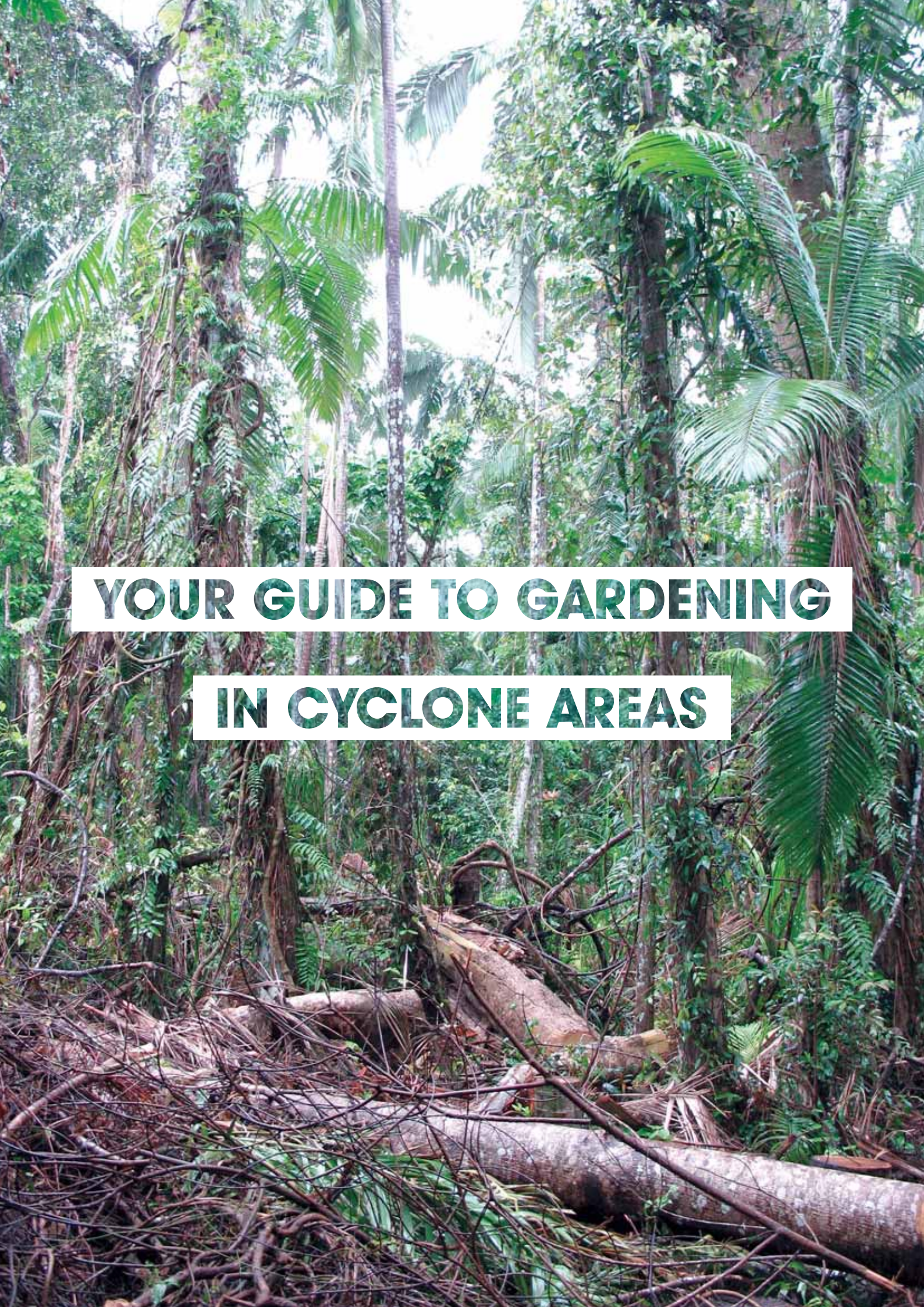


YOUR GUIDE TO GARDENING IN CYCLONE AREAS

Professional arborists may be needed to remove debris and damaged limbs from trees.

