

Brachychiton Breeding and Selection[®]

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HYBRIDISATION

Current Parentage of all Hybrids.

- *Brachychiton grandiflorus* Guymer
- *Brachychiton bidwillii* Hook.
- *Brachychiton garrawayae* (Bailey) Guymer
- *Brachychiton velutinosus* Kostermans
- *Brachychiton acerifolius* (Cunn. Ex G. Don) Macarthur
- *Brachychiton* ×*carneus* Guymer (*B. grandiflorus* × *B. garrawayae*)
- *Brachychiton* ×*roseus* Guymer nothosubsp. *roseus* (*B. acerifolius* × *B. populneus*)

Hybrids Currently Flowering.

- *Brachychiton* ×*carneus* ♂ × *B. bidwillii* ♀
- *Brachychiton bidwillii* ♂ × *B. grandiflorus* ♀
- *Brachychiton bidwillii* ♀ × *B. velutinosus* ♂

Hybrids Yet to Flower.

- *Brachychiton* ×*roseus* ♀ × *B.* ×*carneus* ♂
- *Brachychiton* ×4W4N ♂ × *B.* ×*roseus* ♀

There are five sections in *Brachychiton* each with unique characteristics that can be utilised in this program.

Hybrid Variation with Di-Specific Parentage (F₁ Hybrids). The hybrids with two parents show a general split equal to half way between each parent and are relatively predictable with flower colour, size, leaf shape, and growth habit, though the more vigorous tree species tend to have greater influence on precocity and number of flowers, in young plants at least. *Brachychiton grandiflorus* tends to add a little less predictability as the flowers on this species open white and “fade” to a deep pink by the third day.

Hybrid Variation with Tri-Specific Parentage (F₂ Hybrids). Hybrids combining three parents have exhibited great variation in expression of traits from absolute duds with all the worst attributes from each parent to types that are absolutely stunning with large flowers from *B. grandiflorus*, precocity from *B. bidwillii* and *B. Garrawayae*, and compact growth from *B. bidwillii*.

Flower colour tends to be dominated by shades of red in the above hybrids but corolla shape is quite variable both in fusion of petals and the apical shape of the petals, however, oranges and salmons or pinks are also reasonably represented creating a great range to choose from.

Hybrid Variation with Tetra-Specific or Penta-Specific Parentage (F₃ Hybrids). Presently the most exciting prospect would be hybrids with four or five parents. Current seedlings are between *B.* ×*carneus* × *B. roseus* with four parents and (*B.* ×*carneus* × *B. bidwillii*) × *B.* ×*roseus* with five parents. These

combinations will produce some less spectacular specimens as well as some absolutely stunning combinations.

Flowering and Precocity. In July 2007, Lismore experienced a severe frost with -6.5°C reached at the local airport 4 km from the growing area. Several taxa were frosted to the ground and have been lost. Some taxa were moderately affected with tip burn losing 200–300 mm of fresher growth while others were unaffected, demonstrating a range of levels of hardiness within the trial crosses.

Plants deemed suitable for trialling are selected for the size, colour, and number of flowers as well as the size and growth habit of the shrub or tree. Several parameters have been selected for to satisfy different possible ornamental applications such as growth habit, foliage form, and coloration.

Cultivar Selection. Cultivars are selected on yearly repeat flowering, flower size, and number.

Flowering period is typically 3–4 months with a peak flowering period of 1–2 months and usually extends from September to January unless a hail storm removes all the flowers as it did in October 2007. This occurred when there was peak flowering with 40–50 pods set with new hybrid combinations, all lost in the second hail storm.

FUTURE DIRECTIONS

Species. The next direction is to bring other species and natural hybrids into the combination such as *B. discolor* F. Muell for the spectacular candy-pink flowers.

The other two species that are desirable for their spectacular trunks are *B. australis* (Schott & Endl.) A. Terracc. and *B. rupestris* (Mitchell ex Lindley) Schumann. Both of these species have bottle trunks and insignificant white flowers that are borne prolifically on terminal panicles.

Panicle inflorescences are common in the white-flowered species and will create great effects when combined with the axillary and ramiflorous flowering species of many of which have red or orange flowers.

Unfortunately 2007 also saw an extreme attack from monolepta beetles and resulted in total defoliation of the *B. australis* parent I had planned to use in a new series of crosses. This season is close and I am excited at the possibility to try these crosses again.

Genetic Manipulation. Several of the hybrids regularly exhibit flowers with extra petals sometimes almost double the normal. These flowers are larger with recurved petals and look quite different. If this trait can be developed in a variety the plants would be even more stunning.

Along with extra petals in the same layer several hybrids exhibit the production of small petals in a separate layer outside the fused corolla. The potential for double flowers in both corolla layers and increased petal numbers is exciting.

I will be investigating the use of compounds to induce mutation to try and obtain plants with regular flower variation as outlined above. This process may also help accentuate the bottle shape of many of the trunks of the non-bottle-trunk parents.

The next step is to induce and isolate triploids and tetraploids to enhance desirable flower and vegetative characters.

Natural Disasters. As mentioned earlier, the 2007 season has thrown a few nasty natural extremes at the trial block starting with a severe frost, the worst in living memory, three hail storms in a week, one severe, and then a flood followed by 3 months of wet and miserable weather. This has rogued out a few selections and shown the capability of others with many withstanding all that they have been subjected to.

LITERATURE CITED

Guymer, G.P. 1988. A taxonomic revision of *Brachychiton* (Sterculiaceae). Aust. Syst. Bot. 1(3):199–323.