NOTE

AVERAGE YIELD OF RADIATA PINE IN NEW ZEALAND STATE FORESTS

J. W. SHIRLEY*

The New Zealand Forest Service is in the initial stages of implementing a policy of formal annual revision of yield forecasts for State-owned plantation forests. This requires the identification of groups of stands of the same species which are expected to develop along a similar yield trajectory by virtue of similar site quality and silvicultural treatment. These groups of stands are called crop types. The whole of the forest estate is divided into crop types and area/age class distributions determined for each. A yield table showing the merchantable volumes in m^3/ha expected to be recovered at each age is then prepared for each crop type, using various data sources, including graphical analysis of sample plot data, application of growth functions to inventory data, inventories of recoverable volume, realisation studies and, at times, a best guess. For the State-owned radiata pine resource approximately 400 such yield tables are in existence. They cover the range of site quality which exists in the forest estate and represent, in volumetric terms, the results of silvicultural treatments which have been applied in the past.

With such data available it is possible to calculate a national average yield table for State-owned radiata pine, by weighting the individual yield tables of contributing crop types in proportion to their stocked area at a reference date.

The results of the calculation, using net stocked areas correct at 31 March 1983, are shown in Table 1. Most yield tables had to be extrapolated to cover the range of age shown. The current annual increments (CAI) of recoverable volume (m^3/ha) were calculated after the weighting process. The sharp decrease in CAI at the age of 41 is an artefact of the extrapolation technique used.

The national average MAI curve is relatively flat over a wide range of age from 28 to 47 years, and peaks at about 20 m^3/ha/year. The intersection with the CAI curve occurs at about 36 years, the age of maximum total recoverable volume production for this yield table. If stumpage prices are age independent and a public sector discount rate of 10% prevails, then the rotation of financial maturity is about 25 years. The introduction of a price size gradient would likely tend to increase the rotation of financial maturity.

*New Zealand Forest Service, Rotorua.

TABLE 1: AVERAGE RADIATA PINE YIELDS FOR STATE-OWNED FORESTS

Age (yr)	*Estimated Recoverable Volume* (m^3/ha)	*CAI Recoverable Volume* (m^3/ha)	*CAI Recoverable Volume* (%)	*MAI Recoverable Volume* (m^3/ha)
10	55			6
11	70	15	27	6
12	85	15	21	7
13	101	16	19	8
14	120	19	19	9
15	139	19	16	9
16	160	21	15	10
17	185	25	16	11
18	210	25	14	12
19	236	26	12	12
20	263	27	11	13
21	293	30	11	14
22	328	35	12	15
23	360	32	10	16
24	397	37	10	17
25	435	38	10	17
26	468	33	8	18
27	496	28	6	18
28	525	29	6	19
29	553	28	5	19
30	582	29	5	19
31	609	27	5	20
32	636	27	4	20
33	662	26	4	20
34	687	25	4	20
35	712	25	4	20
36	732	20	3	20
37	751	19	3	20
38	770	19	3	20
39	788	18	2	20
40	807	19	2	20
41	816	9	1	20
42	824	8	1	20
43	833	9	1	19
44	842	9	1	19
45	850	8	1	19
46	858	8	1	19
47	866	8	1	18
48	874	8	1	18
49	882	8	1	18
50	890	8	1	18

ACKNOWLEDGEMENT

New Zealand Forest Service Conservancy staff for providing the yield tables, I. C. Jenkin for doing the calculations and Dr C. J. Goulding for constructive criticism.