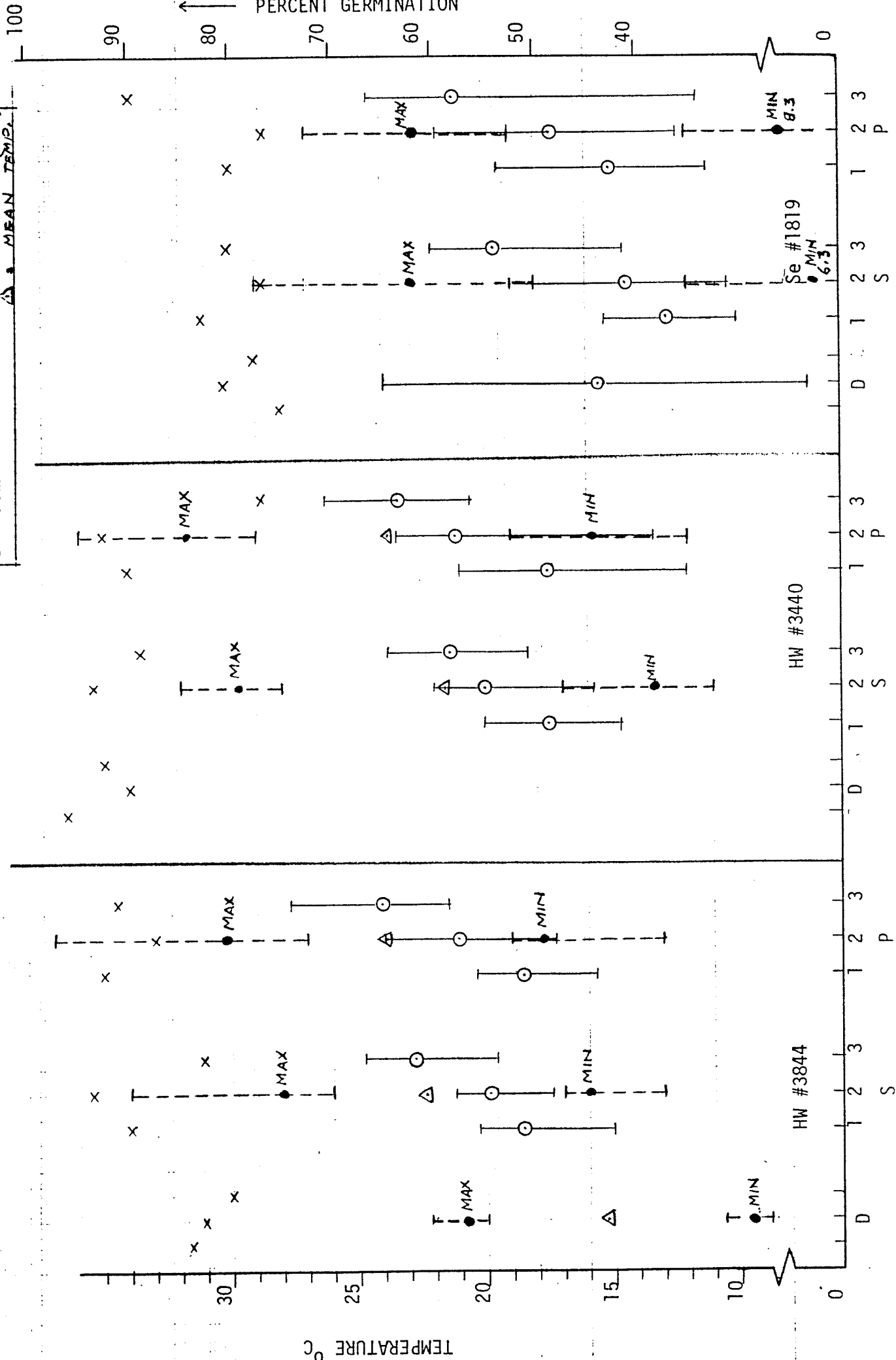
FOR K.J. BARTLETT

TEMPERATURE RANGE OF STOCK  
TREATMENTS AND GERMINATION RESPONSE

0 = Average temp. (probes)  
I = Temp. range  
x = % germination  
D = Direct sown  
S = Standard stack

