

STREET TREE SPECIES TRIALS IN BRISBANE

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Introduction:

Trials of the first five of eleven indigenous tree species with potential for street tree use began in Brisbane last year. The aim of these trials is to expand the current recommended street tree species for Brisbane to especially showcase the natural biodiversity of this area. Increasing the use of indigenous tree species along Brisbane footpaths will not only encourage more use of such species in private landscaping but allow more appropriate species choices for new residential developments in environmentally sensitive areas.

Council's policy position at present is to choose new or replacement street tree species from a list of 25 tried and proven natives and non-invasive exotics. With a current street tree population of around 360,000 and plantings continuing at the rate of around 10,000 per year, a broader list of suitable species choices can help control the maintenance demands of this growing population, and improve the habitat value of Brisbane's streetscapes.

Healthy, attractive shade trees along streets continue to improve property values and support the outdoor lifestyle in Brisbane.

The trial species:

The eleven species chosen for trial were shortlisted from more than 50 species suggestions made by a local community group, The Brisbane Rainforest Action and Information Network (BRAIN) who have been revegetating creeks and rainforest remnant areas in Brisbane for many years. Their first hand experience provided informed suggestions which were screened down to the eleven species based on potential to perform in footpath conditions, ease of propagation, and lack of undesirable features such as prickly foliage, which cannot be tolerated in public spaces. Other reasons for excluding species were root issues, suckering, fleshy fruits, excessively slow growth, and poor shade provision.

BRAIN volunteers also provided fresh local seed for propagation of species that were not commercially available.

Preference was also given to small to medium shade tree species, which are in highest demand for renewal projects in existing suburbs with overhead powerlines, and some species which had shown good potential in smaller trials installed 12 years ago. Final tree heights and canopy dimensions were estimated for cultivated specimens, not those from native stands which are generally much taller with narrower canopies. Not all species chosen are native of wet rainforest environments, others are native of hardy dry South East Queensland rainforest scrubs. Although hardiness was considered, some rainforest species which prefer better sites, but have outstanding features, have been included in the trial. An overview of the Stage 1 trial species is provided in Table 1.

Methodology of the trial:

The field trials consist of planting up to 100 specimens of each species in at least four different districts of the city on a variety of footpath sites, using a minimum of 10 specimens in any one trial street site. Stock size is usually around 1 m tall within a 250mm diameter container. Stock quality is a critical element and has been consistently good to date, meeting Council's Street Tree Stock Standard. Planting takes place within either the "spring planting window" (Sept-Nov) or the "autumn planting window" (March-May). Residents living adjacent to the new plantings are informed, as per standard street tree plantings, of the species planted and some tree care tips. Regular watering, fertilising, weeding and mulch maintenance is provided at the same frequency as other standard street tree early care practices (weekly for first month and then monthly for next 11 months)

Planting site details and plant dimensions are recorded at planting and performance is monitored twice per year.

So far, 96 Tulip Satinwoods (*Rhodosphaera rhodantha*) have been installed on 10 sites. 87 Yellow Woods (*Flindersia xanthoxyla*) have been installed on 8 sites. 137 Whalebone Trees (*Streblus brunonianus*) have been installed on 5 sites, 18 Golden Ash (*Hodgkinsonia ovatiflora*) have been installed at one site and 20 Hard Quandong (*Eleaocarpus obovatus*) have been installed at one site.

Results so far:

Of the five species installed up to 15 months ago, all are performing satisfactorily so far through an exceptionally dry past 12 months in South East Queensland.

More specifically:

- Tulip Satinwoods have performed the best with an average of 450cm height increase (34%) and glossy healthy foliage
- Tulip Satinwoods on more fertile, moist soils appear to be performing better than those on poorer, drier sites
- Yellow Woods appear uniformly healthy but exhibited an average growth increase of only 10cm (.07%)
- There was variable performance evident between individual Whalebone Tree specimens with some showing dense, healthy growth compared to others showing yellowing of leaves and leaf drop in dry conditions. However, for all the latter specimens, healthy new buds are evident. There is negligible height increase in this species to date, with most biomass increase reflected in lateral growth.
- Whilst only 8 specimens of Golden Ash have been assessed to date, all specimens appear healthy and vigorous but with a negligible increase in height.
- No evidence of pests and diseases and 100% survival rates to date.
- Application of the liquid organic fertiliser during watering visits has contributed to shoot extension, even in winter. This is consistent with other street tree species performance since a change from inorganic to organic fertiliser.

