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Catalogue of Trees

for growing under Western Australian conditions



Eucalyptus erythrocorys

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ORESTS

Catalogue of trees

Hamel and Narrogin Nurseries

INTRODUCTION

In many parts of the rural districts of Western Australia there is a distinct scarcity of tree growth. This may, in some cases, be natural or may, in others, be due to the almost complete removal of the original tree cover in past times to allow for agricultural and pastoral pursuits.

Trees influence human welfare in many different ways, not the least among them being the provision of shade and shelter from sun and wind and the beauty they add to countryside, homesteads and townships. In an endeavour to promote the establishment of trees in rural areas the Forests Department has, for many years now, offered seedlings at reduced rates to the people of country areas.

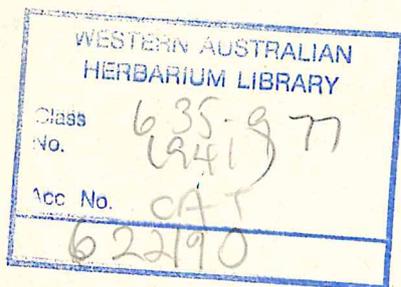
This booklet contains recommendations concerning trees suitable for different sites and localities and for different purposes. The recommendations are based on past observations and experience and on information coming forward from the performance of the trees in numerous arboreta, established by the Department throughout the southern half of the State.

Other sections of the booklet provide advice on the planting and tending of young trees and some notes on the benefits and limitations of pine growing for commercial purposes.

The latter sections set out the conditions of sale, advice on ordering and, finally, the price lists.

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1. Recommendations concerning Trees suitable for Different Localities and Different Purposes.
2. Descriptive Lists of Trees available.
3. Planting and Tending of Young Trees in the Field.
4. Pine Plantations for Commercial Purposes.
5. Ordering Trees (Conditions of Sale, Price Lists etc.)



1.—Recommendations Concerning Trees Suitable for Different Localities and Different Purposes

The wide variations in soil and other conditions existing throughout the State render it difficult to make definite recommendations concerning suitable trees, but the following should serve as a general guide if studied in conjunction with the notes given on the various trees.

A—Trees Recommended as Suitable for Districts having a Rainfall of 20 inches and over.

(1) Street Trees.

- (a) Trees of low to medium growth suitable for street planting where overhead wires, are present. (Limited cutting back may become necessary.)

Acacia melanoxylon	Eucalyptus cladocalyx var nana
Agonis flexuosa	Melia azedarach
Callistemon lanceolatus	Melaleuca pubescens
Erythrina indica	Tristania conferta
Eucalyptus lehmanni	Brachychiton diversifolium
Eucalyptus platypus var. heterophylla	

- (b) In addition to the above the following may be planted in situations where they will have room for development, including avenues or streets where there are no overhead wires:—

Acacia elata	Pittosporum undulatum
Eucalyptus cladocalyx	Pinus radiata
Eucalyptus gomphocephala	Pinus pinaster
Eucalyptus botryoides	Platanus occidentalis
Eucalyptus maculata	Populus nigra
Ficus australis	Quercus lusitanica
Grevillia robusta	Jacaranda mimosifolia

(2) Trees for Shelterbelts and Woodlots.

In this zone the various species of Pinus will be found most suitable for the above purposes. Several of the Eucalypts particularly Eucalyptus gomphocephala and Eucalyptus robusta are also suitable.

B—Trees recommended for Districts with a Rainfall of less than 20 in. but within the Agricultural Areas. (For situations where no additional water is given.)

- (a) Trees of low to medium height growth suggested for windbreaks or low shelter or for street planting where overhead wires are present; limited pruning may be necessary when used as street trees.

Brachychiton diversifolium	Eucalyptus platypus (H)
Eucalyptus caesia (L)	Eucalyptus redunca var. melanophloia (M)
Eucalyptus campaspe (H)	
Eucalyptus cladocalyx var nana (M)	Eucalyptus salubris (H)
Eucalyptus crucis (L)	Eucalyptus spathulata (H)
Eucalyptus platypus var heterophylla (L) (M)	Eucalyptus torquata (M)
	Schinus molle (M)

- (b) Trees of medium to tall height growth suitable as shade trees, as the tall components of shelter belts, or for street or avenue planting where no overhead wires are present—

Callitris calcarata (L)	Eucalyptus gardneri (M)
Callitris glauca	Eucalyptus pterocarpa (H)
Casuarina glauca (S)	Eucalyptus redunca (M)
Casuarina huegeliana (L)	Eucalyptus salmonophloia (H)

Eucalyptus brockwayi (H)	Eucalyptus sargentii (H) (S)
Eucalyptus camaldulensis (M)	Pinus brutia
Eucalyptus cladocalyx (L)	Tamarix articulata (syn aphylla)
Eucalyptus dundasi (H)	

(c) Trees of rapid height growth suitable for growing as shade group:—

Eucalyptus brockwayi (H)	Eucalyptus cladocalyx (L)
Eucalyptus camaldulensis (M)	Eucalyptus dundasi (H)

Note:

Trees marked H—recommended for medium to heavy textured soils only.

Trees marked L—recommended for light to medium soils.

Trees marked M—adapted to a wide range of soils.

Trees marked S—salt tolerant.

(d) *Ornamental Trees.*—Practically all of the trees listed have considerable ornamental value but there are certain species which on account of their striking blossoms, picturesque appearance or unusual foliage are outstanding. These include—

Eucalyptus caesia (B)	Eucalyptus leucoxyton (B)
Eucalyptus crucis (F)	Eucalyptus pyriformis (B)
Eucalyptus eremophila (B)	Eucalyptus stoatei (B)
Eucalyptus erythronema (B)	Eucalyptus torquata (B)
Eucalyptus forrestiana (B)	Eucalyptus woodwardi x torquata
Eucalyptus kruseana (B & F)	hybrid (B)
Eucalyptus macrocarpa (B)	

Note:

(F) Denotes unusual or attractive foliage.

(B) Denotes attractive blossoms (or fruit).

(e) Trees suitable for saline areas. While it is not possible to grow trees in soils heavily impregnated with salt a number of trees show considerable salt tolerance. These include:—

Callitris glauca	Eucalyptus spathulata
Casuarina glauca	Tamarix articulata (syn aphylla)
Eucalyptus loxophleba	Tamarix gallica
Eucalyptus sargentii	Tamarix pentandra

TREES SUITABLE FOR PLANTING.
(a) In the South West (Over 20 in. Annual Rainfall.)

Botanical and Common Name	Minimum Yearly Rainfall	Soils	Height	Description	Recommended Use
<i>Acacia baileyana</i> (Cootamundra Wattle)	20 in.	Prefers well-drained sites. Sands to medium loams	20 ft max.	Winter flowering, yellow blossoms, silver foliage	Ornamental
* <i>Acacia cyanophylla</i> (Western Wattle)	20 in.	Sand and light loams. Suitable for sandy coastal areas	20 ft	Small, quick growing, short lived tree. Rounded, shady dark green crown	Shade and ornamental, Salt tolerant
<i>Acacia dealbata</i> (Silver Wattle)	20 in.	Sand, gravel, light loam	25 ft	Fast growing, feathery leaves, silver sheen. Strong tendency to sucker from roots	Shade and ornamental
<i>Acacia decurrens</i> (Black Wattle)	20 in.	Sand, loam and gravel	Up to 30 ft	Yellow blossoms, dark green feathery foliage	Ornamental
<i>Acacia elata</i> (Cedar Wattle)	25 in.	Adaptable to most well drained soils	40 ft	Larger and longer lived than most wattles	Ornamental
<i>Acacia melanocorylan</i> (Tasmanian Blackwood)	35 in.	Light loams and loamy gravels	60 ft and over	Larger and longer lived than most acacias. Dense dark green bushy crown	Shade, ornament, avenue planting
<i>Acacia podalyriaefolia</i> (Queensland Silver Wattle)	20 in.	Wide range of soils	20 ft	Very early winter flowering	Ornamental
<i>Acacia pycnantha</i> (Golden Wattle)	18 in.	Wide range of soils	20 ft	Hardy species, broad leaves, large golden flowers	Ornamental, suitable for coastal areas
(Note: Acacias are generally short lived with an effective life of 12-25 years)					
<i>Agonia flezuosa</i> (W.A. Peppermint)	25 in.	Adaptable to most soils. Prefers sands and light loams	Up to 25 ft	Attractive shady tree, often weeping habit	Ideal for metropolitan shade street and ornamental planting. Suitable for coast
<i>Angophora costata</i> Syn. <i>Angophora lanceolata</i> (Smooth barked apple and Apple Myrtle)	30 in.	Adapted to range of soils, light loam, gravel sand	60 ft and over	Medium sized tree. Spreading shady crown. Similar to brush box in appearance	Shade ornament Attractive flowers and seed capsules when present
<i>Aracaria excelsa</i> (Norfolk Island Pine)	25 in.	Sand to medium loam	To 100 ft	Tall, pyramidal tree. Suited to coastal areas. Resistant to sea winds	Ornamental and avenue planting Useful for coastal areas
<i>Brachychiton acerifolium</i> (Illawarra Flame Tree)	30 in.	Good loamy soils in sheltered position preferred	To 40 ft	Massed red flowers in early summer, large glossy leaves	Ornamental
<i>Brachychiton diversifolium</i> (Kurrajong)	18 in.	Sands and light loams	To 60 ft	Crown bushy, leaf shape variable	Street, shade and ornamental
<i>Callitris robusta</i> (Rottneest Island Cypress)	18 in.	Limestone soils, sands and light loams	To 25 ft	Compact, upright habit	Windbreak, shade, ornamental, suitable for coastal areas
<i>Cinnamomum camphora</i> (Camphor Laurel)	30 in.	Loam soil	To 40 ft	Spreading tree, dense crown of smooth shining leaves	Street shade and ornamental
<i>Cupressus arizonica</i> (Arizona Cypress)	18 in.	Sands and loams	40 ft	A hardy but slow growing tree, conical grey green crown	Windbreak, shade and ornamental
<i>Cupressus sempervirens</i> (Morocco Cypress)	30 in.	Sands and loams	40 ft	Dense crown, pyramidal form	Garden, shade and ornamental
<i>Casuarina suberosa</i> (Cork Oak)	18 in.	Sand, light loams	To 30 ft	Dense crown, little corky bark produced normally	Shade and shelter
<i>Eucalyptus botryoides</i> (False Mahogany)	20 in.	Sands and loams	60 ft	Broad leaves, heavy crowned. Bark rough, dark grey in colour	Shelterbelt, shade and roadside planting

* Salt tolerant

TREES SUITABLE FOR PLANTING—*continued*
 (a) In the South West (Over 20 in. Annual Rainfall.)

