

THE EFFECT OF CROWN SCORCH ON GROWTH IN *P. PINASTER*

by

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The area of land under pine plantations is rapidly increasing and consequently so too are the areas required to be controlled burnt annually. Controlled burning in pine is, of course, now a necessity if fire risk is to be reduced to a minimum. The worry to the responsible officer in this field is great, as under most site and weather conditions the danger of crown scorch is always present. The problem of scorch is a difficult one as so few facets have been investigated. For example – what degree of scorch is necessary before girth and height increments are affected? How does this effect vary in relation to scorch severity? What period of time elapses before scorch trees return to normal? There are many unanswered questions.

In an attempt to answer some of these questions a field experiment in the form of a dendrometer trial was established in Somerville (*P. pinaster*) plantation following a top disposal burn in September 1966 in which a number of trees received varying degrees of scorch. The average height and G.B.H.O.B. of the trees at the commencement of the trial were 50' and 2'5" respectively. 50 trees were selected and fitted with dendrometer bands. The tree heights, crown heights, and the height of green crown remaining were recorded for each tree. The 50 trees selected consisted of 30 scorch and 20 controls. The controls were matched individually by G.B.H.O.B. with scorch trees. The 30 scorch trees were divided into 3 classes (10 per class) as follows:—

A scorch – mean height of green tip – 1'6" (severe scorch)

B scorch – mean height of green tip – 5'0"

C scorch – mean height of green tip – 10'6" (light scorch)

Dendrometer readings were recorded monthly and total tree and crown heights annually. A variance test has been applied to each scorch class, the results of which are shown below. The trial has now been maintained for over 3 years.

MEAN GROWTH PER TREE FOR FIRST 3 YEARS AFTER BURNING.

Scorch Class	Year	Scorch	Control	Diff.	V.R.	Sig.
A	1	.125	.701	.576	31.14	.01
	2	.513	1.367	.854	24.63	.01
	3	.640	1.005	.365	9.21	.01
B	1	.383	.735	.352	6.16	.05
	2	.923	1.374	.451	5.99	.05
	3	.735	1.022	.287	5.72	.05
C	1	.750	1.004	.254	1.96	NS
	2	1.451	1.488	.037	0.04	NS
	3	1.059	1.055	+ .004	0.001	NS

The growth pattern of trees in each scorch class in relation to control trees is perhaps best illustrated in the form of normal curves as shown in the following graphs. B class scorch has been omitted as its growth rate lies between that of A scorch and C scorch.

Height readings have been taken annually and the latest readings taken in September 1970 revealed the following mean crown heights which are compared with crown heights taken at the commencement of the trial.

<u>SEPT. '70 READINGS</u>	<u>FEB. '67 READINGS</u>
A scorch -- 16.2' (61% of mean control crown ht.)	1.5'
B scorch -- 17.7' (62% of mean control crown ht.)	5.0'
C scorch -- 22.3' (78% of mean control crown ht.)	10.5'