The balance of the first five species stock, together with up to four of the remaining six species is scheduled for planting this spring. The Stage 2 trial species include:-

- *Dissilaria baloghioides* (Lancewood)
- *Alectryon tomentosus* (Hairy Bird's Eye)
- *Rapanea variabilis* (Muttonwood)
- *Aphananthe philipinensis* (Native Elm)
- *Atalaya salicifolia* (Scrub White Wood)
- *Brachychiton discolor* (Lacebark Tree)

It is anticipated that useful data on some of the faster growing species such as *Flindersia* and *Rhodosphaera* will be available by early 2004. Slower growing species such as the Whalebone Tree may take up to 4 or five years to reveal more about their potential as street trees in Brisbane.

Species which prove successful in these Brisbane trials could be expected to perform comparably from north coast New South Wales through to the Sunshine Coast.

This trial work is planned to continue and there are still many more potential street tree species to be found amongst the diverse rainforest flora of South East Queensland.

Table 1**Stage 1 Trial Species List and features**

<i>Streblus brunonianus</i> Whalebone Tree (Moraceae)			
General Description (ht, spread, foliage, flowers)	Tolerances/ Resistance	Lifespan	Other comments
<ul style="list-style-type: none"> • Small to medium size tree of dry rainforest • grows to approx 4 –6 metres in cultivation. • upright columnar to rounded dense canopy with thin, dark-green serrated lanceolate to ovate foliage -lightly sandpaperish to touch (3 - 8cm long x 3cm wide). • Flowers insignificant • fruit a small yellowish 5mm berry • closely related to Sandpaper Fig and Rough-leaved Elm 	<p>Known to look good even after being neglected</p>	<p>Unknown but not shortlived</p>	<p>Trees may be seen in the wild at Rafting Ground Reserve</p> <p>Propagation from cuttings</p> <p>Useful shade tree</p> <p>Extremely tough and flexible timber. Called Whalebone Tree because stiff tough timber used to make women's corsets</p>
<i>Elaeocarpus obovatus</i> Hard Quandong (Elaeocarpaceae)			
<ul style="list-style-type: none"> • Bushy tree to > 10m tall in the wild (likely to be up to 6-8m in cultivation) • elliptical leaves 10cm x 3.5 cm. • occurs naturally along Brisbane creeklines, • Becomes covered in sprays of tiny white bell flowers in spring - highly scented • attractive round blue berries. • reasonably fast growth rates in cultivation. Like moisture. Slight buttressing at base in older specimens. 	<p>Adaptable to wide range of situations and soil types.</p> <p>Tolerant of wet soils and shade</p>	<p>Longlived.</p> <p>Remnant specimen in Rotary Park, cnr Graham Rd & Gympie Rd, Carseldine 10m high</p>	<p>Birds are attracted to fruit</p> <p>Cultivated specimen at entrance to Downfall Creek Bushland Centre, McDowall</p> <p>Propagation by cuttings mainly as seed difficult to propagate.</p> <p>Not commonly available</p> <p>White, hard & tough wood. Used in making oars and furniture</p>

<i>Rhodospaera rhodantha</i> Tulip Satinash (Anacardiaceae)			
General Description (ht, spread, foliage, flowers)	Tolerances/ Resistance	Lifespan	Other comments
<ul style="list-style-type: none"> • Medium sized fast growing tree to 20m in wild (possibly 8-10m in cultivation) • pinnate lanceolate leaflets to 7cm long. • bears sprays of red small flowers in spring • glossy brown dry berries 1.2cm in diameter that tend to remain on the tree. • separate male and female trees. 	BRAIN members suggest insect attack may be problem in young specimens occasionally but doesn't affect tree	Longlived	Beautiful foliage plant Highly ornamental species Semi-mature specimens at Kevin Daley's Nursery, Belmont
<i>Flindersia xanthoxyla</i> Yellow Wood or Long Jack (Rutaceae)			
<ul style="list-style-type: none"> • Large straight tree up to 15m high in cultivation (>20m in the wild) • spreading canopy. • deep green thin leaves; pinnate 75cm long with 4 – 11cm lanceolate leaflets each to 10cm long. • bears small yellow flowers in terminal clusters • oblong woody brown 7-10cm pods covered with small prickles 	Tolerates heavy shade	Long lived	Attractive foliage and useful shade tree. Propagate from fresh seed. Easy to grow. Strong durable timber
<i>Hodgkinsonia ovatiflora</i> Golden Ash (Rubiaceae)			
<ul style="list-style-type: none"> • Small to medium sized tree to 6m • rounded canopy . • flowers insignificant followed by masses of black berries 0.5 cm wide. 	Quite tough but probably prefer better sites	Long lived	Birds just love fruits. Berries on ground not a problem underfoot –not mushy.

(NB: The maximum heights shown in the table below for some of the species may be considerably lower than those quoted in reference texts. This is because the latter are usually referring to specimens in closed forest conditions where strong light competition exists with surrounding trees. The heights quoted below however are recorded from open grown specimens in cultivation).