Botanical and Common Name	Minimum Yearly Rainfall	Soils	Height	Description	Recommended Use
<i>Eucalyptus bicostata</i> (Tasmanian Blue Gum or "Eurabbie")	20 in.	Most types well drained sands and loams	150 ft	Fast growing, large pendulous strap-like leaves, glaucous colour when young	Shade, shelter belt and roadside planting. Frost tolerant
<i>Eucalyptus calophylla</i> var. <i>rosea</i> (Pink Flowered Marri)	15 in.	Well drained sand, gravel or loam	To 100 ft	Broad leaves, dense spreading crown, handsome pink blossoms	Shade and ornamental
<i>Eucalyptus citriodora</i> (Lemon Scented Gum)	25 in.	Adaptable to most soils. Frost tender when young	70 ft	Slender, erect, graceful form	Ornamental and avenue planting
<i>Eucalyptus cladocalyx</i> (Sugar Gum)	14 in.	Adaptable to most light textured soils	70 ft	Large spreading crown and clean, smooth bark, Fast growing	Shade, shelter belt and roadside planting
<i>Eucalyptus cladocalyx</i> , var. <i>nana</i> (Dwarf Sugar Gum)	12 in.	Light and medium loams and deep sands	To 30 ft	Fast growing, smooth bark, good crown	Street planting, shade groups, shelter belts
<i>Eucalyptus erythrocorys</i> (Illyarrie)	18 in.	Adaptable, better on light soils, lime tolerant	25 ft	Slender tree, bark moderately smooth, dull white in colour. Striking scarlet capped buds and bright yellow blossoms	Ornamental, suitable for coastal areas
<i>Eucalyptus ficifolia</i> (Red Flowered Gum)	30 in.	Adaptable, occurs naturally on poor sand and gravel	40 ft	Dense, dark green rounded crown. Bark rough. Striking blossoms—various shades of red carried clear of the leaves	Ornament, shade and avenue planting
<i>Eucalyptus globulus</i> (Tasmanian Blue Gum)	20 in.	Well drained sand and loams	150 ft	Fast growing. Large pendulous leaves	Shade and roadside planting
<i>Eucalyptus gomphocephala</i> (Tuart)	20 in.	Well drained sand and loams. Tolerates soils with high lime content	100 ft	Fast growing with rough ash-coloured bark and a heavy crown	Shade, shelter belt and roadside planting. Suitable for coastal areas
<i>Eucalyptus lehmanni</i> (Bald Island Marlock)	18 in.	Sand and loams	To 25 ft	Bushy tree. Flowers unusual and attractive	Windbreak, shade and ornamental. Suitable for coastal areas
<i>Eucalyptus leucozydon</i> var. <i>rosea</i> (Pink Flowered Yellow Gum)	14 in.	Sandy loam to heavy loam	To 30 ft	Ornamental with attractive blossoms	Street planting and shade
<i>Eucalyptus maculata</i> (Spotted Gum)	25 in.	Loam and better sands	100 ft	Smooth mottled bark, attractive crown, fast growing	Ornamental, shade and avenue planting
<i>Eucalyptus microcorys</i> (Tallowwood)	25 in.	Well drained loams and fertile sands	80 ft	Fibrous bark light tan to brown. Rather pyramidal crown	Shade, shelter belts and avenues
<i>Eucalyptus mellilotora</i> (Yellow Box)	20 in.	Adaptable to most soils except poor sand. Prefers loam	To 100 ft	Moderately dense crown	Ornamental, shade and shelter. Good honey-producer
<i>Eucalyptus occidentalis</i> (Flat Topped Yate)	14 in.	Occurs in low-lying poorly drained clay soils, with or without sandy surface. In wheat belt planting on deep sand has given good results	To 60 ft	Tall tree umbrella crown. Bark on trunk rough and dark, on limbs grey and smooth	Shade Tree
<i>Eucalyptus platyphyllo</i> var. <i>heterophylla</i> (Coastal Moort)	14 in.	Sand to medium loam	To 20 ft	Bushy tree with dense crown	Ornamental, low windbreak or shelter-belt. Suitable for coastal areas
<i>Eucalyptus robusta</i> (Swamp Mahogany)	20 in.	Adaptable to most soils including deep sands. Suitable for swampy areas	To 40 ft	Fairly dense crown, large glossy leaves. Bark dark grey	Ornamental, shade and shelter. Tolerates flooding
<i>Ficus macrophylla</i> (Moreton Bay Fig)	20 in.	Adaptable to soils, including coastal sands	40 ft	Heavy crowned tree. Massive buttress roots	Shade tree and ornamental

TREES SUITABLE FOR PLANTING—*continued*
(a) In the South West (Over 20 in. Annual Rainfall.)

Botanical and Common Name	Minimum Yearly Rainfall	Soils	Height	Description	Recommended Use
<i>Grevillea robusta</i> (Silky Oak)	20 in.	Well drained loams	40 ft	Deeply divided leaves. Bright coppery golden flowers	Ornamental
<i>Hakea laurina</i> (Pin Cushion Hakea)	14 in.	Sand, gravel and light loam	15 ft	Large ornamental shrub with rounded crown. Blossoms globular—red tipped with yellow	Ornamental and low windbreak
<i>Hymenosporum flavum</i> (N.S.W. Frangipani)	30 in.	Well drained sands and loams	To 50 ft	Yellow scented flowers—rounded crown	Ornamental and shade tree, street tree
<i>Jacaranda mimosifolia</i> (Jacaranda)	20 in.	Good sand or loam. Frost tender when young	50 ft	Popular deciduous tree with fern-like foliage and masses of violet-blue flowers	Ornamental and street planting
<i>Melaleuca pubescens</i> (Rottnest Island Tea Tree)	18 in.	Limestone soils, sands and light loams	To 30 ft	Dark green, dense spreading rounded crown. Rough bark	Low shelterbelt shade and ornamental suitable for coastal areas
<i>Melia azederach</i> (Cape Lilac or White Cedar)	25 in.	Adaptable to most soils, including deep sand	To 30 ft	Deciduous. Fern-like foliage. Clusters of mauve flowers followed by large yellow berries	Ornamental, shade
<i>Pinus brutia</i> (Closely related to <i>P. halepensis</i> but of more symmetrical growth habit)	18 in.	Good sands and light loams. Suitable for limestone areas	70 ft	Small, fine needles. Erect habit of growth	Drought resistant. Shade shelter tree including seaside areas
<i>Pinus canariensis</i> (Canary Island Pine)	18 in.	Good sand or loam	80 ft	Hardy pine with broad pyramidal crown, long pendulous needles	Shelterbelt, shade and ornamental
<i>Pinus halepensis</i> (Aleppo Pine)	13 in.	Good sands and light loams. Suitable for limestone areas	60 ft	Small fine needles, heavily branched, short trunk	Drought resistant. Shade shelter tree including seaside areas
<i>Pinus pinaster</i> (Maritime Pine)	13 in.	Sandy soils	60 ft	Hardy tree with dense crown	Shelterbelt and shade tree. Commercial timber
<i>Pinus pinea</i> (Stone Pine)	18 in.	Sands and loams	40 ft	Dense wide spreading umbrella crown	Shelter and shade for farms. Edible seeds
<i>Pinus radiata</i> (Monterey Pine)	25 in.	Good loam soils	100 ft	Dense erect crown. Rapid growth	Shelterbelt, road and ornamental planting. Commercial timber
<i>Platanus occidentalis</i> (Plane Tree)	25 in.	Good sands and loam	70 ft	Deciduous, wide spreading crown	Street and ornamental planting
<i>Populus nigra</i> (Black Poplar)	25 in.	Prefers damp soils well drained	100 ft	Deciduous, erect columnar habit	Shelter belt and avenue planting
<i>Quercus lusitanica</i> (Portuguese Oak)	25 in.	Adaptable to most soils	30 ft	Semi-deciduous, hardy tree, compact crown	Shade tree
<i>Salix babylonica</i> (Weeping Willow)	25 in.	Requires damp conditions	30 ft	Rapid growing tree. Attractive foliage and weeping habit	Shade and ornamental
<i>Tristania conferta</i> (Brush Box)	20 in.	Adaptable with a preference for heavy soils	Up to 50 ft	Neat appearance, compact, dark green foliage, small white flowers	Street and ornamental planting
<i>Ulmus pumila</i> (Chinese Elm)	20 in.	Good sand or loam	60 ft	Deciduous, compact crown	Shade and street planting
<i>Virgilia capensis</i>	30 in.	Well drained sands and loams	To 50 ft	Compact, rounded crown with mauve flowers	Ornamental and decorative planting

ESPERANCE PLAINS (18 in. Rainfall Minimum)—

The undermentioned species are recommended as the result of successful local plantings over a number of years.

Descriptions are given above.

Eucalyptus lehmanni (Bald Island Marlock); *Eucalyptus gomphocephala* (Tuart); *Eucalyptus globulus* (Tasmanian Blue Gum); *Eucalyptus cladocalyx* (Sugar Gum); *Eucalyptus cladocalyx*, var. *nana* (Dwarf Sugar Gum); *Eucalyptus falcata* (White Mallet); *Eucalyptus gardneri* (Blue Mallet); *Eucalyptus platyphus* var. *heterophylla* (Coastal Moort); *Pinus pinaster* (Maritime Pine); *Pinus pinea* (Stone Pine); *Acacia pycnantha* (Golden Wattle); *Callitris robusta* (Rottnest Island Cypress).

TREES SUITABLE FOR PLANTING—continued

(b) In 15 in. to 20 in. Rainfall Areas.