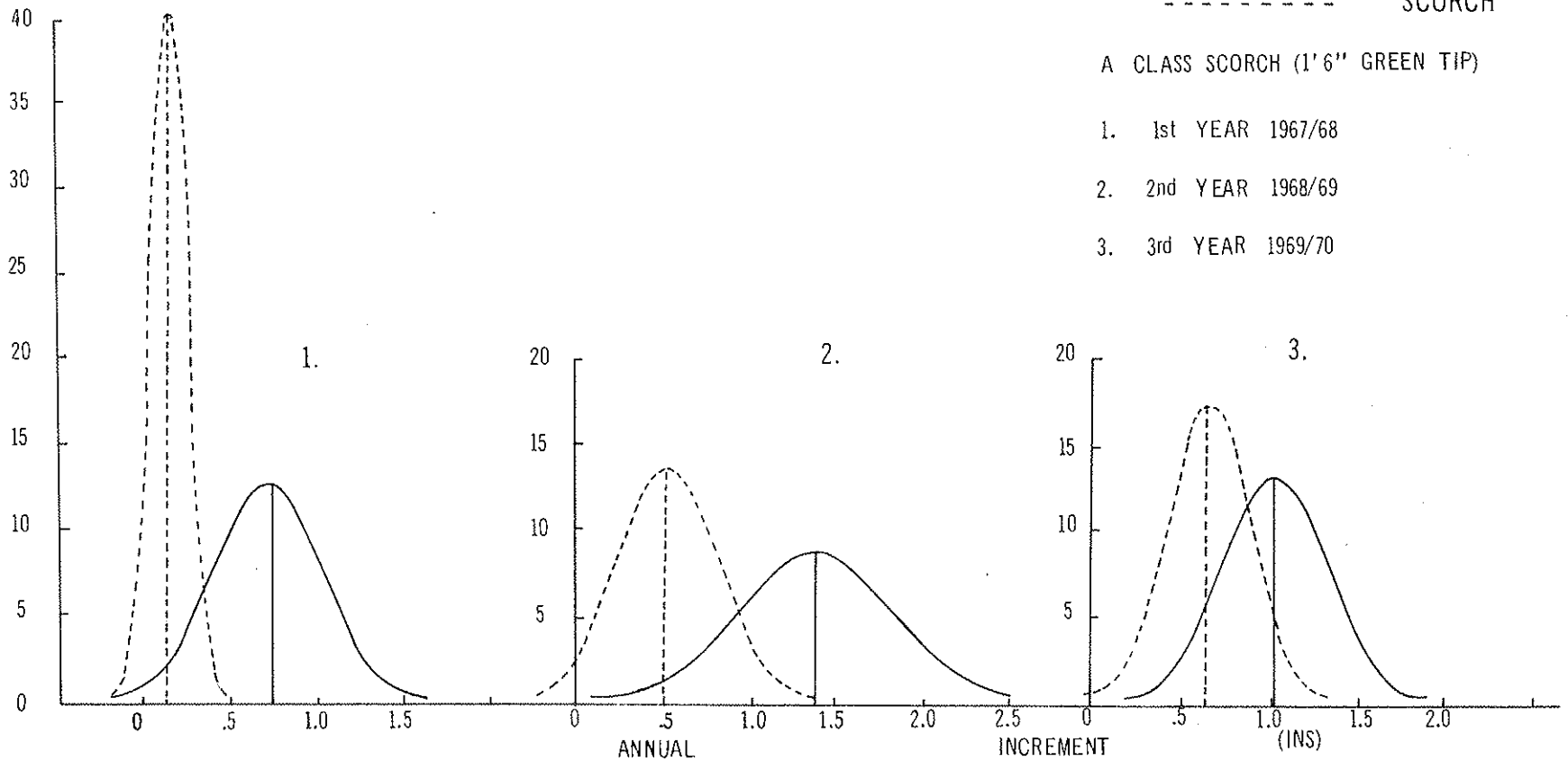
Even from initial readings there were indications of a marked detrimental effect on growth rate which from the A scorch and to a lesser extent the B scorch trees has persisted up to the present time, while growth rate for C scorch trees has returned to normal after 3 years. As the effect of severe scorch (A class) is still highly significant 3 years following scorching it seems reasonable to assume that this effect may be prolonged a further 3 or even more years. From these results evidence may be such to confirm the theory that degree of increment loss is directly related to the severity of crown scorch.

P. PINASTER GROWTH

————— CONTROL
 - - - - - SCORCH

A CLASS SCORCH (1'6" GREEN TIP)

1. 1st YEAR 1967/68
2. 2nd YEAR 1968/69
3. 3rd YEAR 1969/70



————— CONTROL
 - - - - - SCORCH

C CLASS SCORCH (10'6" GREEN TIP)

4. 1st YEAR 1967/68
5. 3rd YEAR 1969/70

