

LAND MANAGEMENT

CONSERVATION TREES

Eucalyptus species for Erosion Control

Background

Between 500 and 600 species of *Eucalyptus* are native to Australia. Around 100 of these have been planted in New Zealand since the mid 1800's for shade, shelter, fuel, and timber.

Little was known then about the different species, or the different provenances within species. This led to extensive plantings of unsuitable trees, or potentially suitable trees on inappropriate sites. Now more is known about each species, its seed

sources, growth and care, and its milling and wood seasoning, so more eucalyptus are being planted.

What are the characteristics of *Eucalyptus*?

Eucalyptus are evergreen hardwood trees bearing leaves and flowers, rather than the needles and cones of softwoods, like pines. The trees are generally single stemmed, but do not have a clear single leader; rather the crown grows by a method called *indefinite growth* from buds. This



Space planting of Eucalyptus species across an unstable slope experiencing shallow slipping

leads to the characteristic referred to as *crown shyness*. Where trees grow close together, the buds of adjacent trees become damaged, and it is the buds on the opposite side of the trees that initiate new growth, so the trees appear to lean away from close neighbours. This characteristic makes it important to plant at regular spacings.

Eucalypts are grouped according to bark type, into:

- Smooth barks
- Bloodwoods
- Stringy barks
- Peppermints
- Iron barks
- Boxes

Why plant eucalyptus for erosion control?

Willows and poplars are commonly used for erosion control on easier slopes, with radiata pines used more in steeper areas with greater erosion problems. Moisture stress, drying winds, steep slopes and shallow soils in the drier, eastern parts of the North Island, may make willows and poplars unsuitable. For these sites, alternative hardwood species, such as eucalyptus may be more suitable.

Which eucalypts are most suitable for erosion control?

Careful species and site selection and planting are required for success in the heavy soils and windy areas of many parts of Hawke's Bay.

Eucalyptus require special care and attention: they do best in free draining soils and frost free areas as seedlings are less tolerant of frosts, particularly out of season frosts. Branches can be very brittle and may break in strong winds.

The following lists contain eucalypts recognised as most suitable for erosion control planting in Hawke's Bay, though many others will successfully grow in specific micro-climates on many farms.

Fast growing species for windbreaks include:

- Tolerating winter frosts up to -6 °C
E. botryoides, muelleriana, saligna
- Tolerating winter frosts up to -9 °C:
E. fastigata, fraxinoides, obliqua, regnans
- Tolerating winter frosts up to -12 °C:
E. delegatensis, nitens, ovata

To stabilise hill slopes: On hard, exposed, dry upper slopes, the lower growing, hardy peppermints are a good choice. They tend to have poor form, but establish better under these adverse conditions. Trials suggest:

- *E. pulchella, nitida and amygdalina*

In deeper soils on lower slopes where frosts are not a problem:

- Bluegums: *E. saligna, botryoides, nitens and ovata*, and
- Stringy barks: *E. muelleriana* and *globoidea*.

Where frosts will occur, the ash group is most suitable. These include:

- *E. regnans, fastigata, fraxinoides, obliqua* and *delegatensis*

What pests and diseases affect eucalyptus?

Pests, many of which arrive from Australia and thrive in the absence of natural predators, often affect eucalypts. A number of fungi affect eucalypts by causing leaf spotting, but most are not significant. There are also a number of insect pests, the most damaging in recent times being *Paropsis* (tortoise beetle), and the leaf mining sawfly. Both these insects are currently well controlled by introduced parasitic insects.

Useful Publications

- *Plant materials handbook for Soil Conservation – Volume 2 Introduced Plants Water and Soil*. Miscellaneous publication Number 94.
- *Growing Eucalypt Trees for Milling*, Neil Barr.
- *Eucalyptus Species Selection for Soil Conservation in Seasonally Dry Hill Country – trials planted 1980-1986*, B.T. Bulloch & C.E. Stace, HortResearch, 1996.
- *What's New in Forest Number 124 Eucalypts: Species Choice and Site Requirements*, New Zealand Forest Research Institute.
- *Eucalypts for New Zealand Conditions (1)*, The New Zealand Plant Materials Research Collective Fact Sheet 5
- *Eucalypts for New Zealand Conditions (2)*, The New Zealand Plant Materials Research Collective Fact Sheet 6
- *Eucalyptus Trees for New Zealand Farms*, F.B. McWhannel, NZ Journal of Agriculture.

For further information

For further information on eucalyptus or sustainable land management issues ask for the other titles in this series or contact Land Management Officers at Hawke's Bay Regional Council for advice:

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