

Cabbage tree

Cordyline australis

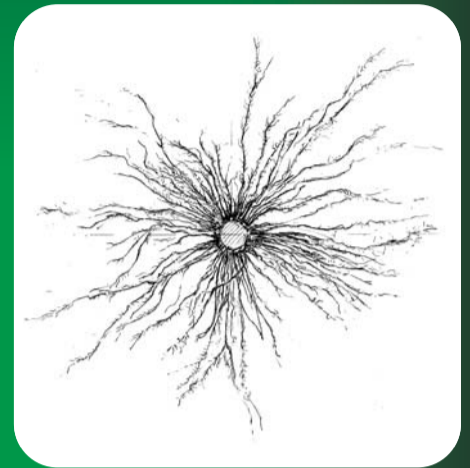
Introduction and Methods

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)

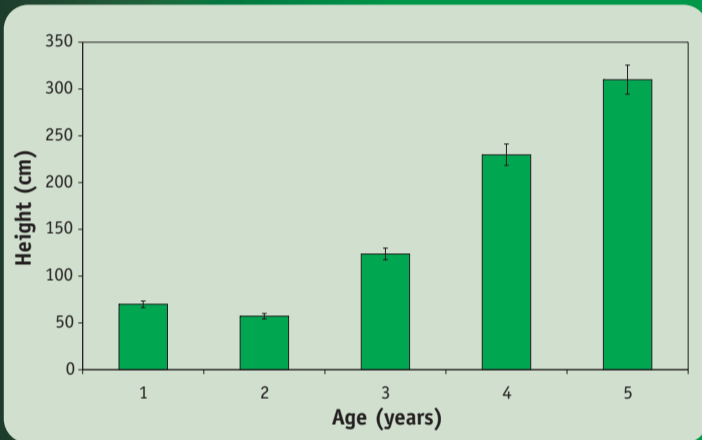
A trial was established in 1999 to assess growth performance of twelve 1 to 5 year-old native riparian plant colonisers. Ten plants were extracted each year and growth parameters measured.



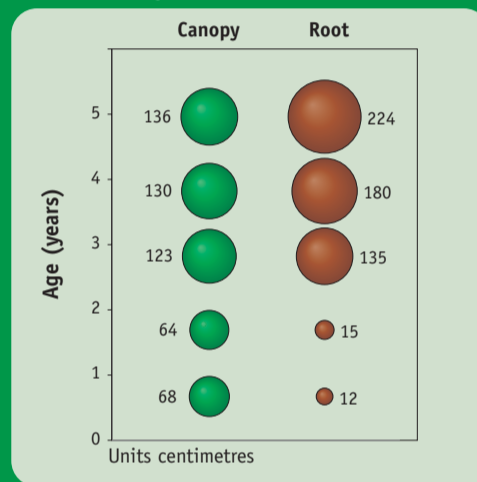
Plan view of 5-year old root system (see text box for dimensions)

Results

Tree Height



Canopy and Root Spread



Distribution and Site Preferences

Occurrence	North and South Islands
Local occurrence	open places and scrubland
Altitudinal range	sea-level to 800 m
Preferred soils	no preference (heavy or light)
Moisture	no preference (wet or dry)
Properties	grows in sand and gravel if moisture is not limiting

Summary of growth characteristics at age 5

Mean height	3.1 m, 5 to 13 m in adult trees
Mean canopy	1.4 m
Mean root spread	2.2 m
Max. root depth	0.4 m, can extend to 3 m depth in adult trees
Mean above ground biomass	11.3 kg
Mean below ground biomass	2.7 kg

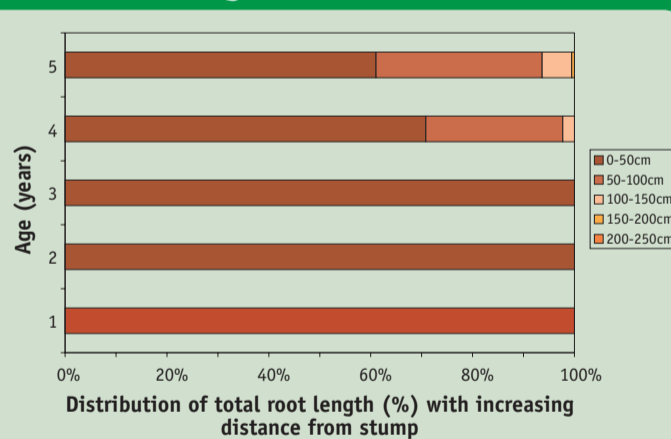
Notes: Has a distinctive taproot with numerous laterals at all levels and together with the ability to develop adventitious roots it is suited to planting on slopes where stabilisation is required. Roots have moderate (mean: 26.42 MPa) tensile strength (Watson, A., Marden, M. 2004). The production of adventitious roots from stems, branches and foliage enable plant propagation from vegetative parts and aids survival if buried, for example, by flood deposits.

