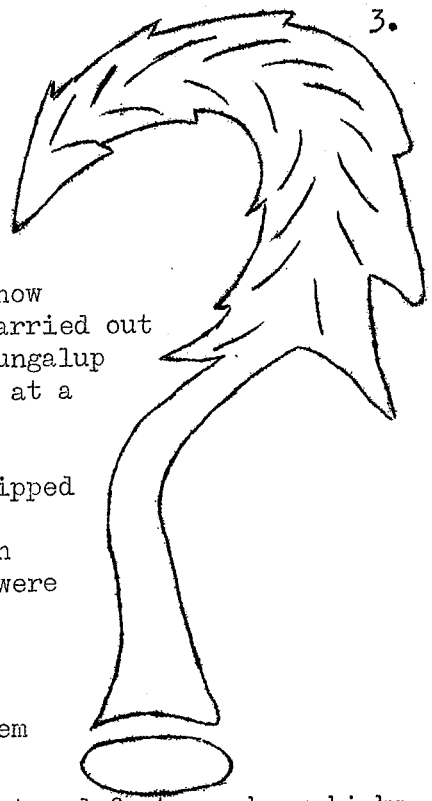
FORM OF PINUS RADIATA ON A HIGH QUALITY SITE

by F. H. McKinnell



It is generally recognised that stem form in pine plantations is worse on high quality sites than on poor sites. To gain some figures on how bad it can be a stem form assessment was recently carried out in P. radiata planted on a former pasture site at Mungalup A-15, Collie. This compartment was planted in 1958 at a nominal spacing of 9' x 9' or 540 stems per acre.

In the assessment the compartment was stripped at roughly 5-row intervals, every tree along a row being booked except edge trees. Trees wer judged on the form of the lower 35 - 40 feet of the bole and were placed into one of the following classes:

(1) Straight - trees truly straight.

(2) Slightly crooked - trees with a slight stem defect but still acceptable stems.

(3) Markedly crooked - these trees had major stem defects such as kinks, sweeps, forks etc.

In order to give a clearer picture of the stand composition the latter two classes were subdivided as follows:

Slightly crooked - (1) trees worth retaining.

(2) suppressed trees normally eliminated in the first thinning.

Markedly crooked - (1) forks and multiple leaders.

(2) millable trees - those which would yield a minimum of two straight 7' billets.

(3) non-millable stems failing to meet the specifications in (2).

Results.

		Number	Percentage	
Straight		19	2.2	
Slightly crooked	Retained	269	30.9	36.5
	Thinned	49	5.6	
Markedly crooked	Forks etc.	81	9.3	61.3
	Millable	278	32.0	
	Non-millable	176	20.0	
		872	100.0	

While these figures are not claimed to be characteristic of all high quality P. radiata there is evidence that they are not uncommon.

If we reduce these figures to a per acre basis we get:

Straight		10 stems.
Slightly crooked	Retained	155 stems.
	Thinned	30 stems.
Markedly crooked	Forks	45 stems.
	Millable	160 stems.
	Non-millable	100 stems.
		500 stems.

500 surviving stems per acre at this age is probably an optimistic assumption. Figures from a series of thinning plots in the adjacent (but older) compartment on a similar site indicate that the true average stocking is more likely to be 400 - 450 per acre.

How will the future management of this compartment be affected by this situation? Consider the first thinning, which is due in 2 years' time at the present rate of growth of this area.

On the current thinning prescription the stand will be reduced to 300 per acre at height 60'. To begin with, of the 200 stems to be eliminated, 100 are not millable. Of the 100 remaining to be chosen, 30 are suppressed trees which must come out. We also have 45 forks and multiple leaders. These also should come out, so we are able to mark only 25 of the 160 millable markedly crooked trees. This means that we have to carry on 135 stems of undesirable quality into later thinnings. They will still not all be removed after the second thinning.

The first thinning yield will be greatly reduced. Half the trees to be removed will yield nothing at all and many of the remainder will have their marketable volume reduced because of the necessity to dock out defects in the stem. The normal yield of 25 loads per acre will be reduced by at least half. If the true average stocking is less than 500 stems per acre the picture is even worse. Hence it may not be economical to thin at all.

In fact the best solution to the problem in this case seems to be to clear fell the lot and start all over again, planting this time at a much closer spacing, say 8' x 6', or about 900 stems per acre. An initial stocking of this nature would ensure that 300 stems of acceptable form would be available.

This compartment also demonstrates the necessity for tree breeding in P. radiata. Perhaps as a first step we might confine our seed collection to "plus stands" only.

****