The resilience of many tropical plants means that they will grow new shoots within a few months, or weeks, after a cyclone.

Anton van der Schans
Landscape Architect – Cairns
text+images
[additional images Paul Plant]

feature article

For most gardeners who live in cyclone (and hurricane) regions of the world, the ferocious wind gusts are the main cause of plant damage, complicated by loss of soil anchorage once the deluge of water liquefies the soil. Gardeners on the shorefront may also have to contend with salt spray and even inundation. Anton van der Schans, internationally respected plantsman and landscape designer talks about better garden design and plant selection for these districts.

Garden design

Although trees can be considered a potential risk, with careful selection and preparation a well planted garden can provide shelter to the house protecting it from the worst cyclonic wind gusts with the year-round benefits of shade and screening. They will undoubtedly create some mess to clean up; however it is usually preferable to scrub off plastered leaves from house walls than have deadly debris penetrate walls or windows.

Massed tree and shrub beds should be located to provide shelter from the likely prevailing wind, also considering other year-round factors, including shade and screening for privacy. This includes shade from the hot afternoon summer sun while allowing the lower winter sun to reach the house (this being more vital in the subtropics).

Having well defined garden areas, rather than spot planting through the lawn, is generally preferred as not only does it look better, but it assists the establishment of trees and shrubs and facilitates subsequent maintenance.

Garden establishment

Deep cultivation of planting areas to create garden beds rather than individual planting holes, ensures a large volume of loose soil is available to encourage rapid root growth.

It is preferable to plant young vigorous trees (and large shrubs). Advanced trees or plants, which have a higher shoot to root ratio, run a higher risk of being rootbound and also may need higher levels of maintenance to ensure good establishment.

Grouping trees and shrubs together in massed garden beds can provide mutual protection and usually provides better screening and aesthetic effect. It can also conserve watering as the garden bed can be soaked occasionally (but thoroughly) during dry periods.

If drainage is poor (often unavoidable in heavy clay soils) install subsoil drainage or mound garden beds (over cultivated subsoil). The root systems of some trees can be poorly anchored in waterlogged soil and this can have disastrous impacts during cyclonic winds. If subsoil drainage appears unlikely to be effective after torrential rains, select trees and palms (especially larger types) that are adapted to seasonal inundation (see lists below and on the website).

Placing large stones or boulders around young trees can help provide solid anchorage for roots systems to establish.

Fallen trees can still be used as landscape features.

Garden maintenance

Water garden beds once established with occasional deep soakings (say weekly to monthly) depending on maturity, plant type and prevailing seasonal / climatic conditions, rather than frequent light sprinklings. This (together with thorough soil preparation) encourages a deeper feeder root system providing greater stability and hardens the trees to drought stress.

Prune young trees lightly and regularly to encourage lower bushy growth. Take particular care to ensure that trees have a single lead trunk, as 'double leaders' with tight forks often break during storms, losing half the tree leaving a gaping wound that is often irreparable.

Fertilise trees moderately with a balanced fertiliser to ensure good root growth. High nitrogen levels can force excessive top growth, with weak wood prone to breakage or toppling. This is another good reason to plant trees and shrubs in garden beds away from lawns and buildings.

Fantastic detail and character in this *Leptospermum* trunk.

