

# Lemonwood

## *Pittosporum eugenoides*

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### Introduction and Methods

The composition and extent of stream-side vegetation influences how well a riparian area functions and hence has a major impact on the state of streams. Though the role of exotic woody species such as willow is well recognised for improving bank stability, information on the performance of native woody species is limited. Thus, there is a need to quantify their effectiveness particularly as stream restoration enhancement projects involving native species increase in popularity.



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

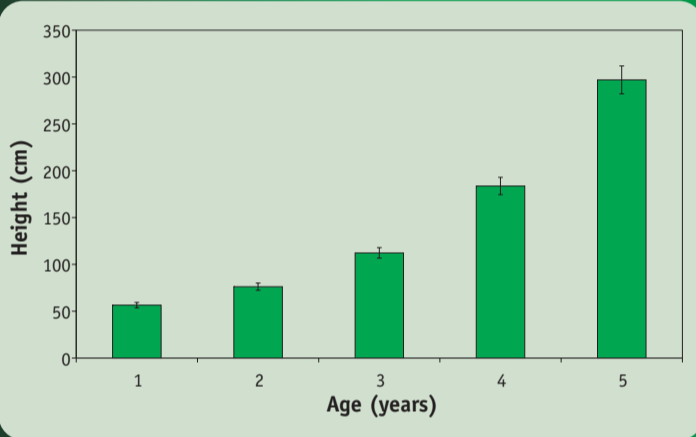
A trial was established in 1999 to assess growth performance of twelve 1 to 5 year-old native riparian plant colonisers. Ten plants were extracted each year and growth parameters measured.



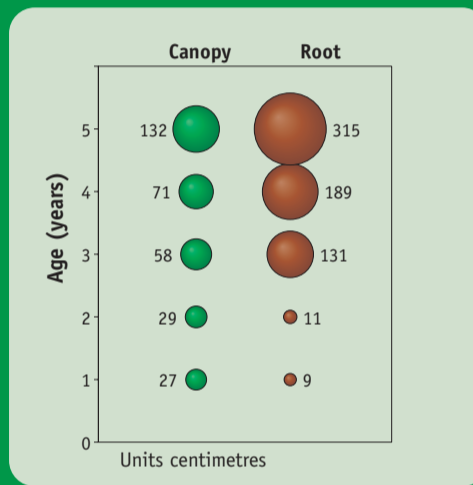
Plan view of 5-year old root system (see text box for dimensions)

### Results

#### Tree Height



#### Canopy and Root Spread



#### Distribution and Site Preferences

<b>Occurrence</b>	North and South Island
<b>Local occurrence</b>	lowland and low montane regions, along stream-sides, forest clearings, forest margins and second-growth forests
<b>Altitudinal range</b>	sea-level to 600 m
<b>Preferred soils</b>	fertile, uneroded soils
<b>Moisture</b>	on well-drained soils, not tolerant of waterlogged sites
<b>Properties</b>	frost tolerant, moderately wind tolerant

#### Summary of growth characteristics at age 5

<b>Mean height</b>	3 m, 12 m in adult trees
<b>Mean canopy</b>	1.3 m
<b>Mean root spread</b>	3.2 m
<b>Max. root depth</b>	0.3 m
<b>Mean above ground biomass</b>	4.2 kg
<b>Mean below ground biomass</b>	1.5 kg

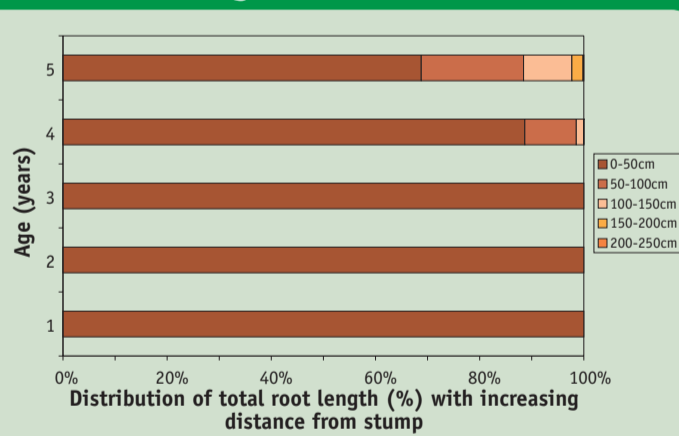
**Notes:** Suitable for revegetation on disturbed but not exposed, waterlogged or low fertile sites. Its fast early growth, tall and erect habit makes it a good nurse plant for other forest species. Roots have low (mean: 16.44 MPa) tensile strength (Watson, A., Marden, M. 2004).