Botanical and Common Name	Minimum Yearly Rainfall	Soils	Height	Description	Recommended Use
<i>Azacia acuminata</i> (Raspberry Jam)	12 in.	Loams	To 25 ft	Small tree, rounded umbrella crown	Street planting, ornamental shade
<i>Acacia inophloia</i>	12 in.	Loamy sands	12 ft	Small, fine leaved compact tree	Windbreak, ornamental planting
<i>Acacia microbotrya</i>	11 in.	Prefers loamy soils	To 20 ft	A small, fast growing tree, dense bluish green foliage	Shade, ornamental, Manna gum production
<i>Acacia pycnantha</i>	18 in.	Wide range, including coastal areas	20 ft	Hardy species, broad leaves, large golden flowers	Ornamental and windbreak in coastal areas
Note: Acacias generally have a limited effective life of 12-25 years					
<i>Brachychiton gregori</i>	8 in.	Loams	To 30 ft	Dense crown, drought resistant, slow growing	Shade and ornamental
(W.A. Kurrajong)					
<i>Callitris calcarata</i>	12 in.	Sand, laterite gravels, light loam and coastal areas	50 ft	Erect symmetrical tree. Dark green conical crown	Windbreak, shade and ornamental
(Black Cypress Pine)					
* <i>Callitris glauca</i>	7 in.	Sands and medium loams. Salt tolerant	30 ft	Compact, upright habit, silvery green foliage, slow growing	Windbreak, shade and ornamental and salt areas
(White Cypress Pine)					
<i>Callitris intratropica</i>	15 in.	Deep sands over gravelly clay	20 ft	Pyramidal shape, glaucous foliage	Windbreak and ornamental
<i>Callitris robusta</i>	18 in.	Loams, sandy gravels to limestone soils	25 ft	Erect symmetrical tree, bronzy green, crown at extremities	Windbreak shade and ornamental
(Rottnest Pine)					
<i>Casuarina decaisneana</i>	12 in.	Loam over sandy clays	20 ft	Dense foliage, compact crown rather dark green	Windbreak, shade and ornamental
<i>Casuarina dielsiana</i>	12 in.	Loamy soils and deep sands	20 ft	Dense green, foliated compact tree with twisted leaves	Windbreak, shade and ornamental
* <i>Casuarina glauca</i>	12 in.	Sand, light loams	To 30 ft	Dense crowned sheoak	Shade and shelter belt—especially for low lying salty areas
(Swamp sheoak)					
<i>Casuarina huegeliana</i>	12 in.	Found on shallow sandy soil around granite rocks. Thrives on deeper sands	To 30 ft	Symmetrical habit, dense globular crown	Shade, on poor shallow sands
<i>Ceratonia siliqua</i>	16 in.	Good loam	To 25 ft	Hardy. Dense spreading crown. Slow growing	Shade and ornamental. Beans useful stock feed
(Carob Bean)					
<i>Cupressus arizonica</i>	15 in.	Sand and light loam	To 50 ft	Hardy, but slow growing tree, conical grey-green crown	Windbreak, ornamental
(Arizona Cypress)					
<i>Eucalyptus astringens</i>	13 in.	Sandy or gravelly to loamy soils, preferably with clay subsoil	To 70 ft	Upright tree, bronze coloured bark, dark green leaves, umbrella crown	Shade and shelter. Tan bark production
(Brown Mallet)					
<i>Eucalyptus brockwayi</i>	11 in.	Medium loam	To 80 ft	Fast growing, upright. Bark pinkish grey, leaves dark green, shining	Shade and ornamental
(Dundas Mahogany)					
<i>Eucalyptus botryoides</i>	18 in.	Deep sandy or medium loam	To 60 ft	Broad leaves, heavy crowned. Bark rough, dark grey	Windbreak, shade, roadside planting
(False Mahogany)					
<i>Eucalyptus caesia</i>	12 in.	Sands and light loams. Occurs naturally around granite out-crops	To 25 ft	Bark dark greenish-brown to bronze. Crown rather sparse, flowers large and attractive pink	Ornament—homestead gardens and parks
(Gungunnu)					
<i>Eucalyptus calophylla</i> var. <i>rosea</i>	15 in.	Well drained sand, gravel or clay loam	40 ft	Broad leaves, dense crown, pink blossoms	Ornamental and windbreak plantings
(Pink Flowered Marri)					
<i>Eucalyptus camaldulensis</i>	8 in.	Adaptable to wide range of soils	To 90 ft	Fast growing, bark white or grey and smooth. Crown dense and often weeping habit	Ornamental, shade, windbreaks and shelter belts

* Salt tolerant

TREES SUITABLE FOR PLANTING—continued

(b) In 15 in. to 20 in. Rainfall Areas.

Botanical and Common Name	Minimum Yearly Rainfall	Soils	Height	Description	Recommended Use
<i>Eucalyptus campaspe</i> (Silver Gimlet)	7 in.	Good loams only	To 35 ft	Bark smooth and bronze coloured to almost white on smaller twigs. Crown silvery blue-green	Shade, windbreak and ornament
<i>Eucalyptus cladocalyz</i> (Sugar Gum)	14 in.	Light and medium loams and deep sands	To 70 ft	Fast growing. Bark smooth, light coloured. Wide spreading crown	Shade groups, shelter belts
<i>Eucalyptus cladocalyz</i> , var. <i>nana</i> (Dwarf Sugar Gum)	12 in.	Light and medium loams and deep sands	To 30 ft	Fast growing, smooth bark, vigorous crown	Street planting, shade groups, shelter belts
<i>Eucalyptus crucis</i> (Southern Cross Silver Mallee)	8 in.	Sands to loam	To 20 ft	Hardy, decorative foliage tree, "bloom" covered twigs and leaves	Ornamental, street planting
<i>Eucalyptus decipiens</i> (Limestone Marlock)	15 in.	Well drained loams and sands. Coastal areas also	To 25 ft	Small umbrageous crown, light bluish foliage, erect stem	Shade and shelter belt
<i>Eucalyptus diptera</i> (Bastard Gimlet)	15 in.	Good loams and sands over clays	25 ft	Small dark green foliated tree, erect stem	Shade tree, ornamental and street trees. Salt areas
<i>Eucalyptus dundasii</i> (Dundas Blackbutt)	10 in.	Good loams. Prefers soils with alkaline reaction	To 50 ft	Fast growing, bark rough and dark brown at base, limbs smooth and copper coloured, dense crown, leaves shining dark green	Street planting and shade
<i>Eucalyptus erythronema</i> (White Mallee)	10 in.	Loam to loamy clay	To 20 ft	Erect handsome mallee. Bark smooth, light grey. Beautiful flowers varying from white to pink or red	Ornamental and street planting, especially under overhead wires
<i>Eucalyptus eremophila</i> (Tall Sand Mallee)	8 in.	Sand and sandy loams	To 20 ft	Mallee—foliage to ground level. Cream flowers occasionally red or pink in showy clusters	Ornament, windbreak, street planting—especially under overhead wires
<i>Eucalyptus erythrocorys</i> (Illyarrie)	18 in.	Adaptable, better on light soils, lime tolerant	25 ft	Slender tree, bark moderately smooth, dull white in colour. Striking scarlet capped buds and bright yellow blossoms	Ornamental
<i>Eucalyptus forrestiana</i> (Fuchsia Mallee)	15 in.	Loamy soils	To 20 ft	Attractive mallee. Capsules at flowering time bright red, clustered and pendulous	Ornamental and garden specimen
<i>Eucalyptus flocktoniae</i> (Merrit)	15 in.	Loams	To 30 ft	Erect tree, dense green foliage, compact crown	Shade, windbreak
<i>Eucalyptus gardneri</i> (Blue Mallet)	12 in.	Sandy to loamy soils	35 ft	Large dense crown, leaves blue-green. Bark smooth and grey-brown	Shade, windbreak, ornamental. Tan bark. Particularly suited to southern wheatbelt
<i>Eucalyptus globulus</i> (Tasmanian Blue Gum)	20 in.	Well drained sand and loams	150 ft	Fast growing. Large pendulous leaves	Shade and roadside planting
<i>Eucalyptus gomphocephala</i> (Tuart)	20 in.	Well drained sand and loams. Tolerates soils with high lime content	100 ft	Fast growing with rough ash-coloured bark and a heavy crown	Shade, shelter belt and roadside planting and coastal areas
<i>Eucalyptus gracilis</i> (Yorrel)	12 in.	Loams and clays over sands and loams	50 ft	Fairly quick growing, fresh green compact crown	Shade and wind break, also sub saline situations where not swampy
<i>Eucalyptus kondininensis</i> (Stocking Tree)	12 in.	Loams and clays well drained	50 ft	Slender erect tree marked black stocking at base, fresh green crown	Shade and ornamental, suits saline conditions
<i>Eucalyptus kruseana</i> (Book Leaf Mallee)	8 in.	Loamy sand (occurs naturally in shallow soils near granite outcrops)	To 20 ft	Unique appearance. Leaves small, round, sessile and bluish. Flowers yellow in spike-like arrangements	Ornamental

TREES SUITABLE FOR PLANTING—*continued*

(b) In 15 in. to 20 in. Rainfall Areas.

Botanical and Common Name	Minimum Yearly Rainfall	Soils	Height	Description	Recommended Use
<i>Eucalyptus lehmanni</i> (Bald Island Marlock)	18 in.	Sands and loams	To 30 ft	Bushy globular form from near ground. Umbrella crown develops with age. Flowers greenish yellow fused together in clusters	Windbreak, shade and ornament
* <i>Eucalyptus lozophleba</i> (York Gum)	12 in.	Prefers sandy loams to medium loams. Will often survive in shallow soils when other species may fail. Fairly salt tolerant	35 ft	A fair shade tree with umbrella crown. Trunk rough barked and usually crooked	Shade and shelter belt
<i>Eucalyptus leptophylla</i> (Slender Leaved White Mallee)	15 in.	Clay over loam	10 ft	Slender, many stemmed Mallee, narrow light green leaves	Windbreak, ornamental
<i>Eucalyptus occidentalis</i> (Flat Topped Yate)	14 in.	Occurs in low-lying poorly drained clay soils with or without sandy surface. In wheat belt planting, deep sand has given good results	To 60 ft	Tall tree, umbrella crown. Bark on trunk rough and dark on limbs grey and smooth	Shade tree
<i>Eucalyptus platypus</i> var. <i>heterophylla</i> (Coastal Moort)	14 in.	Sand to medium loam	To 20 ft	Bushy tree dense foliated low statue early	Ornamental, low windbreak and shelter belt
<i>Eucalyptus wandoo</i> inland form (Wandoo)	9 in.	Adaptable, including poor gravelly sands	To 50 ft	Fairly dense spreading crown. Bark smooth and light coloured. Foliage bluish green	Shade and shelter belts
<i>Eucalyptus redunca</i> , var. <i>melanophloia</i> (Black Barked Marlock)	14 in.	Occurs naturally on sandy clay flats but will adapt itself to a range of soils	25 ft	Rounded shady crown. Large dark green leaves	Shade, ornamental, low shelter belt or windbreak
<i>Eucalyptus salubris</i> (Gimlet)	7 in.	Medium to heavy loams	To 40 ft	If adequately spaced, forms good shady crown, leaves dark green. Bark smooth bronze coloured. Trunk straight and fluted	Shade, street and avenue
* <i>Eucalyptus sargentii</i> (Salt River Gum)	14 in.	Sand to medium loams. (Found on low lying areas near salt lakes)	To 30 ft	Vigorous early growth. Bushy globular crown. Medium density	Shade, shelter and windbreaks. Suited to salty areas
* <i>Eucalyptus spathulata</i> (Swamp Mallet)	12 in.	Medium to heavy loam. Fairly salt tolerant	25 ft	Small tree or mallee with smooth bronze coloured bark. Leaves very narrow. If given adequate growing space develops a bushy crown	Shade and shelter belt
<i>Eucalyptus torquata</i> (Coral Gum)	7 in.	Loams and better quality gravel soils	To 35 ft	Rounded dense crown, leaves dark green but lack lustre. Handsome blossoms white to deep pink. Bark rough, flaky and dark grey	Street, ornamental and shelter belt
<i>Eucalyptus woodwardi</i> (x <i>Euc. torquata</i> hybrid)	10 in.	Good light or medium loams	40 ft	Taller and more erect than <i>Euc. torquata</i> and more densely crowned than <i>Euc. woodwardi</i> . Bark dark grey and smooth. Blossoms vary from yellow to orange-pink	Shade, shelter and ornamental
<i>Melaleuca pubescens</i> (Rottnest Island Tea Tree)	18 in.	Limestone soils, sands and light loams	To 30 ft	Dark green, dense spreading rounded crown. Rough bark	Low shelter belt shade and ornamental. Suitable for coastal areas
<i>Pinus pinea</i> (Stone Pine)	18 in.	Deep sandy soils	40 ft	Dense wide-spreading umbrella crown	Shelter and shade for farms
<i>Pinus halepensis</i> (Aleppo Pine)	13 in.	Sandy soils suitable for limestone areas	To 60 ft	Heavily branched with small fine needles	Shade and shelter belts including seaside areas. (Drought resistant)
<i>Pinus pinaster</i> (Maritime Pine)	13 in.	Deep sandy soils	To 60 ft	Hardy with dense crown	Shelter belt and shade tree
<i>Pinus brutia</i> (Closely related to <i>Pinus halepensis</i>)	18 in.	Sandy soils, suitable for limestone areas	To 70 ft	Erect form, small fine needles	Shade and shelter belts including seaside areas. (Drought resistant)
* <i>Tamarix articulata</i> (Syn. <i>T. aphylla</i>) (Athel Tree or Evergreen Tamarisk)	7 in.	Suitable for heavy salty soils. Otherwise clays over loams and limestone sands	To 40 ft	Dense, bushy tree, fine greyish-green leaves. (Easily grown from cuttings)	Shade, windbreak, ornament

