

## **EUCALYPTS WITH POTENTIAL FOR STREETS**

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The eucalypts (genera *Eucalyptus*, *Corymbia* and *Angophora*) are a group of trees, mallees and shrubs distributed almost exclusively in Australia, but with a few species extending to New Guinea and a few other island to the north of the continent. The eucalypts dominate many Australian landscapes and are present in almost all landforms throughout Australia, being absent only from tropical rainforest and some extremely arid environments in central Australia. The eucalypts vary in form from almost prostrate shrubby groundcovers such as *Eucalyptus vernicosa* to the largest flowering plants in the world in *E. regnans*, which can grow to over 100 metres tall. Approximately 1000 taxa (species and subspecies) are known, with new species still being recognised. The majority of these species are poorly known or unknown in cultivation and their potential for a myriad of uses is unknown. Some appear to have potential in suburbia for uses such as street trees and garden and park plantings because of their unique combinations of ornamental appeal and suitability for a range of specific sites.

### **THE ROLE OF CURRENCY CREEK ARBORETUM IN ASSESSING THE POTENTIAL OF EUCALYPTS FOR STREET TREES**

Currency Creek Arboretum (CCA) is a specialist eucalypt arboretum located approximately 80 km south of Adelaide in South Australia. As of January 2002, CCA had approximately 6000 plants from 1800 accessions of 850 eucalypts species and subspecies growing. CCA is helping to assess eucalypt species for street tree potential in the following manner:

- Basic knowledge on each species characteristics. The flower colour of *E. histophylla* was unknown and assumed to be white (based on related species) until the species was grown to maturity at CCA and flower colour was seen to be consistently yellow. Tree and mallee forms of *E. conglobata* was shown to be caused by site conditions alone as both developed into small bushy trees at CCA.
- Basic knowledge on each species site suitability. Growth rates, survival rates, and health indices are recorded for all plantings at one-year intervals. Time to first bud initiation and first flowering are recorded.
- Assessment of ornamental qualities including form, bark, foliage, flowers and fruits.

Examples:

*Angophora euryphylla* (form and bark)

*Corymbia ficifolia* (form and flowers)

*E. apodophylla* (bark and foliage)

*E. macrocarpa* subsp. *elachantha* (foliage and flowers)

*E. synandra* (foliage and flowers)

*E. wyolensis* (foliage)

*E. youngiana* (flowers and fruit)

## **THE RECOGNITION OF REGENERATIVE STRATEGIES IN THE SELECTION OF POTENTIALLY USEFUL STREET EUCALYPTS**

Through research at CCA and much field work, it has become apparent that there are distinctive regenerative strategies amongst the eucalypts that will have an impact of the selection of species for street trees. Two main groups can be identified, obligate seeders and resprouters. Obligate seeders will regenerate only by seed and are killed by terminal crown destruction. Resprouters will regenerate vegetatively via epicormic shoots as well as regenerate by seed.

### **Obligate seeders**

General characteristics:

- Very quick growing.
- Tend to be short lived (10-20 yrs), at least in natural conditions, death usually resultant from wildfire.
- Killed by terminal crown destruction caused in the wild by fire or in cultivation by severe pruning of accidental damage.
- Can be prone to wind damage

Common examples of obligate seeders used as street trees, with varying effectiveness include *E. spathulata*, *E. sargentii*, *E. platypus*, *E. torquata*, *E. steedmanii* and *E. woodwardii*.

### **Resprouters**

General characteristics:

- Are not generally as quick growing as obligate seeders.
- Are usually very long lived (2000 yrs + have been reported.)
- Will resprout following terminal crown destruction (fire, pruning, other damage)

The resprouters can then be classified into three groups amongst the eucalypts, depending on where the species will resprout following terminal crown destruction.

Lignotuber sprouters (mallees) resprout from a lignotuber at ground level only and stem coppice is absent. Common examples used as street trees, with varying effectiveness include *E. caesia*, *E. formanii*, *E. viridis*, *E. diversifolia*, *E. erythronema* and *E. macrocarpa*.

