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Landcare Research
Manaaki Whenua

Titoki
Alectryon excelsus

INTRODUCTION AND METHODS

Reasons for planting native trees include the enhancement of plant and animal biodiversity for conservation, establishment of a native cover on erosion-prone sites, improvement of water quality by revegetation of riparian areas and management for production of high quality timber. Significant areas of the New Zealand landscape, both urban and rural, are being re-vegetated using native species. Many such plantings are on open sites where the aim is to quickly achieve canopy closure and often includes the planting of a mixture of shrubs and tree species concurrently. Previously, data have been presented showing the potential above- and below-ground growth performance of eleven native plant species considered typical early colonisers of bare ground, particularly in riparian areas (http://icm.landcareresearch.co.nz/research/land/Trial1results.asp). In this current series of posters we present data on the growth performance of six native conifer (kauri, rimu, totara, matai, miro, kahikatea) and two broadleaved hardwood (puriri, titoki) species most likely to succeed the early colonising species to become a major component in mature stands of indigenous forest (http://icm.landcareresearch.co.nz/research/land/Trial2.asp). Data on the potential above- and below-ground early growth performance of colonising shrubby species together with that of conifer and broadleaved species will help land managers and community groups involved in re-vegetation projects in deciding the plant spacing and species mix most appropriate for the scale of planting and best suited to site conditions.

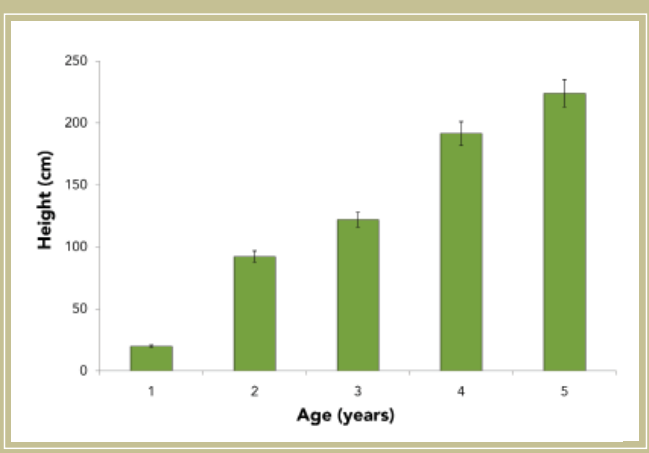
Data are from a trial established in 2006 to assess the relative growth performance of native conifer and broadleaved hardwood tree species. Ten plants were extracted each year for 5 years following establishment and their above- and below-ground growth parameters measured.

Plan view of 5-year old root system (see text box for dimensions)

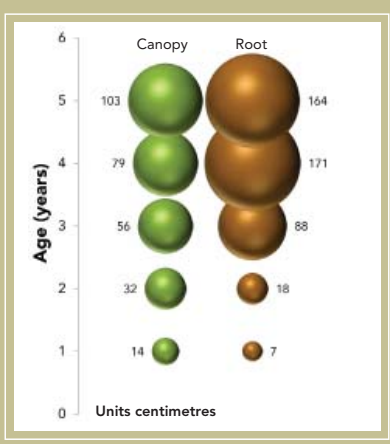
View of canopy and root system of a 5-year old plant (see text box for dimensions)