TREES SUITABLE FOR PLANTING—*continued*

(c) In Areas receiving less than 15 in. rainfall.

Botanical and Common Name	Minimum Yearly Rainfall	Soils	Height	Description	Recommended Use
<i>Acacia acuminata</i> (Rasperry Jam)	12 in.	Loams	To 25 ft	Small tree, rounded umbrella crown	Shade, ornamental, fence posts
<i>Acacia inophloia</i>	12 in.	Loamy sands	12 ft	Small, fine leaved compact tree	Windbreak, ornamental planting
<i>Acacia microbotrya</i> (Manna Gum)	11 in.	Prefers loamy soils	To 20 ft	A small, fast growing tree, dense bluish-green foliage	Shade, ornamental, Manna gum production
<i>Brachyhiton gregorii</i> (W. A. Kurrajong)	8 in.	Loams	To 30 ft	Dense crown, drought resistant, slow growing	Shade and ornamental
* <i>Callitris glauca</i> (White Cypress Pine)	7 in.	Sands and medium loams. Salt tolerant	30 ft	Compact, upright habit, silvery green foliage slow growing	Windbreak, shade and ornamental and for salt areas
<i>Casuarina campestris</i>	12 in.	Loams over sand and clay hardpan	6 ft	Compact shrub, coppery green in dry periods	Windbreak
<i>Casuarina decaisneana</i>	12 in.	Good loam over deep sandy clays	20 ft	Dense foliage compact crown rather dark green	Windbreak, shade and ornamental
<i>Casuarina dielsiana</i>	12 in.	Loamy soils and deep sands	20 ft	Dense green foliage compact tree with twisted leaves	Windbreak, shade and ornamental
* <i>Casuarina glauca</i> (Swamp sheoak)	12 in.	Sand, light loams	To 30 ft	Dense crowned sheoak	Shade and shelter belt—especially for low lying salty areas
<i>Casuarina heugliana</i>	12 in.	Found on shallow sandy soil	To 30 ft	Symmetrical habit, dense globular crown	Shade, on poor shallow sands
<i>Eucalyptus astringens</i> (Brown Mallet)	13 in.	Sandy or gravelly to loamy soils, preferably with clay subsoil	To 70 ft	Upright tree, bronze coloured bark, dark green leaves, umbrella crown	Shade and shelter. Tan bark production
<i>Eucalyptus brockwayi</i> (Dundas Mahogany)	11 in.	Medium loam	To 80 ft	Fast growing, upright. Bark pinkish grey, leaves dark green, shining	Shade and ornamental
<i>Eucalyptus caesia</i> (Gungunnu)	12 in.	Sands and light loams. Occurs naturally around granite outcrops	To 25 ft	Bark dark greenish-brown to bronze. Crown rather sparse, flowers large and attractive pink	Ornamental—homestead gardens and parks
<i>Eucalyptus camaldulensis</i> (River Gum)	8 in.	Adaptable to wide range of soils	To 90 ft	Fast growing, bark white or grey and smooth. Crown dense and often weeping habit	Ornamental, shade, windbreaks and shelter belts
<i>Eucalyptus campospe</i> (Silver Gimlet)	7 in.	Good loams only	To 35 ft	Bark smooth and bronze coloured to almost white on smaller twigs. Crown silvery blue-green	Shade, windbreak and ornamental
<i>Eucalyptus cladocalyx</i> (Sugar Gum)	14 in.	Adaptable to most light textured soils	70 ft	Large spreading crown and clean, smooth bark. Fast growing	Shade, shelter belt and roadside planting
<i>Eucalyptus cladocalyx</i> , var. <i>nana</i> (Dwarf Sugar Gum)	12 in.	Light and medium loams and deep sands	To 30 ft	Fast growing, smooth bark, good crown	Street planting, shade groups, shelter belts
<i>Eucalyptus crucis</i> (Southern Cross Mallee)	8 in.	Sand to loam	30 ft	Usually spreading glaucous crown on short erect stem. Yellowish flowers	Shade, windbreak and ornamental
<i>Eucalyptus dundasii</i> (Dundas Blackbutt)	12 in.	Loams over clay	30 ft	Dark green compact crown on erect bole and brown bark	Shade and windbreak,—street tree
<i>Eucalyptus ebbanoensis</i> (Sandplain Mallee)	12 in.	Well drained loams and sandy loams	12 ft	Rounded Mallee crown, bluish green foliage narrow leaves	Shade and windbreak
<i>Eucalyptus eremophila</i> (Tall Sand Mallee)	8 in.	Sand and sandy loams	To 20 ft	Mallee—foliage to ground level. Cream flowers, occasionally red or pink in showy clusters	Ornamental, wind break, street planting—especially under overhead wires

* Salt tolerant

TREES SUITABLE FOR PLANTING—*continued*

(c) In Areas receiving less than 15 in. rainfall.

Botanical and Common Name	Minimum Yearly Rainfall	Soils	Height	Description	Recommended Use
<i>Eucalyptus gardneri</i> (Blue Mallet)	12 in.	Sandy to loamy soils	35 ft	Large dense crown, leaves blue-green. Bark smooth and grey-brown	Shade, windbreak, ornamental. Tan bark. Particularly suited to southern wheatbelt
<i>Eucalyptus gracilis</i> (Yorrel)	12 in.	Loams and clays over sands and loams	50 ft	Fairly quick growing, fresh green compact crown	Shade and windbreak also sub saline situations where not swampy
<i>Eucalyptus kondininensis</i> (Stocking Tree)	12 in.	Loams and clays well drained	50 ft	Slender erect tree marked black stocking at base, fresh green crown	Shade and ornamental, suits saline conditions
* <i>Eucalyptus loxophleba</i> (York Gum)	12 in.	Prefers sandy loams to medium loams. Will often survive on shallow soils when other species may fall. Fairly salt tolerant	35 ft	A fair shade tree with umbrella crown. Trunk rough barked and usually crooked	Shade and shelter belt
<i>Eucalyptus occidentalis</i> (Flat Topped Yate)	14 in.	Occurs in low-lying poorly-drained clay soils with or without sandy surface. In wheat belt planting, deep sand has given good results	To 60 ft	Tall tree, umbrella crown. Bark on trunk rough and dark, on limbs grey and smooth	Shade tree
<i>Eucalyptus oleosa</i> , var. <i>kochii</i> (Watheroo Mallee)	12 in.	Sands, sandy gravels and light loam	To 25 ft	Tall, mallee, umbrella crown, rough grey bark, very drought resistant	Low shade or low shelter belt
<i>Eucalyptus platypus</i> (Moort)	14 in.	Medium to heavy loams	To 25 ft	Dense rounded crown. Bark moderately smooth, light grey. Greenish-yellow flowers	Shade, street planting, low windbreaks and shelter belts
<i>Eucalyptus platypus</i> var. <i>heterophylla</i> (Coastal Moort)	14 in.	Sand to medium loam	To 20 ft	Bushy tree	Ornamental, low windbreak and shelter belt
<i>Eucalyptus pyriformis</i> (Pear Fruited Mallee)	12 in.	Sand to medium loam and loamy gravel	20 ft	Rather sparse crowned mallee with very large blossoms varying on different trees from pale yellow to rich red	Ornamental
<i>Eucalyptus wandoo</i> inland form (Wandoo)	9 in.	Adaptable, including poor gravelly sands	To 50 ft	Fairly dense spreading crown. Bark smooth and light coloured. Foliage bluish green	Shade and shelter belts
<i>Eucalyptus reduunca</i> , var. <i>melanophloia</i> (Black Barked Marlock)	15 in.	Occurs naturally on sandy clay flats but will adapt itself to a range of soils	25 ft	Rounded shady crown. Large dark green leaves	Shade, ornamental, low shelter belt or windbreak
<i>Eucalyptus salmonophloia</i> (Salmon Gum)	7 in.	Medium to heavy loams	To 80 ft	Handsome tree. Early growth rather slow. Bark smooth salmon coloured. Fairly dense crown with shiny leaves	Shade, windbreak, shelter belt and avenues
<i>Eucalyptus salubris</i> (Gimlet)	7 in.	Medium to heavy loams	To 40 ft	If adequately spaced, forms good shady crown, leaves dark green. Bark smooth, bronze coloured. Trunk straight and fluted	Shade, street and avenue
* <i>Eucalyptus sargentii</i> (Salt River Gum)	14 in.	Sand to medium loams. (Found on low lying areas near salt lakes)	To 30 ft	Vigorous early growth. Bushy globular crown. Medium density	Shade, shelter and windbreaks. Suited to salty areas
* <i>Eucalyptus spathulata</i> (Swamp Mallet)	12 in.	Medium to heavy loam. Fairly salt tolerant	25 ft	Small tree or mallee with smooth bronze coloured bark. Leaves very narrow. If given adequate growing space develops a bushy crown	Shade and shelter belt

* Salt tolerant

TREES SUITABLE FOR PLANTING—*continued*

(c) In Areas receiving less than 15 in. rainfall.