More resilient plant types

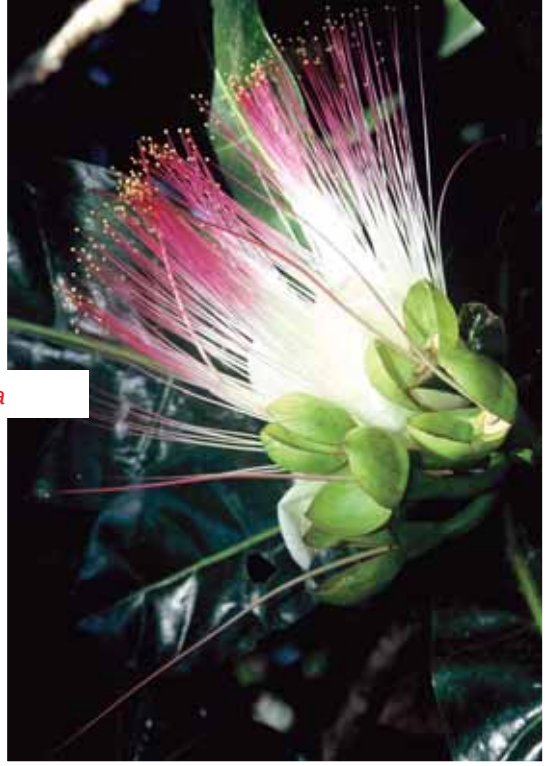
It is impossible to guarantee that any given species will always survive cyclones unscathed, however some general predictions can be suggested based on the tree or palms habitat and form.

Natural habitat cues

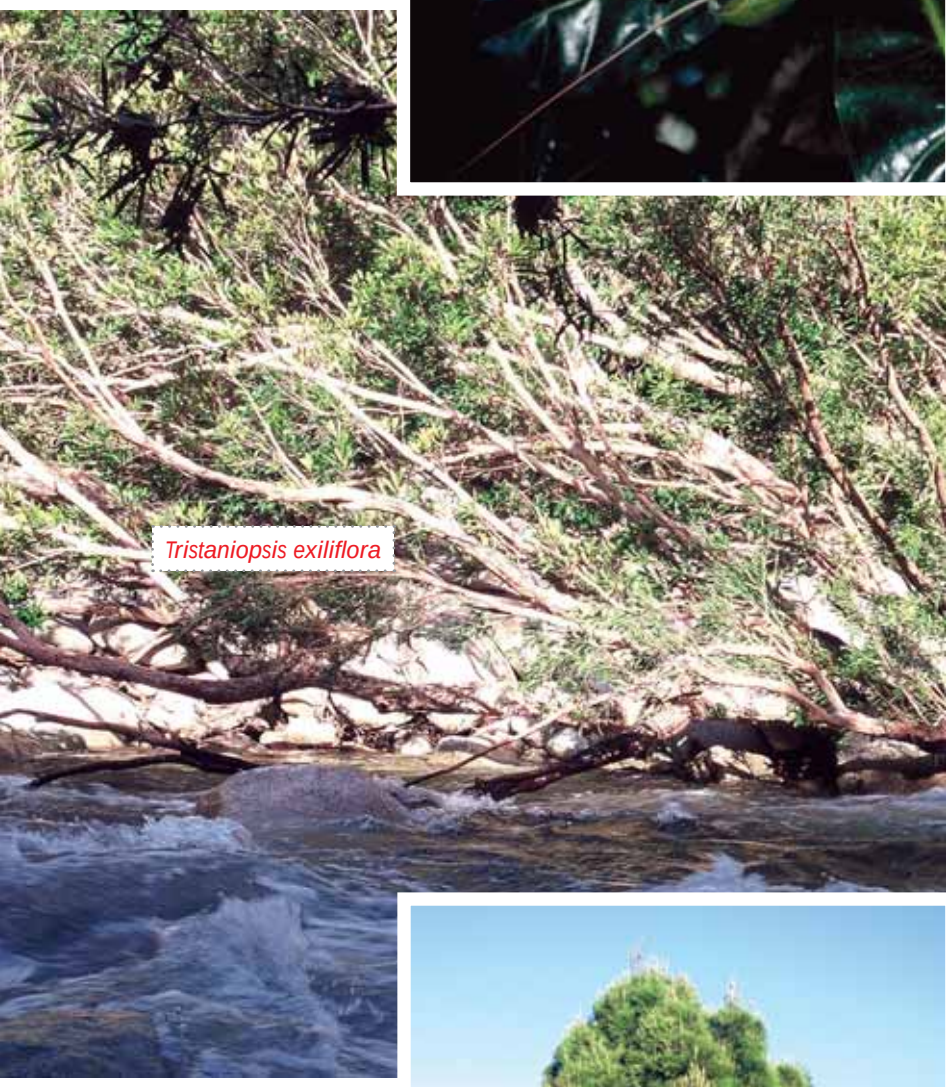
The most resilient trees are found in tropical and subtropical areas that experience regular cyclones, hurricanes or typhoons, including northern Australia, much of southern and eastern Asia and the Caribbean. These storms are largely absent from the equatorial tropics such that species that have proved spectacularly successful in cities such as Singapore, including angsana (*Pterocarpus indicus*), weeping fig (*Ficus benjamina*) and rain tree (*Samanea saman* – although this is from the monsoonal Caribbean) often fail dramatically in the cyclone prone sub-equatorial tropics.

