

SOME EUCALYPTS OF THE AUSTRALIAN HIGH COUNTRY

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The alpine eucalypts consist of less than 10 species in all, there being many variations of the main species *Eucalyptus pauciflora* (white sallee or cabbage gum). The variations or sub-species are recognized under their own names as with *Eucalyptus niphophila* (snow gum), *E. de beuzvillei* (giant snow gum) and *E. gregsoniana* (Wolgan snow gum). These small mallee-like trees or shrubs are excellent as ornamental specimens. They have creamy flowers but their most attractive features are their irregular stems with white and red bark and glaucous leaves. As the light intensifies in higher altitudes the eucalypts have adapted by producing a waxy glaucous leaf surface to give them the advantage of the maximum photosynthesis required yet protection from light reflectance in exposed alpine environment.

SELECTION

Collection of viable seed is very important for the production of good plants; these are dependent upon a number of factors. Seed is collected from a plant having the most favourable characteristics of that particular species; this for the alpine eucalypts means the ability to survive under extreme climatic conditions.

Dr. K. G. Eldridge found in tests on *E. regnans* that the trees from higher altitudes produced seedlings that were more frost resistant, grew straighter stems and, although they grew more slowly than seedlings from lower altitude parents, were better quality trees. The seed source range varied from 37' to 41' on an altitudinal transect of Mt. Erica in Victoria. Note was taken of each original parent and these were then used for subsequent collections.

GERMINATION

There appears to be a chemical inhibitor in the seed coat, thus explaining why germination of some eucalypts can be erratic and germination percentage low from apparently viable seed. In nature the seed undergoes cold, moist conditions with warm days and cool nights. This can be sufficient to break dormancy allowing continuation of the species, and for immature viable seed to gain maturity.

The Seed Sub-section of the Forestry and Timber Bureau in Canberra has conducted tests on the optimum temperature, moisture and light requirements of the majority of eucalypt species. The following results were obtained on replicates of approximately 50 seed prechilled for 2, 4 or 6 weeks at 5°C.

Table 1. Germination percentages of seeds of some eucalyptus species.

Species	Weight of Replicate (mg)	Temp. °C	First Count	Final Count
<i>E. alpina</i>	500	15	10	42
<i>E. coccifera</i>	250	15	10	28
<i>E. de beuzvillei</i>	500	20	7	14
<i>E. delegatensis</i>	500	20	5	14
<i>E. gunnii</i>	250	20, 25, 30	7	28
<i>E. mitchelliana</i>	250	20	5	14
<i>E. niphophila</i>	500	20	5	10
<i>E. pauciflora</i>	500	15	7	21
<i>E. perriniana</i>	50	20	5	10
<i>E. regnans</i>	250	15	10	21
<i>E. rubida</i>	250	(25)	5	21
<i>E. stellulata</i>	100	15	10	21

Simulation of natural conditions appears to give more even and higher percentage germination, by subjecting the seed to various temperatures over 24-hr periods.

INFORMATION ON SOME OF THE EUCALYPTS

E. niphophilla Maiden et Blakely (snow gum)

A true alpine found on Mt. Kosciusko, N.S.W., at the highest tree line, 6500 ft. Height varies with altitudinal climes from 3-20 ft, and prefers north-facing slopes (warmest).

E. pauciflora Sieb. ex Spreng. (white sallee or cabbage gum)

A very useful species for altitudes between 2000-5000 ft. Valuable for fuel and shelter. A small to large tree that can withstand severe cold, wind and snow. Yields a golden coloured honey without high density.

E. gregsoniana L. Johnson et D. Blaxell

Limited occurrence at Wolgan, N.S.W., restricted to the tops of board spurs on tablelands of sandstone or other silious rock.

E. stellulata Sieb. ex D.C. (black sallee)

A multistemmed small tree with bushy habit, located on poorly drained soils in frost hollows. Typical habitat is one of the most severe in Australia.

E. rubida Deane et Maiden (candlebark)

A sub-alpine species widely distributed in the Australian Alps, found up to 4500 ft. Located on a wide range of soils and very useful for shade, shelter and second-class timber.

E. delegatensis R. T. Bak. (gum-topped stringybark ash)

Second most important timber tree from sub-alpine areas, prefers southern and eastern exposures on moist well drained loams, especially granite or dolomote.

E. regnans F. Muell. (mountain ash)

The most important hardwood, average height 175-250 ft, mostly found in deep sheltered gullies on deep, good quality loams over clay.

E. perriniana F. Muell. ex Rodway (roundleafed snow gum)

Occurs in small stands in high country on southeast N.S.W., Victoria and Tasmania. Prefers plateau-like ridge tops, also sub-alpine slopes from 4000-6000 ft. The glaucous foliage contrasting with the greener foliage of *E. pauciflora*.

E. mitchelliana Cabbage (weeping or Mt. Buffalo sallee)

A rare species from Mt. Buffalo in Victoria, found in slight depressions and exposed edges at the top of steep slopes on prevailing granite outcrops, with good surface drainage.

Definition: MALLEE — the native name for a *Eucalyptus* thicket: shrubby species with a bulbous rootstock from which ascend several slender stems.

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REFERENCES

1. Blakely, F. W., A Key to the Eucalypts.
2. Boden, R. W. 1956, Some aspects of seed dormancy in *Eucalyptus*, *Aust. For.* 21:81-85.
3. Cameron, R. J. 1970, Light intensity and the growth of *Eucalyptus* seedlings, *Aust. J. Bot.* 18:275-84.
4. Eldridge, K. G. 1971, Genetically improved Eucalypt seed for Australian pulpwood forests, *Appita* 25.
5. Green, J. W. 1969, Temperature responses in altitudinal populations of *Eucalyptus pauciflora* Sieb. ex Spreng. *New Phytol.* 68:399-410.
6. Pryor, L. D. 1954, Improved germination of some alpine eucalypts for stratification, *Aust. For.* 18:104-106.
7. Viability Testing of Eucalypt Seeds, Forestry & Timber Bureau Leaflet No. 116.