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Landcare Research
Manaaki Whenua

Kahikatea
Dacrycarpus dacrydioides

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)

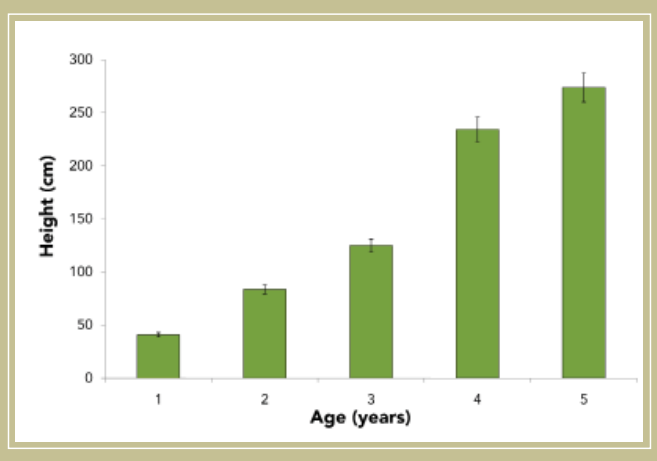
INTRODUCTION AND METHODS

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.

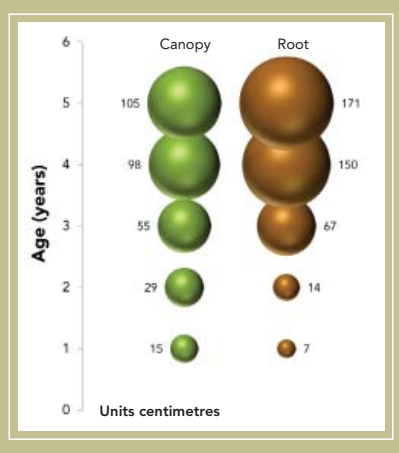
Data are from a trial established in 2006 to assess the relative growth performance of native conifer and broadleaved hardwood tree species. Ten plants were extracted each year for 5 years following establishment and their above- and below-ground growth parameters measured.