Over centuries and millennia the impact can be seen in the wet tropic rainforests where, despite rich soil and ample rainfall, there is a lack of the majestic giant trees common in equatorial forests.

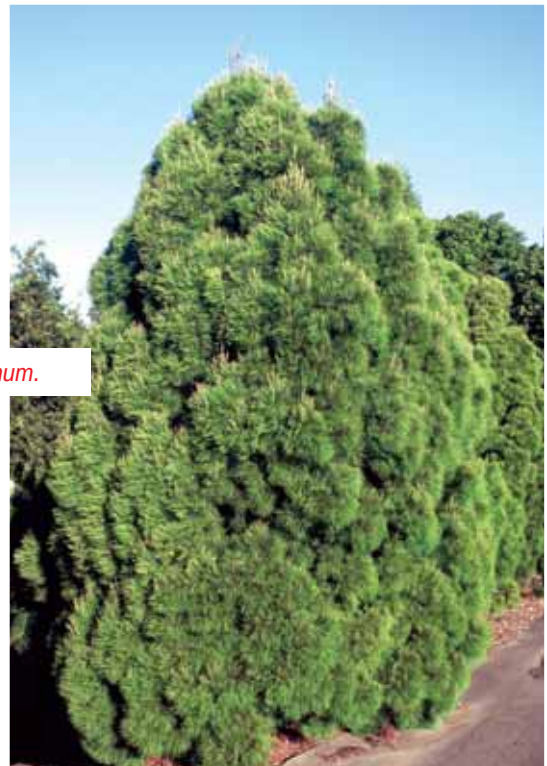
Leptospermum sativum.



Barringtonia acutangula



Tristaniopsis exiliflora



Gymnostoma australianum.

Rheophytic trees from stream edge niches in riparian vegetation, especially streams subject to flash flooding with fast flowing water: These species are adapted to bear the weight of water with clean often multiple trunks and an ability to repair damage by coppicing.

Weeping Bottlebrush (*Callistemon viminalis*) can be found under large canopy breaks along fast flowing rivers in the wet tropics wedged between water washed boulders.

Water gum (*Tristaniopsis exiliflora*) shares similar rocky stream banks; its slow growing hard heavy timber sheathed in smooth peeling bark.

Golden penda (*Xanthostemon chrysanthus*) were amongst the few trees standing intact along rainforest streams in the wet tropics, flushing into mass bloom about 6 weeks after Cyclone Larry.

Weeping ti tree (*Leptospermum madidum*) also occurs along flooded stream banks in the monsoon tropics of Cape York and the Top End, a non-weedy and non-invasive tropical substitute for the weeping willow.

Creek cherry (*Syzygium australe*) found fringing streams along much of the east coast of Australia, in the tropics is prevalent on the tableland, usually remaining a modest size in gardens, with numerous shrubby selections now available.