Suitable for streamside stabilisation of small streams with stable banks either as single species stands or in conjunction with other species. Its relatively shallow rooting depth makes it unsuitable for riverbank stabilisation in situations where bank height likely exceeds the maximum rooting depth (~3m) of adult trees.

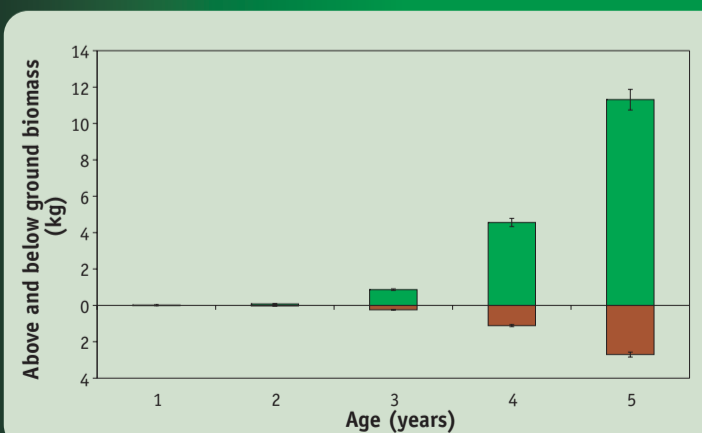
Root Depth



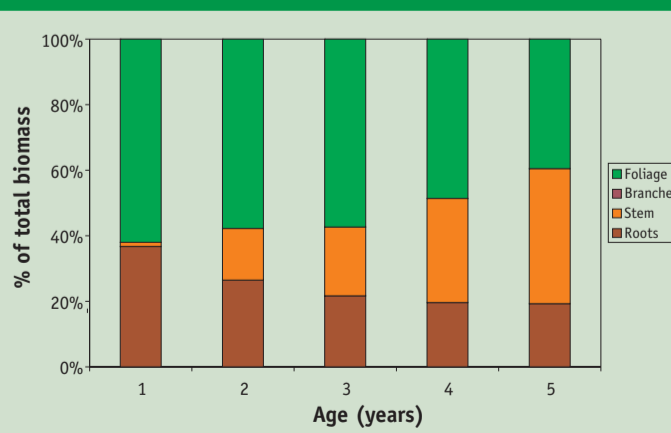
Root Length Distribution



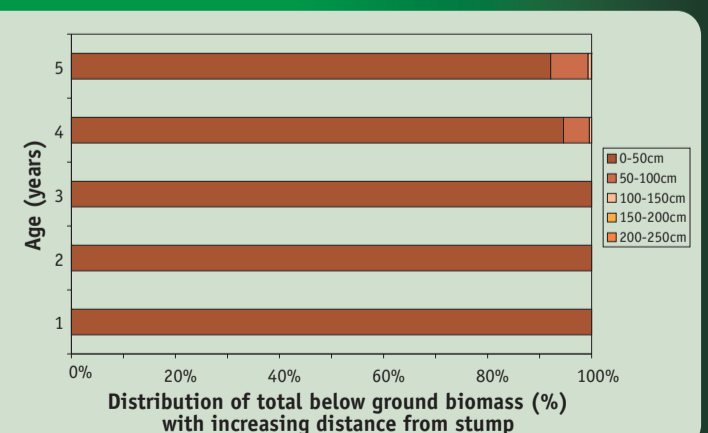
Biomass



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.

Acknowledgements

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- Sketches by Gisborne artist Graeme Mudge.
- http://icm.landcareresearch.co.nz/science_themes/freshwater/stabilising_characteristics_of_nz_native_riparian_plants.htm