

ON KAURI GROWTH AND YIELD.

By A. D. McKINNON.

The following data were obtained during remeasurement of tagged kauri seedlings and saplings, examination of natural seeding plots at Waipoua Forest, and from increment borings, stump analyses and log measurements at Omáhuta Forest.

(1) Height Growth of Seedlings and Saplings.

(a) Seedlings and saplings were first measured in 1930. At the date of remeasurement (February, 1941), the vegetation on the sample plot consisted of an upper storey of mature manuka, towhai, tanekaha, kauri, toru and rewarewa 30 ft.—45 ft. high. Crown cover is approximately 80%. The intermediate storey consists of sapling kauri and tanekaha, mairehau, mingi, heketara, mahoe, alseuosmia, and karamu 6 ft.—15 ft. high, while the ground cover, consisting of seedlings of the above species, together with hangehange, punga, small ferns and lycopods, is fairly dense and 18 inches—4 ft. high. The remeasurement was made for the purpose of collecting data on rate of height growth of kauri seedlings and saplings under a fairly heavy cover.

1930 Height Class	No. of Trees	Average yearly increment
3 feet	155	0.8 inches
6 feet	18	2.0 inches
9 feet	5	2.0 inches
12 feet	5	2.5 inches
Total	183	Mean 1.0 inches

(b) To compare with the above, the rate of growth of vigorous saplings growing under conditions of approximately 75% overhead light, but receiving complete side shelter, the following measurements were made. Trees were first measured in 1930 and remeasured February, 1941.

1930 Height Class	No. of Trees	Average yearly increment
3 feet	2	10 inches
6 feet	6	9 inches
9 feet	6	12 inches
12 feet	3	10 inches
Total	17	Mean 10 inches

(c) Comparison of rate of growth of open grown and of sheltered kauri saplings.

Description	No. of trees	Height 1937	Height 1941	Yearly Increment
Open Grown Trees: —Full overhead and side light and exposed to ground level.	6	7' 2"	10' 0"	9"
Sheltered Trees: —75% overhead light and full side shelter.	6	10' 0"	13' 8"	11"

(2) Natural seeding of kauri in a mature stand.

A half-acre sample plot located in a representative stand of mature kauri, was, in 1937, cleared of all the shrub covering of kauri grass, small ferns, punga and small shrubs. An examination of twenty uniformly distributed 4 square yard sub-plots showed a stocking of 12 kauri seedlings per square yard, i.e. 58,000 per acre.

(3) Increment Borings.

Data obtained at Omahuta Forest from an examination of the dominant and co-dominant members of a well stocked group of kauri saplings and poles was as follows :—

D.B.H. Class Inches	No. of Trees Examined	No of Rings in last inch of Wood	No. of years to increase 1 in. in diam.	No. of years to pass through D.B.H. Class
6"	5	20	10	60
12"	14	10	5	30
18"	10	15	7	42
24"	7	12	6	36
30"	1	8	4	42

(5) Increment:

The following data were obtained from the examination of 30 trees during logging operations at Omahuta Forest. Age has been based on ring counts on the assumption that each ring represents a year.

Mean girth at b.h.	13' 2" (Ranging from 11' 1"—17' 1")
Mean merchantable height	49' (Ranging from 38'—84')
Mean merchantable volume	478 cubic feet
Mean No. of rings	365 (Ranging from 250—500)
Mean No. of rings per inch of diameter	8
Mean annual increment per tree	1.3 cubic feet



Photo R. W. G. Janson

PINUS LARICIO planted in 1933. Golden Downs State Forest, Nelson.
Trees in foreground were felled in 1936, but subsequently recovered.
COPPICING OF CORSICAN PINE

List of common names mentioned:—

Kauri	...	...	<i>Agathis australis.</i>
Manuka	...	...	<i>Leptospermum scoparium.</i>
Towhai	...	...	<i>Weinmannia spp.</i>
Tanekaha	...	...	<i>Phyllocladus trichomanoides</i>
Toru	...	...	<i>Persoonia toru</i>
Rewarewa	...	...	<i>Knightia excelsa.</i>
Mairehau	...	...	<i>Phebalium nudum.</i>
Mingi	...	...	<i>Leucopogon fasciculatus.</i>
Heketara	...	...	<i>Olearia cunninghamii.</i>
Mahoe	...	...	<i>Meliccytus ramiflorus.</i>
Alseuosmia	...	...	<i>A. macrophylla.</i>
Karamu	...	...	<i>Coprosma spp.</i>
Hangehange	...	...	<i>Geniostoma ligustrifolium</i>
Punga	...	...	<i>Cyathea dealbata.</i>
Kauri grass	...	...	<i>Astelia trinervia.</i>

COPPICING OF CORSICAN PINE.

The following example of unintentional coniferous coppicing is recorded from Golden Downs State Forest (35 miles from Nelson).

A compartment, elevation 1,500 feet, was planted in 1933 with *Pinus laricio*. In 1936, it was decided to widen the boundary fire-break adjoining this compartment, and to this end a chain strip of trees was cleared by slasher. An attempt was then made to burn the cut-over strip, but the results seem to have been somewhat patchy.

A recent inspection showed that where there was no burning, a remarkably high percentage of coppicing had taken place.

As shown in the photograph, the loss of three years has had little effect upon the average growth, and it is interesting to note that there are very few double leaders or otherwise malformed trees.

R. W. G. J.