Botanical and Common Name	Minimum Yearly Rainfall	Soils	Height	Description	Recommended Use
<i>Eucalyptus stotei</i> (Scarlet Pear Gum)	12 in.	Sands and light to medium loam	20 ft	Erect tree with compact dense dark green crown. Buds and capsules large and bright red immediately prior to and following flowering	Ornamental and street planting
<i>Eucalyptus stricklandi</i> (Yellow Flowered Blackbutt)	7 in.	Loams and loamy gravels (not suitable for poor sands)	To 35 ft	Bark—lower trunk, black and rough, upper trunk and limbs grey and smooth. Leaves large and shining. Striking large yellow blossoms	Shade, shelter and ornamental. Highly drought resistant
<i>Eucalyptus torquata</i> (Coral Gum)	7 in.	Loams and better quality gravel soils	To 35 ft	Rounded dense crown leaves dark green but lack lustre. Handsome blossoms white to deep pink. Bark rough, flaky and dark grey	Street, ornamental and shelter belt
<i>Eucalyptus woodwardi</i> (Lemon Flowered Gum)	7 in.	Good light or medium loams	To 35 ft	Rather open crowned. Mature form bears pendulous branches. Leaves large and glaucous. Large lemon-yellow blossoms	Ornamental
<i>Eucalyptus woodwardi</i> (x <i>Euc. torquata</i> hybrid)	10 in.	Good light or medium loams	Probably 40 ft	Taller and more erect than <i>Euc. torquata</i> and more densely crowned than <i>Euc. woodwardi</i> . Bark dark grey and smooth. Blossoms vary from yellow to orange-pink	Shade, shelter and ornamental
<i>Melaleuca hamulosa</i>	14 in.	Clay loams	6 ft	Rounded fairly dense light foliage— attractive whitish flowers	Shelter and ornamental
<i>Melaleuca pubescens</i> (Rottneft Island Tea Tree)	11 in.	Limestone soils, sands and light loams	20 ft	Dark green, dense spreading rounded crown. Rough bark	Low shelterbelt shade and ornamental. Suitable for coastal areas
<i>Pinus halepensis</i> (Aleppo Pine)	13 in.	Sandy soils suitable for limestone areas	To 60 ft	Heavily branched with small fine needles	Shade and shelter belts including sea-side areas. (Drought resistant)
<i>Pinus pinaster</i> (Maritime Pine)	13 in.	Deep sandy soils	To 60 ft	Hardy with dense crown	Shelter belt and shade tree. Commercial timber
* <i>Tamarix articulata</i> (<i>Syn. T. aphylla</i>) (Athel Tree or Evergreen Tamarisk)	7 in.	Suitable for heavy salty soils and clay loams well drained	To 40 ft	Dense, bushy tree, fine greyish-green leaves. (Easily grown from cuttings)	Shade, windbreak, ornamental

* Salt tolerant

3.—Planting and Tending of Young Trees in the Field

The following notes apply primarily to trees planted under conditions where they will receive only limited subsequent attention, as on farming properties, rather than to those being established in gardens or parks. It is assumed that the trees once planted will be wholly dependent for their moisture requirements on the rainfall.

The climate of the southern portion of Western Australia includes a long period of summer drought during which trees are subjected to considerable moisture stress which can retard their development and may even cause their death. While the selection of hardy species adapted to such conditions is the first essential, ultimate success can only be expected if due attention is paid to site selection, site preparation, planting layout, planting method and subsequent tending and protection.

Do not plant more trees than you can look after.

Site Selection

In occasional cases trees may receive water by drainage or seepage from other areas, but generally they will have for their use throughout the whole year only that water which the soil, on which they are growing, can absorb and store up during the wet months. Very shallow soils with inadequate moisture storage capacity should therefore be avoided. The soil types for which the various species are suited are indicated in the descriptive tables on pages 4 to 12.

Site Preparation

Cultivation of the site commencing with a ploughing twelve months in advance, followed by another just prior to planting is advisable to ensure the elimination of any competing vegetation and to permit a built up in soil moisture reserves. Subsequent tending should include late winter cultivation between the trees for at least two years to ensure that there is no re-establishment of scrub or grass during that period.

Time of Planting

Planting should be done during the early winter, as soon as the ground is well soaked. This not only gives the trees a longer time in which to become established before the hot weather sets in but also ensures the supply of healthy selected trees, as those left in nursery containers during long periods of wet weather tend to lose vigour. The optimum conditions for planting are a soil and subsoil well soaked by rain, but not water-logged, a humid atmosphere and a cloud covered sky.

Spacing

Trees need ample space to enable them to attain their full development and the lower the rainfall the greater the space needed. Unless they are planted with a view to timber production, they seldom need be planted closer than twenty feet apart even in the wetter districts, while in the drier portions of the wheat belt, the distance should be increased to thirty or more feet, with even wider spacing on the poorer sites. Some modification of this, involving slightly closer planting, can be considered in the case of trees planted as one or two line shelter belts where the roots have access to cleared or cultivated land on either side.

Large and wide spreading trees should not be planted close to houses—thirty feet is quite close enough. If space permits, a distance equal to the mature height of the species being used is suggested. It is also inadvisable to plant them close to septic systems owing to the possibility of roots penetrating joints in pipes. This applies particularly to pepper trees, white cedars, camphor laurels, poplars and the ornamental figs.

Soil Preparation

For planting under field conditions, cultivation as previously described is adequate. Where greater attention can be given the excavation of a hole 2 ft. square and 2 ft. deep, and filling it with some enriched topsoil will give the trees a more rapid start, but their more vigorous top growth is likely to necessitate artificial watering to meet the increased moisture demand.

There are few trees that do not benefit from a little fertilizer at planting time, but this should not be overdone and an ounce or so of superphosphate worked into the soil for a radius of about two feet round the tree should be ample, but avoid nitrogenous fertilizers. A complete fertilizer may be used in the second or subsequent years.

A small quantity of two per cent. dieldrin powder worked into the planting spot and dusted on to the soil enclosing the roots of the small tree will act as a deterrent to root destroying insects.

Planting Method

Shape the planting spot into a shallow saucer-shaped depression about two or three feet in diameter and a couple of inches deep to ensure that any rain falling on it will concentrate near the young tree and not flow elsewhere. Plant the tree in the centre of the saucer in a vertical position and about an inch deeper than it was in the nursery.

In the case of open rooted trees, see that the planting hole is large enough to permit the tap root to be directed straight down without bending and the lateral roots to be spread out and not bunched or twisted.

With trees raised in individual containers such as pots, tins or tubes, it will usually be found that some root coiling has taken place. If steps are not taken at planting time to deal with this fault subsequent loss of trees by wind throw is liable to occur. If, on examining the root system, a concentration of coiled roots is found at the bottom of the enclosing ball of earth we consider it advisable to cut them off. Where marked coiling of roots around the outside of the ball takes place the severing of such coiled roots by two shallow vertical cuts on opposite sides of the plant is suggested, but care should be taken to keep the ball otherwise intact. Extensive trials have established that with our Eucalypts at any rate, such treatment, although apparently drastic, does not cause any set back to the trees provided all care is taken in other directions.

Some trees are raised in trays (about twenty-five per tray) and at planting time should be taken out as follows:—

Remove one side of the tray, run a sharp trowel edge or knife between the rows both along and across the tray, thereby cutting the soil into small blocks, each containing a tree which can then be removed singly. It is necessary to give the tray a thorough soaking a couple of hours beforehand and allow to drain.

(Never allow tree roots, particularly those of pines, to be exposed, and see that they are kept continually moist prior to, during, and after planting. When trees are received from the nursery, they should be placed immediately in a sheltered, shady position and given a watering. If the roots and enclosing soil have been wrapped in paper, make sure that the paper is open at the top so that any water applied will be able to reach the soil.) It is advisable when a young tree is planted, to give it a gallon or even more of water to assist the settling of the soil round its roots.

In the actual planting operation, with balled stock, the planting hole should be made large enough to take the root ball and also to allow room for the hand of the planter to enable the plant to be held in place during the operation. Fill the hole by working well broken moist soil round the roots, gradually withdrawing the hand and pressing the soil in with the fingers, making sure to eliminate any air pockets. A final light pressure with the foot—not too close to the tree—will consolidate the refilled soil.

When only a limited number of trees are required annually some farmers prefer to use large planting stock. The seedlings as received from the nursery, instead of being planted straight out in to the field, are held until the following winter in larger containers such as kerosene tins. This procedure is also followed by some local governing bodies who find the larger trees less liable to theft or damage by vandals and incidentally cheaper and more convenient to look after if concentrated in a holding nursery.

Containers should be provided with drainage holes, supported clear of the ground on blocks or bricks, and filled with good potting soil over a bottom layer of coarse drainage material. Tins should be placed about nine inches apart to allow sufficient space for the trees to develop.

In planting in these larger containers, the young trees should receive the same root treatment as for field planting. Regular watering is necessary during the whole period they are held. Planting out requires some care and should be done as follows:—

Cut the bottom out of the container and stand it in the planting hole, which should be made as deep as the container itself. Make a vertical cut from top to bottom of the container and remove it. This leaves the young tree standing in a block of soil. Fill around this block with damp well broken soil, press down firmly and water.

It is advisable to stake trees for the first couple of years—particularly if in exposed situations. Without this precaution, it is found that young trees under the influence of strong winds develop a rotary motion which causes a hole to form around the base of the stem, in addition to which they are likely to develop a permanent lean.

Protection

During their early years, trees should be protected from stock by guards or temporary fences, which should be retained until the trees are large enough to withstand damage from the type of stock which is allowed access to them.

Severe damage (or even destruction) to young trees by cockatoos has developed into a serious problem in parts of the wheatbelt. Protection during the initial vital year or two can be given by surrounding the tree with a tree guard in the form of a tube made from rabbit netting about 3 or 3½ feet long and about 10 in. in diameter. If this is sunk a couple of inches into the ground, pinched together at the top and supported by one or preferably two wooden stakes on opposite sides of the tree, besides providing protection from cockatoos, rabbits and sheep, it will keep the young tree erect.

