

Plants suitable for salty soils

This sheet outlines the problem of salinity and lists some trees and shrubs that are suitable for planting in salty soils in coastal and sub-coastal Queensland. All have a moderate degree of salt tolerance, and are generally available from specialist native and community nurseries.

Salinity in Queensland

The processes leading to rising watertables are often triggered when trees and other deep-rooted, long-lived, native plants are cleared and replaced by shallow-rooted, annual crops and perennial pasture. Clearing vegetation, particularly from hilltops and upper slopes, allows large volumes of water (which would otherwise have been used by native trees) to recharge the groundwater system, contributing to rising watertables. This serious problem has impacts on both agricultural and ecological productivity and sustainability. *NRM Facts L51 Salinity in Queensland* provides an overview of the extent of the salinity problem in Queensland, contributing factors, indicators, prevention and control.

Planting considerations

Strategic placement of retained or planted vegetation in the landscape can help to alleviate

salinity problems. Revegetation of saline sites can reduce soil erosion, provide forage and improve the appearance of (and even disguise) salt affected areas. However, revegetation of seepage areas is unlikely to address the cause of salination because existing salts are not removed and may be further concentrated at the surface or in the root zone. While there is evidence that trees can lower the water table of saline seepage sites, the watertable is unlikely to be lowered significantly, and the real problem area, where excess water is entering the watertable, lies elsewhere. Therefore planting on highly saline soils may not be as effective as planting above, in and adjacent to saline seepage sites to intercept sub-surface water flow.

The natural occurrence of each species is provided below. In general, try to pick species that are found naturally in your area. The use of local species may also be beneficial if you wish to encourage wildlife.

NRM Facts L54 Managing salinity with vegetation advocates the development of a vegetation plan for the strategic retention and establishment of vegetation in the management of salinity. Consider obtaining professional advice when undertaking or planning a planting on salt-affected land.

Species Tolerant of Saline Soils

Large trees - height 15 m or more

Botanical name	Common name	Natural occurrence
<i>Acacia auriculiformis</i> **	northern black wattle, ear pod wattle	NQ and NT
<i>Casuarina cunninghamiana</i> **	river sheoak	NQ, CQ, SEQ, NSW and NT
<i>Casuarina glauca</i> **	swamp sheoak	SEQ, NSW and NT
<i>Corymbia citriodora</i> ssp <i>variegata</i>	spotted gum, lemon-scented gum	NQ, CQ and SQ
<i>Corymbia tessellaris</i>	carbeen, Morton Bay ash	NQ, CQ, SQ and NSW
<i>Eucalyptus argophloia</i> *	western white gum	SQ
<i>Eucalyptus brassiana</i>	Cape York gum	NQ
<i>Eucalyptus brockwayi</i>	dundas mahogany	WA
<i>Eucalyptus camaldulensis</i> **	river red gum	All mainland States
<i>Eucalyptus cambageana</i>	Coowarra box	CQ
<i>Eucalyptus drepanophylla</i> **	Queensland grey ironbark	NQ, CQ and SEQ
<i>Eucalyptus grandis</i>	rose gum, flooded gum	NQ, CQ and SEQ (Coastal)

<i>Eucalyptus largiflorens</i>	black box	SQ, NSW, Vic and SA
<i>Eucalyptus melliodora</i>	yellow box, honey box	CQ, SEQ, NSW and Vic
<i>Eucalyptus microtheca</i>	coolabah	NQ, CQ, SQ, NSW, NT, SA and WA
<i>Eucalyptus moluccana</i> *	grey box	NQ, CQ, SEQ and NSW
<i>Eucalyptus paniculata</i>	grey ironbark	NSW (Coastal)
<i>Eucalyptus pellita</i>	red mahogany	NQ
<i>Eucalyptus raveretiana</i>	yellow box, black ironbark	NQ and CQ
<i>Eucalyptus robusta</i>	swamp mahogany	SEQ and NSW (Coastal)
<i>Eucalyptus salmonophloia</i>	salmon gum	WA
<i>Eucalyptus salubris</i>	gimlet, fluted gum	WA
<i>Eucalyptus sideroxylon</i>	ironbark, mugga	SEQ, NSW and Vic
<i>Eucalyptus tereticornis</i>	forest red gum, blue gum	NQ, CQ, SEQ, NSW and Vic
<i>Melaleuca leucadendra</i> **	broad-leaved tea-tree	NQ, CQ, NT and WA (Tropics)
<i>Melia azederach</i>	white cedar	NQ, CQ, SEQ, NSW and WA