Stem sprouters resprout from the stems and branches only as a lignotuber is absent in such species. Common examples used as street trees, with varying effectiveness include *E. cladocalyx*, *E. gomphocephala* and *E. punctata*.

Combinations sprouters resprout from stems and branches and also from the lignotuber if the damage is severe. Common examples used as street trees, with varying effectiveness include *Angophora costata*, *C. maculata*, *C. ficifolia*, *C. ptychocarpa*, *E. sideroxylon*, *E. leucoxylon*, *E. erythrocorys*, *E. mannifera* and *E. miniata*.

## THE DISCOVERY AND RECOGNITION OF NEW EUCALYPTS WITH POTENTIAL IN SUBURBIA

The discovery of new eucalypt species has declined gradually over the last few decades, as most areas in Australia are now relatively accessible due to improved transport and technology. Most new discoveries are made in remote areas, such as the deserts and northern Australia, or in relatively small inaccessible areas such as on mountain peaks.

A far greater number of eucalypt species have been discovered for some time, but due to various factors, remain untried in cultivation and as such are poorly known in terms of their potential.

Examples of recently discovered eucalypts with potential as street trees include:

(Southern regions)

- The purple-crowned silver mallet (*Eucalyptus purpurata m.s.*). A soon to be named small tree from powdery white loam in southern W.A. with reddish-purple new growth.
- *E. mimica*, a recently named small erect tree with fine, dark green foliage from saline flats in southern W.A.
- Pink flowering variant of *E. cosmophylla* known from Fleurieu Peninsula in S.A.
- *E. mcquoidii*, a recently named small bushy tree from coastal southern W.A. with fine foliage and large, elegant buds and greenish yellow flowers.
- *E. x stoaptera*, a recently discovered natural hybrid between *E. stoatei* and *E. tetraaptera* from southern W.A., having the small tree form of the former and large colourful buds and flowers intermediate between the two species.
- *E. urna*, a common but recently named medium tree from limestony soils in southern W.A. with good form and very shiny green leaves.
- *E. victoriana*, a small stringybark from the Grampians (Vic.) with good form and deep green foliage.

(Tropical regions)

- *Corymbia aspera*, a small ghost gum (powdery white bark) from very rocky sites in semi-arid northern Australia.
- *C. flavescens*, a small ghost gum with undulate, shiny green leaves from the Pilbara (W.A.) to Mt Isa (Qld.) regions of northern Australia.
- *E. brachyandra*, a small tree with light green rounded leaves (like a poplar) from cliff faces or otherwise very harsh sites in far northern W.A. and N.T.
- *E. ceracea*, a recent discovery from the northern Kimberley (W.A.), a small tree with silver leaves and large clusters of orange flowers.
- *E. aff. melanophloia*, a mallee ironbark from the Mt Isa (Qld.) area with silver foliage.

As well as these taxa which are untried in cultivation, some newly recognised or newly trialed species are known to be superior to related well known species used in suburbia in terms of greater ornamental appeal and/or superior site tolerances.

Examples of poorly known eucalypts which may be superior to their more well-known counterparts as street trees include:

- *Angophora leiocarpa* which is superior to the popular *A. costata* (the former has finer, graceful leaves and smaller capsules; originates from lower rainfall areas).
- *Eucalyptus petiolaris* which is commonly planted and superior to the easily confused *E. leucoxylon* (the former has a more graceful crown, more varied flower colours, the flower colour breeds true; tolerates saline soils).
- *E. preissiana* subsp. *lobata* which is superior to subsp. *preissiana* (the former has a lower habit, larger leaves, buds and fruits; grows on coastal limestone bluffs).
- *E. astringens* subsp. *redacta* which is superior to subsp. *astringens* (the former is a smaller tree, smoother bark, smaller capsules).
- *E. kingsmillii* subsp. *alaticissima* which is superior to subsp. *kingsmillii* (the former has red flowers (rather than pale yellow), winged buds and fruits and pruinose branchlets).

No doubt further eucalypts will be continue to be discovered, recognised, trialed and selected for that will be superior to the species we know today and be suitable for increasingly difficult sites.