Planting Layout

For shelter belts, two parallel rows of trees, one dwarf (on the windward side) and the other tall, is recommended. Shade groups should not be made too large and the following layouts with spacing distances of thirty feet are suggested.

1. Seven trees, six of them arranged to form a hexagon with one in the centre.
2. Nine trees in three parallel rows each containing three trees.

It will be noted that, with the exception of one central tree in each arrangement, every tree has root access to the surrounding land. The wide spacing permits the development of large spreading crowns.

Heavy pruning of the stems of young trees is inadvisable, and if carried to excess, can cause the trees to become spindly and unable to support their own weight. Pruning should be restricted to the removal of double leaders, and to side limbs only when it becomes obvious that these are developing abnormally and to the detriment of the central shoot.

Particular care must be taken to protect trees from fire. Many of the trees listed, particularly those for the drier areas, are very fire tender, and even the burning of grass litter or piles of leaves near them may cause disfigurement, damage or possibly death.

4.—Pine Plantations for Commercial Purposes

The increased interest in pine planting by private individuals, companies and other institutions emphasises the need for some statements concerning the benefits and attractions of such ventures on the one hand and the difficulties and limitations on the other.

The Demand for Softwoods

Western Australia is short of softwood for the existing industrial needs of the State and there is no doubt that the demand for extra softwood will increase with time. There is, therefore, opportunity for private land owners to undertake pine planting with good prospects for the future.

Benefits and Attractions

Plantings established by the Forests Department over the past 50 years, on both small and large scale, have demonstrated that, in certain situations, pine plantations are fully capable of standing on their own economically. They often compare more than favourably with other forms of primary production practised in the same areas.

Further, pine planting is classed as primary production itself, and, for the private concern, can earn taxation concessions as set out broadly on page 19. It does not, however, lead to an increase in the rateable value of the land so used if the area is over 10 acres and properly managed for commercial purposes.

Combined with the fast growth, which should follow sound site selection and management, these indirect financial aids mean pine planting is not necessarily a project only for those of wealth and patience: it has a place on any farm, where the climate and soil are suitable, and will yield a return in shelter, beauty and profit.

Limitation and Difficulties

Long Term Investment

Commercial timber growing is a long term business in which major returns cannot be expected for at least twenty (20) years and often longer, after planting.

Costs of establishment and maintenance vary depending on the topography and the amount of clearing necessary, but, inevitably, a considerable investment will be tied up for quite long periods with little or no early returns. Establishment costs for *Pinus radiata* plantations can range from \$25 up to \$100 per acre, depending largely on the amount and type of clearing involved. Maintenance of such plantations can vary from \$2 to \$10 per acre per annum with extra outlays of up to \$25 per acre in particular years for special treatments such as pruning.

Intermediate returns from thinnings will be relatively small in amount and will probably do little more than defray some of the maintenance expenditure. It is from the final cropping by clear falling of the mature pines that the larger, more profitable returns will be gained. The age at which *P. radiata* stands reach economic maturity has not yet been conclusively calculated, but it would certainly not be before age 25 years, and more probably will be between 30 and 40 years. *P. pinaster*, growing at about one third of the rate of *P. radiata*, will, of course, take much longer, probably between 50 to 60 years, to reach this stage.

Suitable Sites are Restricted in Western Australia

Sites suitable for growing pines profitably in plantation formations in Western Australia are restricted by species adaptability, rainfall, soil type and depth, and the distance from market outlets for the produce. Some brief notes on these restrictive factors are set out below for guidance, but it is suggested that intending growers should seek advice from the Forests Department before embarking on a planting project.

Species

Trials with a great number of pine species during the last forty years have shown that only two; viz. *Pinus radiata* (Monterey Pine) and *Pinus pinaster* (Maritime Pine) are suitable for commercial planting in Western Australia.

Pinus radiata requires rich, loam soils, and on these shows phenomenally rapid growth. It is however quite unsuitable to the less fertile soils—the sands and gravels. *Pinus pinaster*, although by no means comparable in growth rate, will thrive on the poorer soils and gives quite good results on certain sandy sites on the coastal plain, both North and South of Perth, and on sandy gravels in the hills.

Rainfall

In the South West, pine plantation establishment should be restricted to areas receiving at least thirty inches of annual rainfall. On the South Coast, with cooler conditions and a longer growing period, areas with somewhat less rainfall could be acceptable. In the vicinity of Esperance about 22 inches could, on present indications, be considered about the lower limit.

The dampness often observed in fallowed light land in the wheatbelt has at times given rise to the illusion that such sites could be used for plantation establishment. Unfortunately, this is not so. The moisture holding capacity of light land is quite low and such moisture reserve is easily exhausted and recharge under low rainfall conditions is inadequate to sustain a developing tree crop.

If trees are spaced at wide intervals thereby giving their roots access to large volumes of soil, they may survive under conditions of low rainfall but under such spacing height growth is poor and side limbs large so that any timber produced is poor in quality and low in volume.

Soils

It must be stressed that *Pinus radiata* requires a deep, fertile, loamy soil. Attempts to use poorer sandy or gravelly soils will result in substandard plantations or complete failure.

For *P. pinaster* the site selected must be capable of providing the plantation with moisture throughout the entire year which means that it must be capable of storing enough water from the winter rains to sustain the tree crop through the annual summer drought. Shallow soils have inadequate volume to do this and very deep sands may allow too much moisture to pass from the root zone. A desirable soil is a sand or sandy loam overlying a less pervious layer such as clay or coffee rock at from four to ten feet depth but with adequate slope to avoid waterlogging.

Location of Markets

Log timber is an extremely bulky and heavy commodity to transport and plantations should, therefore, be situated as close to the log consumer as possible. At present, in Western Australia, such consumers are restricted almost entirely to the Perth metropolitan area. Even in the future it is unlikely that high levels of consumption will be reached in other than the South West forest areas.

Plantation Establishment and Maintenance

The following notes set out briefly the establishment and maintenance operations necessary. It is, once again, suggested that intending growers could obtain more detail on particular points from the Forests Department should they so desire.

Soil Preparation

In order that the trees may have, from the outset, the full benefit of the moisture and nutrients of the site, it is necessary to eliminate any competing vegetation. Trees are removed by felling or bulldozing and where possible utilised. The debris and scrub is then burnt and the area deep ploughed. It is preferable (and on the Esperance plain essential) that this initial ploughing should be followed by eight to twelve months fallow and given a second ploughing before planting is carried out.

Plantation Layout

For fire protection purposes it is necessary to leave a chain wide external strip which can be cultivated and kept bare of inflammable material. For timber production, pines should be planted at close spacing to ensure that large side limbs do not develop and that trees of inferior form can be progressively removed as thinnings, leaving only the best for the final crop. The spacing currently used by the Forests Department is 8 feet by 6 feet. At approximately two chain intervals twelve feet wide spaces are left instead of 8 feet, to provide lines of access.

Planting Procedure

Planting should be carried out only during the period from mid June until late July. For small private plantations planting will almost certainly be by hand. Parallel lines of pegs laid down at intervals enable the direction of the planting lines to be maintained.

Trees should have their roots kept damp and well covered from the time they are lifted from the nursery until they are planted in the field. A wet bag or a tray lined and covered with wet hessian can be used for this purpose. They should be planted at least an inch deeper than they were in the nursery.

After planting, 3 or 4 ounces of zinc superphosphate should be applied near to, but not actually on the base of each tree. Sometimes trees at about three years of age show a decline in vigour indicated by a reduction in growth rate, a shortening of the needles and a browning or yellowing of the crown. This may be due to zinc deficiency and if so can be corrected by spraying with a 2½% (4 ozs. per gallon) zinc sulphate solution.

Thinning and Pruning

Removal of lower limbs (up to a height of about 7 feet) should commence when the trees are about 3 to 4 inches diameter. Small suppressed trees which show little prospect of developing into saleable material can be felled at the same time. At from ten to twenty years the first systematic thinning is carried out and this is followed by periodic thinnings throughout the life of the stand so that when the crop reaches maturity only a hundred or so trees, of the eight hundred odd originally planted, will be left.

Protection

Besides the initial protection given to a plantation by ploughing external breaks against fire and erecting fences against stock and vermin, certain maintenance works will be necessary. This will be in the form of adequate fence and firebreak maintenance and the periodic burning of inflammable debris beyond the cultivated breaks.

During the summer months it is necessary to have constantly on call suitably equipped personnel capable of undertaking actual fire fighting. They require facilities for early detection of outbreaks and rapid transport to any fire.

Rabbits may cause considerable tree losses during the first couple of years after planting and if they are numerous in the locality fencing and poisoning becomes necessary.

TAXATION CONCESSIONS FOR PRIVATE COMMERCIAL PLANTATIONS

Under Taxation law, a person who operates a privately owned pine plantation as a business is classed as a primary producer and is eligible for taxation benefits which include the following:—

- (a) His income is subject to averaging provisions. This means that tax is levied on his actual taxable income of the current year but at the rate applicable to the average of his incomes of the four previous years and the current year. (Where the taxable income and the average income both exceed \$16,000 the averaging system is not applied).
- (b) The cost of plant and structural improvements used wholly and exclusively for plantation operations is allowed as a deduction over a five year period by way of special depreciation of one fifth of the cost in each of the five years.
- (c) If capital expenditure is incurred in acquiring new (as distinct from second hand or used) plant which is used wholly and exclusively in carrying on plantation operations, then 20% of the cost may be claimed as a deduction in the year in which the plant is installed. This deduction is termed an "investment allowance" and is in addition to the special depreciation referred to above.
- (d) Deductions are allowable in respect of normal plantation operating costs. These include items such as seeds, plants, fertilizer, repairs, wages, etc. In addition, deductions are allowable in respect of special expenditure of a capital nature incurred in preparing and maintaining the plantation site. These include the cost of clearing, draining, pest extermination, construction of irrigation channels, fencing for protection against animal pests, etc. (The cost of the land itself is not deductible).
- (e) In a year in which plantation expenditure exceeds income received, the difference represents a loss and such loss may be carried forward and claimed as a deduction against income of future years.
- (f) Insurance money recovered in respect of the loss by fire of trees may be spread over five years; one fifth in the year of receipt and one fifth in each of the four succeeding years.
- (g) One third of the amount of payments made for calls on shares in afforestation companies is allowable as a deduction.
- (h) Exemption from state land tax may be granted upon application if the land is used primarily for afforestation.

The above matters are expressed in general terms only, and intending growers, before embarking on large scale projects, are advised to discuss proposed plantation ventures with a taxation consultant or accountant.