RESULTS

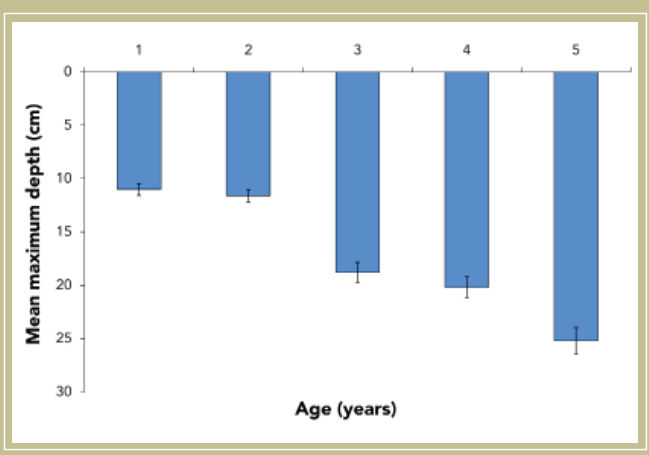
TREE HEIGHT



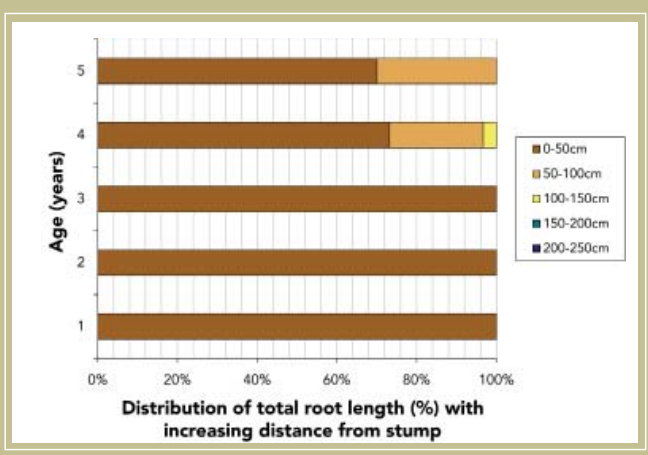
CANOPY AND ROOT SPREAD



ROOT DEPTH



ROOT LENGTH DISTRIBUTION



DISTRIBUTION AND SITE PREFERENCES

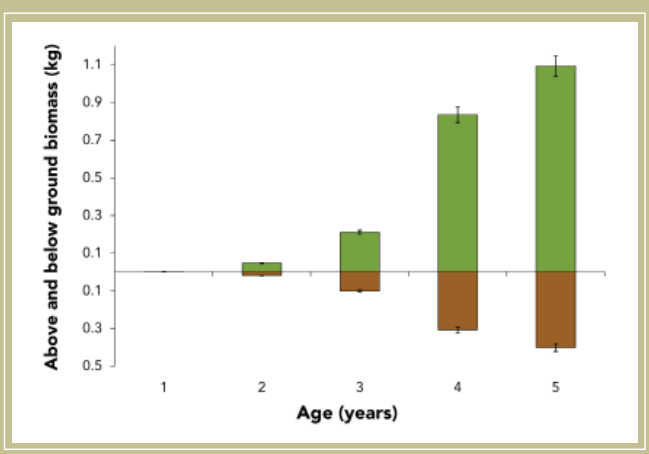
Occurrence	North Cape to Banks Peninsula, north Westland
Local occurrence	Montane and lowland forests, sea level to 600 m
Preferred soils	Lowland soils, well-drained and fertile alluvial flats
Moisture	Tolerates a wide range of moisture conditions
Properties	Brittle stems subject to frost and wind damage

SUMMARY OF GROWTH CHARACTERISTICS AT AGE 5

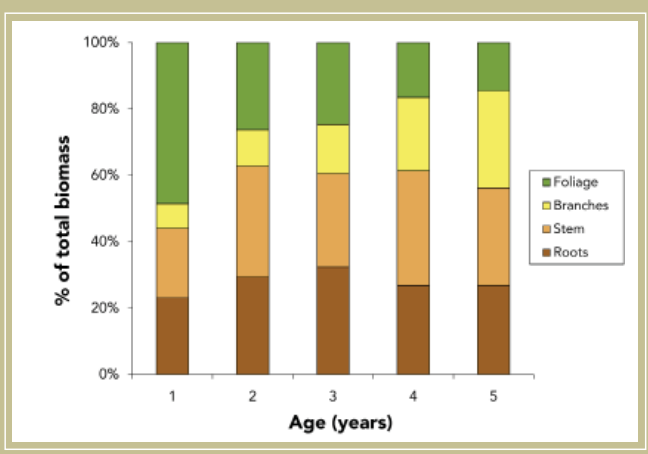
Mean Height	2.24 m
Mean canopy	1.03 m
Mean root spread	1.64 m
Mean max. root depth	025 m
Mean above-ground biomass	1.01 kg
Mean below-ground biomass	0.40 kg
Root:shoot ratio	0.41

Notes: Can reach a height of 10–18 m with a diameter of 1 m. Typically multi-stemmed. Has medicinal values. Very hard timber.

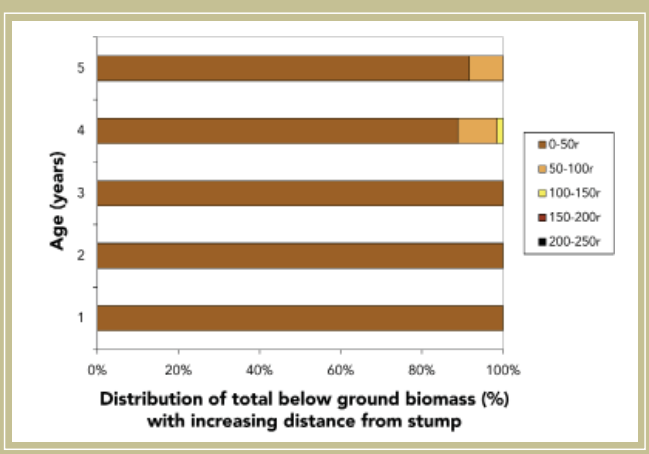
BIOMASS



TOTAL PLANT BIOMASS



ROOT BIOMASS DISTRIBUTION



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Poole AL, Adams NM 1994. Trees and shrubs of New Zealand (re-issue) Lincoln, New Zealand, Manaaki Whenua Press. 256 p.
Salmon JT 1986. New Zealand native trees. Auckland, New Zealand, Reed Books. 228 p.

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