

Eucalyptus as a Landscape Tree¹

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There have been 5 distinctly different studies by Cooperative Extension from the Hayward Office in the last 15 years involving the genus *eucalyptus* and are briefly discussed.

1. Landscape Tree Evaluations: two studies

a) Known as the LTE project, this study, initiated in 1971, involved Extension advisors in 15 counties under the leadership of Extension Specialist, W. B. Davis. We evaluated a range of *Eucalyptus*, most of which were not in the trade. We also evaluated problems related to the site. Forty-three species were selected which were known to have a broad range of adaptability. Seed was obtained from a commercial company in New Zealand and container-grown at University of California, Davis. While growth measurements were made yearly and problems noted, a final rating was made as to the acceptability of the species for the site, from outstanding to unacceptable. In order for a candidate species to be considered outstanding statewide, the species had to be planted at 11 or more project sites which had a wide range of climates and soil conditions and the majority of ratings had to be 4 or 5. Of the 43 candidates, three ranked as outstanding: *E. botryoides*, *E. camaldulensis rostrata* and *E. aggregata*. Three species were given a special ranking for salinity tolerance: *E. platypus*, *E. spathulata* and *E. sargentii*. Much more information is included in the Report on Evaluations of Several *Eucalyptus* Species, edited by W. B. Davis.

b) The Landscape *Eucalyptus* Tree - An Evaluation Study 1971-78, is the title of a study conducted at the University of California Deciduous Fruit Station in San Jose by W. Douglas Hamilton, Cooperative Extension. Seed sources were botanical gardens in Australia. The plants

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Abstract: Ninety-two species of *Eucalyptus* were evaluated at the University of California research station in San Jose. The purpose: to find acceptable new street and park trees. Growth rates and horticultural characteristics were noted. Forty-three species were studied in locations statewide to evaluate site adaptation and landscape usefulness; flooded, cold, dry, saline. Susceptibility-to and recovery-from the prolonged freeze of December 1972 was studied and published. Species response was wide. Prevention of unwanted resprouts was studied. Four alternatives for success were offered.

were grown under the direction of Andrew Leiser, Department of Environmental Horticulture, UC Davis. Ninety-two species were planted; about half in April, 1971, the others in October, 1971. Several observations were recorded.

The April planting quickly became established. The October planting was stunted by the winter temperatures and recovered slowly the following spring, although no difference could be noted after the first year.

All species were measured for height and trunk circumference annually and growth habit, whether mallee or single trunk was noted. Notes were also taken on relating strength of branch angle attachment and flowering. Also, all species were evaluated regarding injury-and-recovery to the 1972 freeze.

Leaf, twig, fruit litter accumulation was measured each month for one year in an effort to evaluate fire hazard and trashiness.

Thirteen species were rated as "most promising" by the author and by industry groups: landscape architects, principal park people, etc. Growth habits, adaptation to the site and possible usefulness were considered among the "winners": *E. accendens* (street tree), *E. archeri* (small, cold tolerant, florist trade), *E. blakelyi* (street tree for cismontaine California), *E. bosistoana* (attractive in nursery, "clean" skyline tree), *E. burdettiana* (small, boxy, exudes character for non-frosty locations), *E. grandis* (50 feet in 5 years, self pruning to single trunk and thus "dirty," fast growing windbreak in mild climate), *E. gunii* (narrow upright, "clean" on droughty soils), *E. intertexta* (a weeping "mayten," excellent patio tree, variable), *E. scoparia* (a more open and "weeping" *E. viminalis*). The report is available from the Hayward Extension office.

2. Damage and Recovery to *Eucalyptus* Resulting from the December 1972 Freeze.

From December 8 through December 15, minimum temperatures at the San Jose research station and

generally in the San Francisco Bay Area were below freezing; 23°F to 28°F, maximum temperatures ranged from 36°F to 48°F, but mostly near 40°F. This provided an opportunity to evaluate injury and recovery to all the Eucalyptus and note effect of spring and fall planting dates to 1.5 years before. The injury rating scale was: 1 - no visible damage; 6 - above-ground plant dead. An early recovery rating was made on January 4, 1973. A late recovery rating was made on July 26, 1973: 1 - complete recovery or no damage; 6 - dead or no recovery.