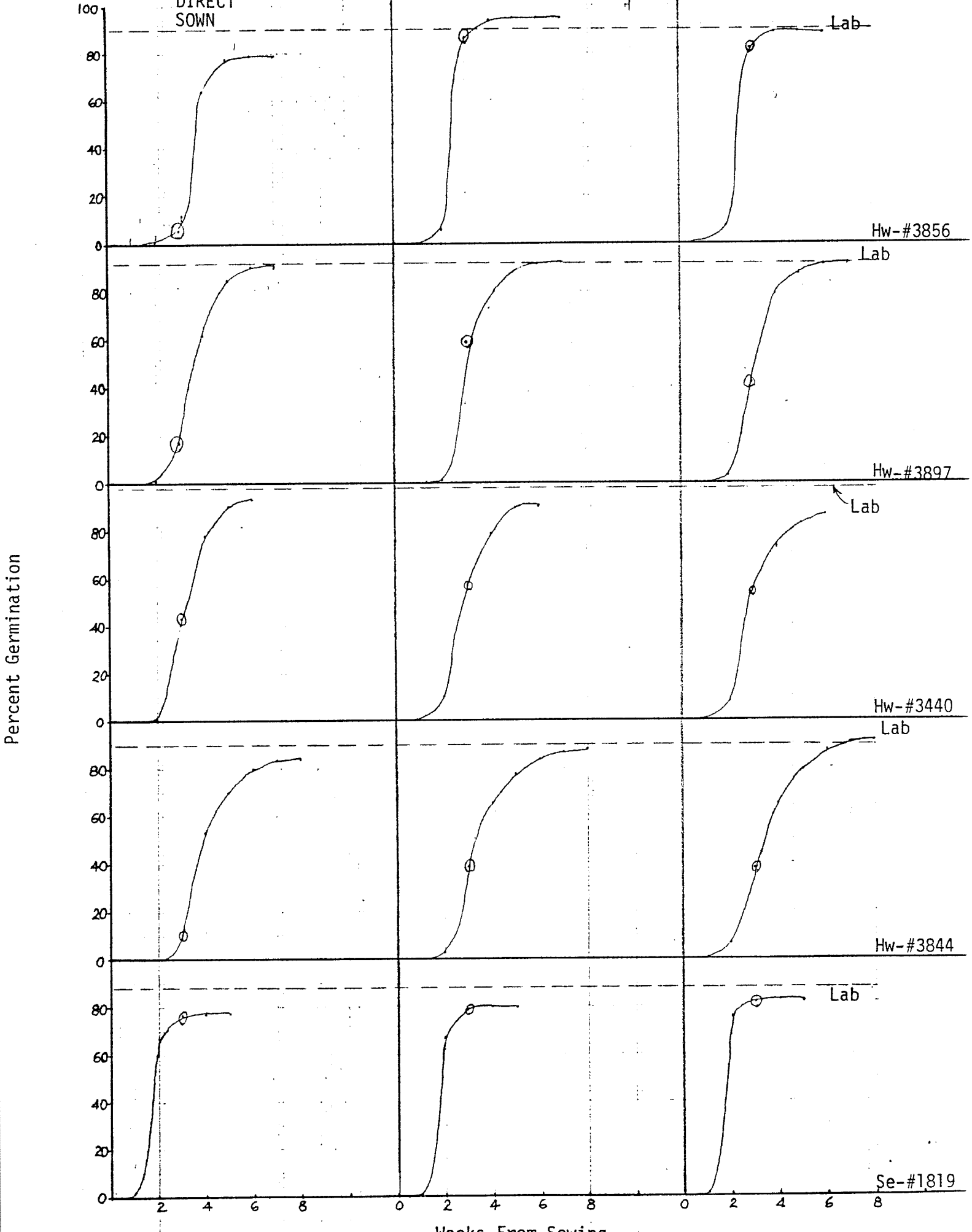
p = plastic cover  
1 = bottom stack  
2 = center  
3 = top

● = MIN-MAX (AVER.)  
△ = MEAN TEMPER.



GERMINATION RESPONSE GRAPHS

Fig. 2



RNX 8051

Surrey Germinator Test

Objective

The purpose of this trial is twofold:

- 1) to monitor the temperature, humidity, and germinator rate in the new germinator house at Surrey Nursery; and
- 2) to determine the effects of using plastic covers over stacked blocks.

Species: Si and Hw - 2 seedlots of each.

Germination: standard conditions for species:

Temp.: 20° C +

Humidity: as high as possible with humidification boom (70-90% acceptable)

Dates: 3 times suggested - early  
- mid-sowing  
- late

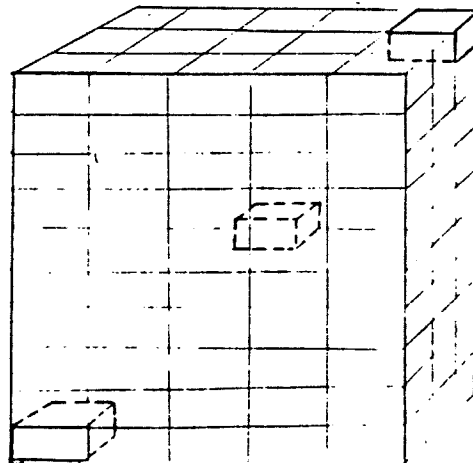
Treatments:

- 1) standard stacked blocks.
- 2) standard stacked blocks covered with a sheet of plastic.
- 3) blocks placed directly into growing facility after sowing.

Three blocks are to be selected for each treatment. Thus the total block requirements per sowing date are:

$$3(\text{treatments}) \times 2(\text{species}) \times 2(\text{S.L.}) \times 3 \text{ reps} = 36 \text{ blocks}$$

Stacked blocks should be placed diagonally from top to bottom so as to ensure maximum dispersal through the stack.



Blocks going directly into the greenhouse may be placed at three random locations.

Measurements:

- 1) Germination rate - suggest 2 counts; one right after germination and second approximately 2 weeks later.
- 2) Climatic Data - one hygrothermograph and max-min thermometer to be located at each treatment location during germination. Note: must be sheltered from direct sunlight.

- one temperature probe to be located on top of each monitored block - extras may be interspersed to record other locations and soil temperatures.

Records:

- require good records of elapsed time from sowing → germinator → greenhouse.
- weather info. - i.e. sunny or cloudy days.
- spot checks with temperature probes - 2 to 3 times per day.
- germination rate.
- plus any other relevant observations or problems.