Medium trees - height 5 m - 15 m

<i>Acacia ampliceps</i> **	salt wattle	WA and NT
<i>Acacia disparrima</i> sub sp <i>disparrima</i> (syn. <i>A. aulacocarpa</i>)	southern salwood	CQ, SEQ and NSW
<i>Acacia crassicarpa</i>	northern wattle	NQ
<i>Acacia leptocarpa</i>	wattle	NQ, CQ, SEQ and NT
<i>Acacia pendula</i>	weeping myall	CQ, SWQ, NSW and Vic
<i>Acacia salicina</i>	cooba	All mainland States
<i>Acacia stenophylla</i> *	river cooba	All mainland States (Inland)
<i>Callistemon salignus</i>	white bottlebrush	SEQ, and NSW
<i>Callistemon viminalis</i>	weeping bottlebrush	NQ, CQ, SEQ, NSW and Vic
<i>Carallia brachiata</i>	carallia	NQ, NT, and WA
<i>Casuarina equisetifolia</i>	beach sheoak	NQ, CQ, SEQ and NSW
<i>Eucalyptus burdettiana</i>	Burdett's gum	WA
<i>Eucalyptus curtisii</i>	plunkett mallee	SEQ
<i>Eucalyptus sargentii</i>	salt river gum	WA
<i>Eucalyptus spathulata</i> , ssp. <i>spathulata</i>	swamp mallee	WA
<i>Melaleuca arcana</i>	winti	NQ
<i>Melaleuca bracteata</i>	river tea-tree, white cloud tree	NQ, CQ, SQ, NSW, SA and WA
<i>Melaleuca linariifolia</i>	narrow-leaved tea-tree	NQ, CQ, SQ, NSW and NT
<i>Melaleuca quinquenervia</i>	broad-leaved tea-tree	NQ, CQ, SEQ and NSW
<i>Pittosporum angustifolium</i>	pittosporum, cattlebush, bitterbush	All mainland States (Inland)

Small trees and shrubs - height up to 5 m

<i>Atriplex nummularia</i> *	old-man saltbush	SQ, NSW, Vic and SA
<i>Callistemon citrinus</i>	lemon-scented bottlebrush	SEQ, NSW and Vic
<i>Callistemon phoeniceus</i>	fiery bottlebrush	WA
<i>Eucalyptus forrestiana</i>	fuchsia mallee	WA
<i>Leptospermum polygalifolium</i>	tantoon, wild may	NQ, CQ, SEQ and NSW
<i>Melaleuca nodosa</i> **	prickly-leaved paperbark	CQ, SEQ and NSW

**best species for highly saline areas; *above average growth and survival in saline areas

Abbreviations: CQ – central Queensland; NT – Northern Territory; NQ – north Queensland; NSW – New South Wales; SA – South Australia; SEQ – southeast Queensland; SQ-southern Queensland (inc. SEQ); Vic – Victoria; WA - Western Australia

Planting technique

NRM Facts V45 – Successful planting techniques and *V46 – Site preparation* describe the basic site preparation and planting techniques. However, when planting on or near saline soils, there are a few extra considerations including:

- when planting in salt-contaminated soil, good drainage is desirable to prevent continued build-up of salts
- trees and shrubs should be planted on mounds up to 50 cms in height
- mounds should ideally be prepared several months before planting to allow some salt to be flushed from the system prior to planting
- heavy mulching of the mounds around each planting site will help reduce evaporation and subsequent salt accumulation at the soil surface
- plant trees and shrubs into deep holes on the top of the mound after scraping away the top 2 cm of soil
- encourage and plant salt-tolerant grasses and legumes over the mounds and the whole site to increase water usage, but ensure that they don't impede the growth of trees and shrubs
- ensure that the total area is fenced from grazing animals for at least two years
- irrigation may be required in the first year of establishment in areas with less than 400 mm annual rainfall.

Further reading

The following texts contain more detailed information on managing salinity.

House S., Nester M., Taylor, D., King, J and Hinchley D. 1998. 'Selecting trees for the Rehabilitation of saline sites in South East Queensland'. Department of Primary Industries, Brisbane.

Salcon, 1997. 'Salinity Management Handbook.' Department of Natural Resources, Brisbane, Queensland.

The National Dryland Salinity Program's website <http://www.ndsp.gov.au/index.html> contains further information on salinity.

See also in this series

L5 - Seepage and salty outbreaks in South Burnett Red Soil Areas

L51 -Salinity in Queensland

L52 - Managing dryland salinity on your property

L53 - Identifying and monitoring salt affected areas

L54 - Managing salinity with vegetation

L55 - Managing salinity with engineering

L56 - Production from salty land

L58 - Brymaroo catchment – salinity case study

V44 – Mulching

V45 – Successful planting techniques

V46 – Site preparation ■