Regarding freeze injury, planting date did not appear to affect freeze injury although no one species was planted on both dates. Cold tolerance and recovery of promising species mentioned earlier is as follows:

Ratings (average)

<u>Species</u>	<u>January 4</u>	<u>July 26</u>
<u>E. accendens</u>	3	3
<u>E. archeri</u>	planted after freeze	
<u>E. blakelyi</u>	1	1
<u>E. bosistoana</u>	4	2
<u>E. burdettiana</u>	4	5
<u>E. grandis</u>	2	1
<u>E. gunii</u>	1	1
<u>E. intertexta</u>	2	1
<u>E. scoparia</u>	1	1
<u>E. microtheca</u>	1	1
<u>E. spathulata</u>	3	3
<u>E. maculosa</u>	2	2
<u>E. populnea</u>	1	1

3. The top-kill of between 2 and 3 million bluegum and river redgum Eucalyptus in the Oakland-Berkeley hills raised many questions: how to avoid a fire danger from the litter and resprouts, how to open fire lanes and biking trails, protect views and how to generally prevent Eucalyptus from resprouting where they were unwanted. Methods used in Australian forests were untenable in the urban areas. In view of this, field research was initiated in 1973 and numerous trials were conducted through 1978. Two methods were successful (+97 to 100 percent control). One was to cut the stump to 4 to 6 inches below the ground surface. A survey of the points of attachment for bluegums indicated that all sprouts originated between ground level and 4 inches below. The second method was to make a fresh cut near the ground level, into the wood. It is essential that the cut be continuous. Into this cut, whether it be the whole cross-section or just the ax frill, is poured a solution (50 or 100 percent); 2,4-D water soluble amine (Weedar-64), glyphosate (Roundup), or the granular material ammonium sulfate (Ammate-x). Other materials were tested on an experimental basis, but are not available or not registered for this use.

4. Control of trunk sprouts with growth regulators on the landscape tree was successfully tested more than 10 years ago by R. W. Harris,

R. M. Sachs and R. E. Fissell at UC Davis. Sprouts on E. camaldulensis and E. viminalis were prevented from developing by the application of 1 percent naphthalene acetic acid (NAA). Results were significant at the 1 percent level. Translocations of materials stayed at the sprout attachment, so no injury to the trees was observed.

5. The storms of late 1982 and early 1983 in the San Francisco Bay Area resulted in considerable limb breakage and tree blow-over. A survey of November-December storms damage involving 35 communities indicated that Eucalyptus species in general and several Eucalyptus species in particular (bluegum, ironbark, silver dollar, peppermint and sugargum) had severe blow-over problems. Limb breakage was noted to be the highest for any one problem species. Twenty-five surveys mentioned Eucalyptus and acacia as problem trees. The genetic habit of the species plus splitting crotches, dense tops, closely-spaced limbs and large limbs of equal size were most often cited as causes of problems. In fairness, however, much of the problems observed were termed catastrophic failures; unpreventable.

Somewhat akin to folks devoted to native plants, the species Eucalyptus has its devotees and detractors. Generally, detractors are people familiar only with the bluegum. While it is true that few people are planting bluegums, others have found that in general, Eucalyptus have an aggressive root system which tends to be shallow and fast-growing; thus there are root-pavement problems and problems of sufficient irrigations of companion plantings. Many of the Eucalyptus grow too large for the small properties where they are planted and the litter produced by many becomes an unwanted nuisance. Some nurseries indicate a slowing demand for Eucalyptus. For Eucalyptus to maintain or serve their useful place in the landscape, it will be necessary to recognize certain species and extoll their usefulness.

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