WINDBREAK ESTABLISHMENT TRIALS

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In July 1973 a range of tree and shrub species were planted as windbreak trials in sandy areas liable to "blow out" in the Boxwood Hills district. These plantings followed requests for assistance from the local branch of the Farmers Union.

Wind erosion is a major problem on many sites in this area, with crops sometimes being blown out before they can become established. The most destructive winds are from the north-west in autumn or early winter, although they are likely to occur at any time throughout the year. The average rainfall is approximately 450 mm with the main falls on average being in the winter months, June 96 mm, July 90 mm, August 80 mm, September 80 mm with some summer falls resulting from the south coastal influence, although these last are unreliable. Natural vegetation consists of Mallee eucalypt spp., Banksia spp. and Christmas Tree, with patches of Flat-topped Yate in the gullies and drainage lines on the heavier soils.

The problems of windbreak establishment in this area are briefly:

1. To find windfirm species that will grow quickly to a reasonable height.

2. To find species that will grow successfully with a comparatively low rainfall.

3. To develop a system of planting that will provide a high percentage of establishment under harsh wind conditions and possible sand-blasting.

To select possible species two trials were established using the following species as combinations of low bush trees or shrubs, and taller trees.

Eucalyptus gomphocephala	Tuart
Eucalyptus lehmannii	Bald Island Marlock
Eucalyptus occidentalis	Flat-topped Yate
Eucalyptus camaldulensis	Murray Red Gum
Eucalyptus bicostata	Southern Blue Gum (Eurabbie)

Eucalyptus globulus	Tasmanian Blue Gum
Eucalyptus sargentii	Salt River Gum
Eucalyptus forrestiana	Fuschia Mallee (Forrest's Marlock)
Eucalyptus gardneri	Gardner's Blue Mallet
Eucalyptus kondininensis	Stocking tree
Eucalyptus nicholi	Nichol's Willow-leaved Peppermint
Eucalyptus platypus	Round-leaved Moort
Eucalyptus platypus var. heterophylla	Moort
Eucalyptus spathulata	Swamp Mallet
Eucalyptus cladocalyx	Sugar Gum
Eucalyptus cladocalyx var. nana	Dwarf Sugar Gum
Pinus eldarica	
Pinus pinaster	Maritime Pine
Pinus pinea	Stone Pine
Pinus halepensis	Aleppo Pine
Leptospermum laevigatum	Vic. Ti-tree
Hakea laurina	Pin Cushion Hakea
Cytisus proliferus	Tree Lucerne
Callitris calcarata	Cypress Pine
Tamarix aphylla	Tamarisk

To provide protection for the planted seedlings and to minimise wind erosion, the experimental areas were sown with cereal rye at 95 kg/ha in the early winter. By the time of planting (in July when soil moisture was sufficient), this had reached a height of approximately 20 cms plus. Sites were prepared several hours before planting by spraying a patch 0.8 m in diameter with a mixture of Grammoxone Reglone contact defoliants. This had the effect of killing the vegetation around the planting site and retaining the rest of the cereal rye as a cover crop for the young trees. All planting stock used was in plastic tubes or pots, and each plant received 56 gm of complete fertilizer placed on the soil surface at time of planting. In the pine species the mixed fertilizer was replaced by Super-Copper-Zinc mixture.

In February 1974 an inspection of the plots was made, unfortunately one plot had suffered severe mortality due to a grasshopper attack, but the other plot showed an overall survival rate of 74%. This figure included three species which had virtually failed completely, Hakea laurina, Tamarix aphylla and Leptospermum laevigatum.

In March 1976 the plots were inspected and measured. The species which showed most promise were:

Tree species

Euc. globulus	78%	survival	4.40	metres	av.	height
Euc. cladocalyx	100%	"	2.86	"	"	"
Euc. gomphocephala	89%	"	2.69	"	"	"
Euc. bicostata	70%	"	2.68	"	"	"

Shrub species

Cytisus proliferus	100%	"	2.48	"	"	"
Euc. cladocalyx var. nana	92%	"	2.30	"	"	"
Euc. platypus var. heterophylla	82%	"	1.71	"	"	"

The above species are outstanding in growth, habit, and resistance to damage and also show good survival on the particular sites. Some of the other varieties show equally good survival rates, but either form or growth rate is poor.

In the 1976 planting season a windbreak plot was planted using the most successful species listed above and consisting of two rows each of shrub species and tree species.

A post planting inspection revealed damage caused by a severe wind storm following planting, although most plants were sending out fresh shoots. Two species that notably suffered very little wind damage were Eucalyptus globulus and Cytisus proliferus.