More detailed information on the assessment of the income of primary producers is contained in the booklet "Income Tax for Farmers and Graziers" obtainable free of charge from the Commonwealth Taxation Department, Perth.

5.—Ordering Trees

CONDITIONS OF SALE

1. Plants are sold on the understanding that they are not to be offered for resale.
2. No trees will be despatched to applicants within the city and suburban areas.
3. No trees will be despatched to any destination outside Western Australia.
4. **A remittance made payable to the Forests Department must accompany each order for trees. Postage stamps should not be sent.**
5. Where trees are required to be sent to sidings, freight must be paid in advance. Freight need not be forwarded with order when trees are to be sent to an attended station.
6. Trees cannot be forwarded by the Railway C.O.D. system.
7. Less than five trees of one variety are charged at the rate for single trees. Five trees and over are charged at the ten tree rate.
8. No order for the supply of less than five trees by Road or Rail transport will be accepted.
9. Trees are despatched from the nursery well packed and in good order and condition. Thereafter they shall travel at Consignees risk and the Forests Department shall accept no further responsibility for them.
10. Prices and freight rates listed are those ruling at October 1st, 1969, but thereafter shall be subject to alteration without notice.
11. The distributing season commences on May 1st and closes on August 31st.

ORDERING TREES—Advice to Clients

1. Please study Conditions of Sale.
2. When ordering it is advisable to indicate a second choice. Failing instructions to the contrary, suitable trees of other species or varieties may be substituted when the trees ordered are out of stock. When stocks of any species are limited, orders placed in advance or early in the season are more likely to be filled to the satisfaction of the client.
3. To avoid disappointment, clients requiring large numbers of trees are requested to place orders well in advance so as to enable adequate stocks to be produced. Where firm orders to the value of 40 dollars or more are placed with the nursery not later than September 15th of the year prior to that in which delivery is required, a discount of 7½% on list price will be allowed.
4. Local authorities and other public bodies are requested to confine their orders for trees for Arbor Day to the number actually required for planting on that day, and to list separately for supply at some other time trees for their ordinary requirements.
5. Clients are requested to use the order form supplied with the price list where such is available.
6. All communications should be addressed to the Officer in Charge, Forest Nursery, Hamel, or to the Officer in Charge, Forest Nursery, Narrogin.
7. Approximate weights (to assist in freight calculations)—
 - Trees raised in trays—35 lb. per tray.
 - Trees raised in 3 in. pots—20 lb. per ten.
 - Trees raised in 4 in. pots—24 lb. per ten.
 - Open rooted pines (in large quantities)—26 lb. per 100.
 - Other open rooted trees—5 lb. per ten.

APPROXIMATE FREIGHTS
TABLE A—GOODS RATES

Miles	Weight not Exceeding							
	1 Qr.	2 Qrs.	3 Qrs.	1 Cwt.	1 Cwt. 1 Qr.	1 Cwt. 2 Qrs.	1 Cwt. 3 Qrs.	2 Cwt.
15	\$ 0.30	\$ 0.35	\$ 0.40	\$ 0.45	\$ 0.50	\$ 0.55	\$ 0.60	\$ 0.65
25	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70
35	0.35	0.40	0.50	0.60	0.65	0.75	0.85	0.90
45	0.35	0.45	0.55	0.65	0.75	0.85	0.95	1.00
55	0.35	0.45	0.60	0.70	0.80	0.95	1.00	1.15
70	0.40	0.50	0.65	0.75	0.90	1.05	1.15	1.25
80	0.40	0.55	0.70	0.80	1.00	1.15	1.25	1.40
90	0.40	0.55	0.75	0.90	1.05	1.25	1.35	1.55
105	0.40	0.60	0.80	0.95	1.15	1.35	1.50	1.65
120	0.45	0.60	0.85	1.05	1.20	1.45	1.60	1.80
135	0.45	0.65	0.90	1.10	1.30	1.55	1.70	1.95
145	0.45	0.70	0.95	1.15	1.40	1.65	1.85	2.05
165	0.50	0.70	1.00	1.20	1.45	1.75	1.95	2.20
185	0.50	0.75	1.00	1.30	1.55	1.80	2.05	2.35
200	0.50	0.75	1.05	1.35	1.60	1.90	2.15	2.50
225	0.50	0.80	1.10	1.40	1.70	2.00	2.30	2.60
250	0.55	0.85	1.15	1.45	1.80	2.10	2.40	2.75
280	0.55	0.85	1.20	1.55	1.85	2.20	2.50	2.90
305	0.55	0.90	1.25	1.60	1.95	2.30	2.65	3.00
335	0.55	0.90	1.30	1.65	2.00	2.40	2.75	3.15
370	0.60	0.95	1.35	1.75	2.10	2.50	2.85	3.30
410	0.60	1.00	1.40	1.80	2.20	2.60	3.00	3.40
445	0.60	1.00	1.45	1.85	2.25	2.70	3.10	3.55
485	0.60	1.05	1.50	1.90	2.35	2.80	3.20	3.70
525	0.65	1.05	1.55	2.00	2.40	2.90	3.35	3.80
565	0.65	1.10	1.60	2.05	2.50	3.00	3.45	3.95
605	0.70	1.20	1.65	2.15	2.60	3.10	3.55	4.05
645	0.70	1.20	1.70	2.15	2.65	3.15	3.65	4.15
725	0.75	1.25	1.75	2.30	2.80	3.30	3.80	4.30
800	0.75	1.30	1.80	2.35	2.90	3.45	3.95	4.50

TABLE B—PARCEL RATES

Young trees in crates are carried in accordance with the following table. When trees are sent freight forward an additional charge (booking fee) of ten cents (10c) is payable.

Miles	Weight not Exceeding													Miles
	3 lb. and under	Over 3 lb. and up to 7 lb.	Over 7 lb. and up to 11 lb.	Over 11 lb. and up to 14 lb.	Over 14 lb. and up to 21 lb.	Over 21 lb. and up to 28 lb.	Over 28 lb. and up to 42 lb.	Over 42 lb. and up to 56 lb.	Over 56 lb. and up to 70 lb.	Over 70 lb. and up to 84 lb.	Over 84 lb. and up to 98 lb.	Over 98 lb. and up to 112 lb.	Each additional 28 lb. or part thereof	
15	\$ 0.15	\$ 0.20	\$ 0.25	\$ 0.30	\$ 0.35	\$ 0.40	\$ 0.50	\$ 0.55	\$ 0.60	\$ 0.65	\$ 0.70	\$ 0.75	\$ 0.80	15
25	0.15	0.25	0.30	0.35	0.40	0.45	0.50	0.60	0.70	0.80	0.85	0.90	0.95	25
50	0.20	0.25	0.35	0.40	0.50	0.55	0.65	0.80	0.90	1.05	1.15	1.25	1.35	50
75	0.20	0.30	0.40	0.45	0.55	0.65	0.80	0.90	1.05	1.20	1.30	1.45	1.55	75
100	0.20	0.30	0.40	0.45	0.55	0.65	0.85	1.00	1.15	1.30	1.50	1.65	1.80	100
125	0.20	0.30	0.45	0.55	0.70	0.85	1.00	1.15	1.30	1.50	1.65	1.85	2.00	125
150	0.20	0.30	0.45	0.60	0.80	0.95	1.10	1.30	1.50	1.70	1.90	2.10	2.30	150
200	0.25	0.35	0.50	0.65	0.90	1.05	1.25	1.55	1.80	2.10	2.35	2.65	2.85	200
250	0.25	0.35	0.50	0.70	0.95	1.20	1.40	1.65	1.90	2.15	2.35	2.60	2.80	250
300	0.25	0.35	0.55	0.70	1.00	1.25	1.55	1.80	2.10	2.35	2.65	2.85	3.05	300
400	0.25	0.40	0.60	0.75	1.10	1.35	1.70	2.00	2.30	2.65	2.95	3.20	3.45	400
500	0.30	0.40	0.60	0.80	1.15	1.45	1.75	2.10	2.40	2.65	2.95	3.20	3.45	500
600	0.30	0.40	0.65	0.85	1.20	1.55	1.85	2.15	2.45	2.80	3.10	3.35	3.60	600
700	0.30	0.40	0.65	0.90	1.25	1.60	1.95	2.30	2.60	2.85	3.20	3.50	3.75	700
800	0.30	0.45	0.70	0.95	1.30	1.65	2.00	2.35	2.65	3.00	3.30	3.60	3.90	800
and over														and over

PRICE LIST—HAMEL NURSERY ONLY

Table 1

(Trees Raised in Pots)

(All earlier price lists are automatically cancelled).

(For Narrogin Nursery Price List see page 24.)

(These are not usually ready before early May.)

Botanical Name	Common Name	Price
<i>Acacia acuminata</i>	Raspberry Jam	} \$0.35 each. \$3.00 per 10. \$25.00 per 100.
" <i>baileyana</i>	Cootamundra Wattle	
" <i>cyanophylla</i>	Western Wattle	
" <i>dealbata</i>	Silver Wattle	
" <i>decurrens</i>	Black Wattle	
" <i>elata</i>	Cedar Leaf Wattle	
" <i>melanoxydon</i>	Blackwood	
" <i>microbotrya</i>	Manna Wattle	
" <i>pendula</i>	Weeping Myall	
" <i>podalyriaefolia</i>	Queensland Silver Wattle	
" <i>pycnantha</i>	Golden Wattle	
<i>Agonis flexuosa</i>	West Australian Peppermint	
<i>Angophora lanceolata</i>	Smooth Barked Apple	
<i>Brachychiton acerifolium</i>	Illawarra Flame Tree	
<i>Callistemon lanceolatus</i>	Bottle Brush	
" <i>phoeniceus</i>	Fiery Bottle Brush	
<i>Callitris calcarata</i>	Black Pine	
<i>Callitris robusta</i>	Rottnest Cypress	
<i>Casuarina glauca</i>	Swamp Sheoak	
" <i>suberosa</i>	Black Oak	
<i>Ceratonia siliqua</i>	Carob Bean	
<i>Cinnamomum camphora</i>	Camphor Laurel	
<i>Cupressus arizonica</i>	Arizona Cypress	
" <i>sempervirens</i> var. <i>horizontalis</i>	Horizontal Cypress or Morocco Cypress	
<i>Eucalyptus botryoides</i>	False Mahogany	
" <i>caesia</i>	Gungunnu (Large Flowered variety)	
" <i>caesia</i>	Gungunnu (Small Flowered variety)	
" <i>calophylla</i> var. <i>rosea</i>	Pink Flowered Marri	
" <i>camaldulensis</i>	River Gum	
" <i>citriodora</i>	Lemon Scented Gum	
" <i>cladocalyx</i>	Sugar Gum	
" <i>cladocalyx</i> var. <i>nana</i>	Dwarf Sugar Gum	
" <i>erythrocorys</i>	Illyarrie	
" <i>ficifolia</i>	Red Flowering Gum	
" <i>forrestiana</i>	Fuchsia Mallee	
" <i>globulus</i>	Tasmanian Blue Gum	
" <i>gomphocephala</i>	Tuart	
" <i>lehmanni</i>	Bald Island Marlock	
" <i>leucoxydon</i> var. <i>rosea</i>	Yellow Gum (Pink Flowered)	
" <i>maculata</i>	Spotted Gum	
" <i>melliodora</i>	Yellow Box	
" <i>microcorys</i>	Tallowwood	
" <i>occidentalis</i>	Flat Topped Yate	
" <i>platypus</i> var. <i>heterophylla</i>	Coastal Moort	
" <i>robusta</i>	Swamp Mahogany	
" <i>sargentii</i>	Salt River Gum	
" <i>spathulata</i>	Swamp Mallet	
" <i>stoatei</i>	Pear Gum	
" <i>torquata</i>	Coral Flowered Gum	
<i>Grevillea robusta</i>	Silky Oak	
<i>Hakea laurina</i>	Pin-cushion Hakea	