RESULTS

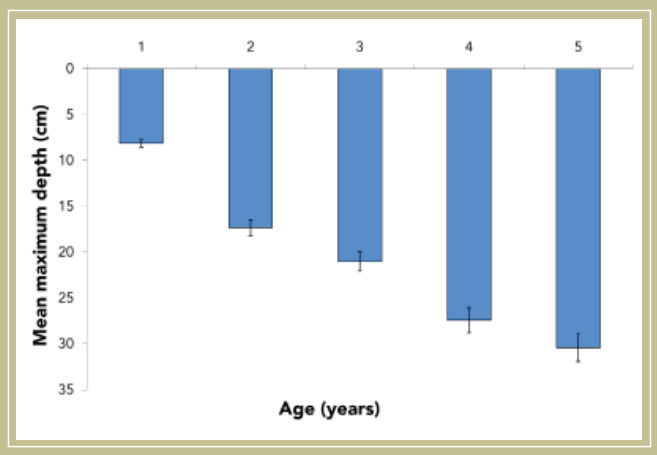
TREE HEIGHT



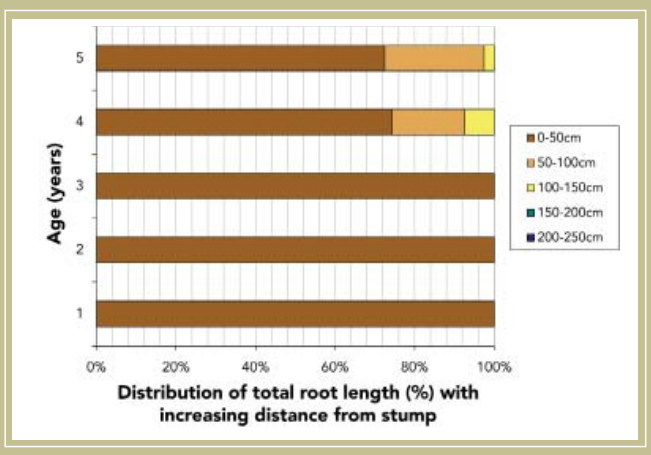
CANOPY AND ROOT SPREAD



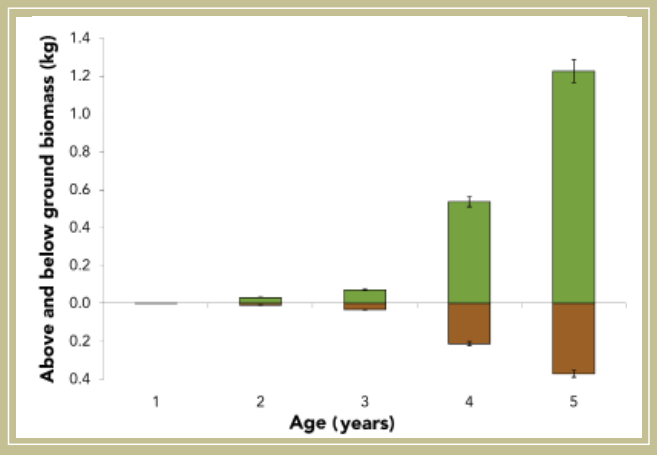
ROOT DEPTH



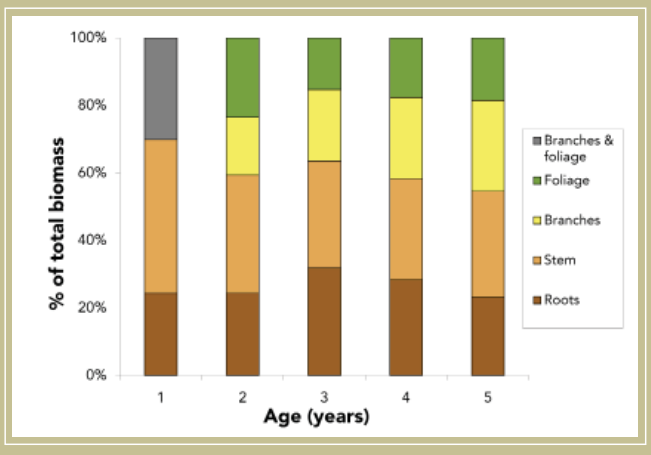
ROOT LENGTH DISTRIBUTION



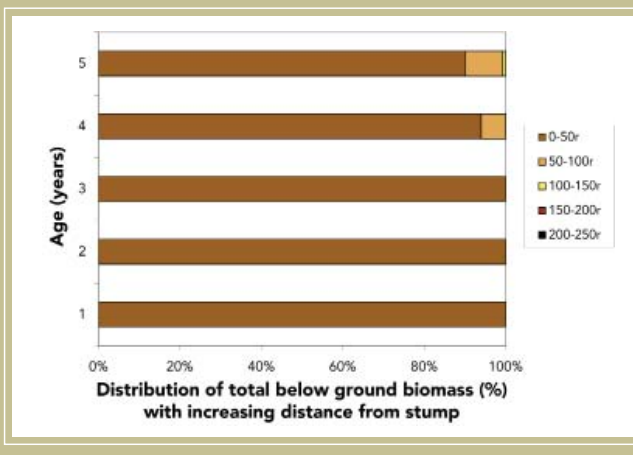
BIOMASS



TOTAL PLANT BIOMASS



ROOT BIOMASS DISTRIBUTION



DISTRIBUTION AND SITE PREFERENCES

Occurrence	North and South Island, rare on Stewart Island
Local occurrence	Dominant in swampy lowland and hilly forests, sea level to 700 m
Preferred soils	Wide range of soils from heavy clays to well drained pumice and alluvial soil
Moisture	Characteristically wet ground, intolerant of dry soils
Properties	Frost hardy, seedlings tolerate shade but prefer full overhead light and shelter. Grows to 60 m tall. Most trees 50–130 cm diameter. Is palatable to browsing animals. Brittle stems subject to wind damage

SUMMARY OF GROWTH CHARACTERISTICS AT AGE 5

Mean Height	2.74 m
Mean canopy	1.05 m
Mean root spread	1.71 m
Mean max. root depth	0.30 m
Mean above-ground biomass	1.23 kg
Mean below-ground biomass	0.37 kg
Root:shoot ratio	0.37

Notes: Thrives mostly in forests but occasionally also in groves or as separate trees. Tall flexible stems are vulnerable to over-topping by dense re-growth of ferns and hardwoods soon after planting. High survival and moderate growth rates on most sites except dry ones. Its longevity and suitability for primary succession on wet heavy soils make it useful for long-term erosion control, although Kahikatea does not tolerate heavy siltation. Damage can be caused by defoliating caterpillars, stick insects and browsing animals.

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