Its widespread root network makes it suitable for streamside stabilisation in conjunction with other species. Its shallow rooting depth however makes it unsuitable for riverbank stabilisation in situations where bank height likely exceeds the maximum rooting depth (~2 m) of adult trees.

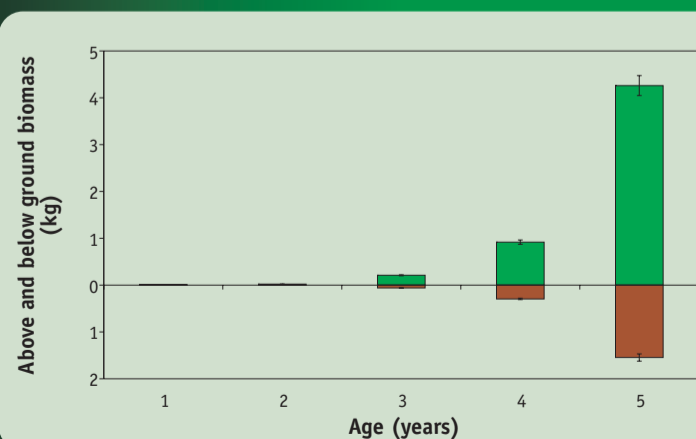
#### Root Depth



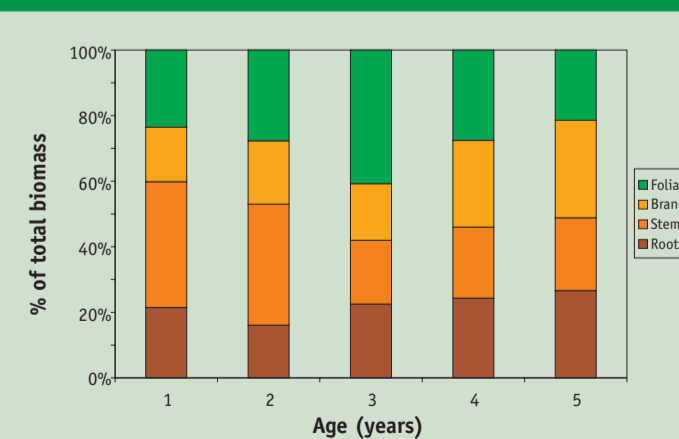
#### Root Length Distribution



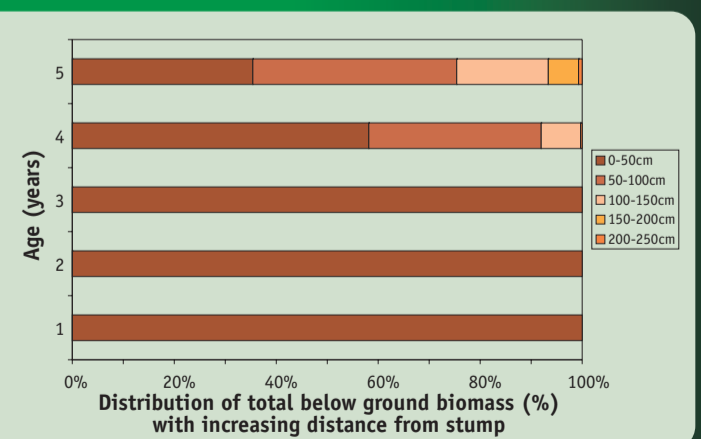
#### Biomass



#### Total Plant Biomass



#### Root Biomass Distribution



#### References

- Marden, M., Rowan, D & Phillips, C. 2005: Stabilising characteristics of New Zealand indigenous riparian colonising plants. *Plant and Soil* 278 (1-2): 95-105.
- Pollock, K. M. 1986: Plant Materials Handbook for Soil Conservation. Volume 3: Native Plants. Water and Soil Miscellaneous Publication No. 95, 66p.
- Watson, A., Marden, M. 2004: Live root-wood tensile strengths of some common New Zealand indigenous and plantation tree species. *New Zealand Journal of Forestry Science* 34(3): 344-353.

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- [http://icm.landcareresearch.co.nz/science\\_themes/freshwater/stabilising\\_characteristics\\_of\\_nz\\_native\\_riparian\\_plants.htm](http://icm.landcareresearch.co.nz/science_themes/freshwater/stabilising_characteristics_of_nz_native_riparian_plants.htm)