Note—Sugar Gums, Dwarf Sugar Gums, River Gums, Tasmanian Blue Gums, Tuarts, Bald Island Marlock, Coastal Moort, Salt River Gum, Canary Island Pines are also raised in trays of approximately 25 trees: Price \$4.50 per tray.

Botanical Name	Common Name	Price	
<i>Hakea multilineata</i>	Grass Leaf Hakea	} \$0.35 each. \$3.00 per 10. \$25.00 per 100.	
<i>Hymenosporum flavum</i>	N.S.W. Frangipanni		
<i>Lagunaria patersoni</i>	Queensland Pyramid Tree		
<i>Leptospermum laevigatum</i>	Victorian Tl-Tree		
<i>Liquidambar styraciflua</i>	Liquidambar		
<i>Melaleuca pubescens</i>	Rottnest Tl-Tree		
<i>Pinus canariensis</i>	Canary Island Pine		
„ <i>halepensis</i>	Aleppo Pine		
„ <i>pinaster</i>	Maritime Pine		
„ <i>radiata</i>	Monterey Pine		
<i>Pittosporum undulatum</i>	Cheesewood		
<i>Rhus succedanea</i>	Wax Tree		
<i>Schinus molle</i>	Pepper Tree		
„ <i>terebinthifolius</i>	Japanese Pepper Tree		
<i>Tamarix articulata (syn. aphylla)</i>	Evergreen Tamarisk		
<i>Thuja orientalis</i>	Chinese Arbor Vitae		
<i>Tristania conferta</i>	Brush Box		
<i>Virgilia capensis</i>			
<i>Araucaria excelsa</i>	Norfolk Island Pine		} \$0.50 each. \$4.50 per 10. \$35.00 per 100.
<i>Ficus australis</i>	Port Macquarie Fig		
<i>Ficus macrophylla</i>	Moreton Bay Flg		
<i>Jacaranda mimosifolia</i>	Jacaranda		

Open Rooted Trees Raised in Nursery Lines

(These are not usually ready for distribution before the middle of June.)

Botanical Name	Common Name	Price
<i>Brachychiton diversifolium</i>	Kurrajong	} \$0.35 each. \$3.00 per 10.
<i>Erythrina indica</i>	Coral Tree	
<i>Liquidambar styraciflua</i>	Liquidambar or Sweet Gum	
<i>Melia azedarach</i>	Cape Lilac or White Cedar	
<i>Platanus occidentalis</i>	Plane Tree	
<i>Populus nigra</i>	Black Poplar	
<i>Populus nigra var. italica</i>		
<i>Populus yunnanensis</i>		
<i>Quercus lusitanica</i>	Portuguese Oak	
<i>Salix babylonica</i>	Weeping Willow	
„ <i>caprea</i>	Pussy Willow	} \$0.08 each. \$0.50 per 10. \$3.50 per 100.
<i>Tamarix gallica</i>	Spring Flowering Tamarisk	
„ <i>pentandra</i>	Summer Flowering Tamarisk	
<i>Ulmus pumila</i>	Chinese Elm	
<i>Pinus halepensis</i>	Aleppo Pine	
„ <i>pinaster</i>	Maritime Pine	
„ <i>pinea</i>	Stone Pine	
„ <i>radiata</i>	Monterey Pine	

Where a small number of pine trees are required, particularly for planting in the wheat belt, potted or tray grown stock is advised. This is available from Hamel or Narragin at prices ruling for Table 1.

Table 3

The following species are available on request: *Acacia inophloia*, *Callitris intratropica*, *Casuarina decaisneana*, *C. dielsiana*, *C. campestris*, *Eucalyptus decipiens*, *E. diptera*, *E. kondininensis*, *E. leptophylla*, *E. ebbanoensis*, *Melaleuca hamulosa*.

PINES—BULK LOTS

Pinus pinaster and *Pinus radiata* may be obtained for small plantations and extensive shelter belts, etc., at \$17.50 per thousand, f.o.r. Hamel.

No extra charge for packing.

Table 3

PRICE LIST—NARROGIN NURSERY

Trees Raised in Pots

Botanical Name	Common Name	Trees Raised in 3 in. Pots
<i>Eucalyptus astringens</i>	Brown Mallet	} \$0.35 each. \$3.00 per 10. \$25.00 per 100.
„ <i>brockwayi</i>	Dundas Mahogany	
„ <i>caesia</i>	Gungunnu	
„ <i>calophylla</i> var <i>rosea</i>	Pink Flowered Marri	
„ <i>camaldulensis</i>	River Gum	
„ <i>campaspe</i>	Silver Gimlet	
„ <i>citriodora</i>	Lemon-scented Gum	
„ <i>cladocalyx</i>	Sugar Gum	
„ <i>cladocalyx</i> var <i>nana</i>	Dwarf Sugar Gum	
„ <i>crucis</i>	Southern Cross Mallee	
„ <i>dundasi</i>	Dundas Blackbutt	
„ <i>erythrocorys</i>	Ilyarrie	
„ <i>erythronema</i>	White Mallee	
„ <i>falcata</i>	White Mallett	
„ <i>ficifolia</i>	Red Flowering Gum	
„ <i>flocktoniae</i>	Merritt	
„ <i>forrestiana</i>	Fuschia Mallee	
„ <i>gardneri</i>	Blue Mallet	
„ <i>gracilis</i>	Yorrel	
„ <i>kruseana</i>	Book Leaf Mallee	
„ <i>lozophleba</i>	York Gum	
„ <i>macrocarpa</i>	Mottlecah or Rose of the West	
„ <i>occidentalis</i>	Flat Topped Yate	
„ <i>platypus</i>	Round Leafed Moort	
„ <i>platypus</i> var. <i>hetero-</i> <i>phylla</i>	Coastal Moort	
„ <i>preissiana</i>	Bell Fruited Mallee	
„ <i>pterocarpa</i>	(A rare ornamental white barked tree)	
„ <i>redunca</i> var <i>melano-</i> <i>phloia</i>	Black Bark Marlock	
„ <i>salmonophloia</i>	Salmon Gum	
„ <i>salubris</i>	Gimlet	
„ <i>sargenti</i>	Salt River Gum	
„ <i>spathulata</i>	Swamp Mallet	
„ <i>stoatei</i>	Pear Gum	
„ <i>stricklandi</i>	Yellow Flowered Blackbutt	
„ <i>torquata</i>	Coral Flowered Gum	
„ <i>torquata</i> x <i>woodwardi</i> <i>hybrid</i>	—	
„ <i>wandoo</i>	Wandoo or White Gum	
„ <i>wandoo</i>	Wandoo or White Gum	
„ (inland form)	Wandoo or White Gum	
„ <i>woodwardi</i>	Lemon Flowered Gum	
<i>Acacia acuminata</i>	Raspberry Jam	
„ <i>baileyana</i>	Cootamundra Wattle	
„ <i>microbotrya</i>	Manna Wattle	
„ <i>podalyriaefolia</i>	Queensland Silver Wattle	
„ <i>pycnantha</i>	Golden Wattle	
<i>Callitris calcarata</i>	Black Cypress Pine	
„ <i>glauca</i>	White Cypress Pine	
„ <i>robusta</i>	Rottnest Island Cypress	
<i>Casuarina glauca</i>	Swamp Oak	
„ <i>huegeliana</i>	Rock Oak	
<i>Cupressus arizonica</i>	Arizona Cypress	
<i>Hakea laurina</i>	Pin Cushion Hakea	
„ <i>multilineata</i>	Grass Leaf Hakea	
<i>Myoporum insulare</i>	Boobyalla	
<i>Tamarix articulata</i> (syn. <i>aphylla</i>)	Evergreen Tamarisk	

Botanical Name	Common Name	Trees Raised in 3 in. Pots
<i>Pinus canariensis</i>	Canary Island Pine	} \$0.35 each. \$3.00 per ten trees \$25.00 per 100.
" <i>halepensis</i>	Aleppo Pine	
" <i>halepensis var brutia</i>	Aleppo Pine	
" <i>pinaster</i>	Cluster Pine	
" <i>pinea</i>	Stone Pine	
" <i>radiata</i>	Monterey Pine	
<i>Schinus molle</i>	Pepper Tree	

Note—Sugar Gums, Dwarf Sugar Gums, River Gums, Brown Mallets, Blue Mallets, Salt River Gums and Swamp Sheoaks are also raised in trays of approximately 24 trees. Price: \$4 per tray.

A few specimens of various other eucalypt species, in addition to those listed, are raised at both nurseries.

Clients with particular tree planting problems are invited to refer these to the Officer in Charge, Hamel Nursery or the Officer in Charge, Forest Nursery, Narrogin, who will advise on species most suitable for their requirements.

SEEDS.

Price lists of seeds available for sale may be obtained from the Conservator of Forests, Perth.

ORDER FORM

NAME
 (Block letters)

ADDRESS.....

To

The Officer in Charge,

..... Nursery,

Please forward to me at.....*station/siding by
 *goods/passenger train, freight *paid/forward the tree seedlings listed
 hereunder.

Would you please despatch so that trees shall reach their destination
 by (date).

NO.	SPECIES	PRICE	NET AMOUNT
	FREIGHT		
		TOTAL \$	

My remittance covering cost and freight is attached herewith.

Signature.....

* Cross out which does not apply.

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Western Australia**

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