

Puriri

Vitex lucens

INTRODUCTION AND METHODS

Reasons for growing 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 regeneration 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 seven native plant species considered typical early colonisers of low ground, particularly in riparian areas: http://www.landcare.govt.nz/indigenous/planting/characteristics_of_native_species_plantings/. In this current series of papers we present data on the growth performance of six native conifer species: rimu, totara, matai, miro, kahikatea and totara broadleaf (hardwood) species. These species most likely to succeed the early colonising species to become a major component in mature stands of indigenous forest. Data on the potential above- and below-ground early growth performance of colonising shrubs by species together with that of conifer and broadleaf species will help land managers and commercial growers involved in re-vegetation projects in deciding the plant species and mixtures most appropriate for the scale, site conditions and best suited to site conditions.

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

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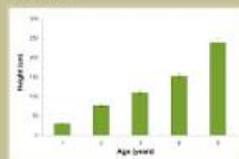


Five year old Puriri (left) and seven year old Puriri (right) for measurement.

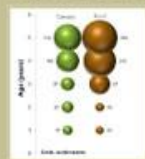
View of canopy and open space of a Puriri at 10 year old (right) for measurement.

RESULTS

TREE HEIGHT



CANOPY AND ROOT SPREAD



DISTRIBUTION AND SITE PREFERENCES

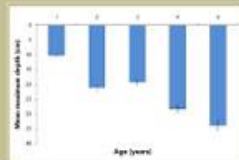
- Characteristics:** Well suited to cool and temperate climates, and to soils with a high water table.
- Local occurrence:** Lowland and coastal forests in warm temperate zones.
- Preferred soils:** Fertile, well-drained soil and basaltic and alluvial soils.
- Habitats:** Temperate wide range of moisture conditions including summer drought.
- Response:** Prone to frost damage and pest and disease.

SUMMARY OF GROWTH CHARACTERISTICS AT AGE 5

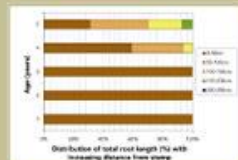
Mean height	2.30 m
Mean canopy	1.50 m
Mean root spread	1.54 m
Mean root depth	0.33 m
Mean above-ground biomass	700 kg
Mean below-ground biomass	120 kg
Root:shoot ratio	0.17

Notes: One of the fastest growing native tree species in early years after establishment. Multiple stems form from the base of the plant. Lowland and coastal forest conditions ranging to 20 m high and 1.5 m in diameter. Timber is clear, heavy, hard, strong and durable. Cupressoid wood.

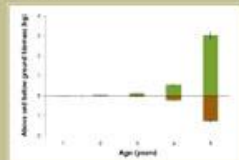
ROOT DEPTH



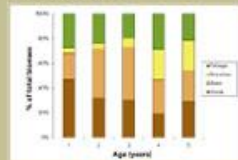
ROOT LENGTH DISTRIBUTION



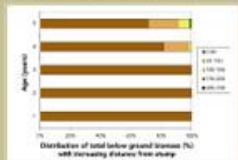
BIOMASS



TOTAL PLANT BIOMASS



ROOT BIOMASS DISTRIBUTION



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Totara

Podocarpus totara

Kahikatea

Dacrydium dacrydioides

Kauri

Agathis australis

Matai

Prumnopitys taxifolia

Miro

Prumnopitys ferruginea

Rimu

Dacrydium cupressinum

Titoki

Alectryon excelsus

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ROOT DEPTH

ROOT LENGTH DISTRIBUTION

BIOMASS

TOTAL PLANT BIOMASS

ROOT BIOMASS DISTRIBUTION