

## NOTES.

### INCREMENT OF KAURI (*Agathis australis*)

Data were obtained from the examination of 50 trees during logging operations at Omahuta and Waipoua State Forests. Age was based on stump ring counts on the assumption that each ring represents a year. It is considered that this assumption is sufficiently sound for the present purpose.

Stump ring counts were made for each tree and merchantable volume (inside bark) calculated in cubic feet.

Average I.B. volumes were grouped into 50 year age classes and the mean class volumes, plotted over mean age, were found to exhibit a well-defined trend. The following values were read from this curve and periodic annual and mean annual increment determined:—

#### Merchantable Volume and Increment per Tree.

Age (No. of rings)	Volume I.B. Cubic feet	P.A.I. Cubic feet	M.A.I. Cubic feet
100	70	0.8	0.70
150	115	1.0	0.77
200	170	1.2	0.85
250	235	1.5	0.94
300	320	1.7	1.07
350	395	1.2	1.13
400	440	0.8	1.10
450	475	0.5	1.06
500	495	0.4	0.99

The P.A.I. culminates between the 275th and 300th year, while the M.A.I. culminates in the 350th year.

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### DROUGHT IN HAWKES BAY

Drought conditions experienced over most of New Zealand during the summer of 1945-46 were most severe in Central Hawkes Bay. The following monthly rainfalls for Napier and Waipukurau indicate the severity of this drought which broke on the 2nd March, 1946, and was fortunately followed by an autumn and early winter of unusual humidity and mildness.

	Napier			Waipukurau		
	Total Rainfall ins.	Deviation from Normal	No. of Rain Days	Total Rainfall ins.	Deviation from Normal	No. of Rain Days
November	0.02	—2.16	1	0.07	Not	3
December	0.93	—1.06	8	1.63	avail-	12
January	0.17	—2.53	4	0.49	able	6
February	0.00	—2.78	0	0.01		1
Total	1.12	—8.53	13	2.20	—	22

The effects on both indigenous and exotic trees were so pronounced as to lend support to the widely expressed view that this was the most severe drought experienced in Hawkes Bay for 50 years. Damage might well have been worse had it not been for the very favourable conditions in the autumn.

The first exotics to react to the drought were *Crytomeria japonica* and *Cupressus lawsoniana*. The latter which is widely planted for shelter was killed or died back severely on the drier sites over most of Central Hawkes Bay. In many cases the upper crown died but a few of the lower branches revived in the autumn. *Cupressus macrocarpa* was much less affected, but on alluvial gravel flats in the driest localities this tree showed, towards the end of the drought, a browning off and apparent death of all the foliage. In the autumn these trees made a surprising recovery: the browned foliage did not revive but new terminal growth occurred. However, the recovery was not sustained and in the following spring this new growth withered and considerable mortality occurred. It is yet early to assess the effect of disease on trees weakened by drought.

*Pinus radiata* suffered severely only on the driest gravel flats where in one case about 75 per cent mortality was noticed under forest conditions. Elsewhere there were cases of terminals of the weaker members of a stand dying back, but on the whole no serious damage occurred. Plantations about 10 years old seemed most susceptible.

Eucalypts on gravel flats suffered severe defoliation, but mostly put out fresh growth in the autumn. Larch and poplars also cast their foliage on drier sites, shooting again later.

Among indigenous species there was occasionally mortality among isolated and marginal rimu in the foothill zone where the average annual rainfall is upwards of 50 inches per annum but where this drought was, relatively, just as severe as on the lower country. Totara which is a common second growth species on well drained land browned off severely on the flats but made a good recovery later. Black beech showed some permanent damage.

The most striking feature in the incidence of drought damage was the relative immunity of trees growing on the hills, even where the soil was shallow and underlain by rock, compared with those on alluvial flats.

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## EXOTIC FORESTS AND RUNOFF

There is much popular enthusiasm for the planting of trees to regulate stream flow. But that such planting can be a double edged weapon is the experience of some farmers on the borders of both Maramarua and Riverhead State Forests in the Auckland Conservancy.