River cherry (*Syzygium tierneyanum*) is one of the dominant species on flood terraces of the wet tropics, with strong anchoring roots and strong branches often surviving cyclones with their canopy intact.

Freshwater mangrove (*Barringtonia acutangula*) also fringes fast streams and more languid billabongs across the monsoon tropics tolerating prolonged inundation. Suitable for smaller gardens where its deciduous canopy allows winter sun then a burgundy spring flush followed by nectar laden red flowers.

Daintree pine (*Gymnostoma australianum*) occurs along a few rocky rainforest creek banks in the Daintree (as well as in low scrub on nearby peaks); in gardens this is better suited as a specimen plant with only lower plants nearby as it needs an open sunny aspect to retain its dense foliage and symmetrical conical form.

Calophyllum flower.

...with careful selection and preparation a well planted garden can provide shelter to the house protecting it from the worst cyclonic wind gusts with the year-round benefits of shade and screening.

Calophyllum inophyllum.

Mimusops elengi.

Coastal forest species from exposed beach communities:

Boxfruit (*Barringtonia asiatica*) overhangs sheltered beaches and coral lagoons through the wetter shores of the Indian and Pacific Oceans. Typically a rounded tree with a stocky trunk and flexible branches. Huge nocturnal tassel flowers are its main feature.

Beauty leaf (*Calophyllum inophyllum*), another venerable tree from Indo-Pacific shores, their spreading canopies often supported by 'elbow' branches resting on the beach sand, specimens recorded by Joseph Banks are known to still survive; recommended only for large tropical gardens.

Kwila/Johnstone River teak (*Intsia bijuga*) shares prime tropical absolute beachfront with the above two species. Its strong commercially prized timber deters significant canopy damage. The small fragrant flowers are pretty when seen close up.

Red coondoo/tanjong tree (*Mimusops elengi*) is widely distributed in the monsoon tropics with good salt and drought tolerance. Has neat smallish evergreen foliage scattered with small fragrant flowers. In gardens it remains a modest size, is one of the best street trees in Darwin, and recently smaller variegated forms have become available.

Tuckeroo (*Cupaniopsis anacardioides*) is a proven salt, wind and drought hardy tree, although not visually spectacular, it is a proven street and moderate sized garden tree.

Cottonwood/beach hibiscus (*Talipariti* [syn. *Hibiscus*] *tiliaceum*) perhaps defies reason for consideration here as it is extremely fast and brittle, however it can be hard pruned prior to the cyclone season to be maintained as a small shrubby tree, rapidly re-growing. Its natural tendency to form thickets provides excellent shelter. There is a variant with deep purple-flushed foliage, a variegated from (var. *populneum*) with pointed green-veined yellow leaves, and a shrubby form (cultivar 'Hilo Rainbow') with foliage heavily splashed in pink and white, unfortunately prone to heavy infestations with all manner of sucking insects.

Sea mango (*Cerbera manghas*) and pong-pong tree (*Cerbera odollam*) are two closely similar species from Australian and Asian (the latter only) beaches, resembling an evergreen frangipani with slender glossy green foliage and small scented flowers through much of the year, followed by red-skinned (toxic if eaten) fruit that is husked for flotation like miniature (non-dangerous) coconuts.

Indian tamarind (*Tamarindus indicus*) is presumed native through much of monsoonal Asia, though possibly originating in Madagascar, and was probably introduced to the Top End by Macassan fishermen some 400 years ago, and is now naturalised as a significant component of their monsoonal rainforests. Its tough flexible branches become stripped bare of foliage, but survive completely intact; its deep root system also ensures excellent drought tolerance.

Feather frond Palms for Cyclone areas

Coconut palm (*Cocos nucifera*)

Hurricane/princess palm (*Dictyosperma alba*)

Alexandra palm (*Archontophoenix alexandrae*)

Black plam (*Normanbya normanbyi*)

Gulubia (*Gulubia costata*)

Darwin palm (*Carpentaria acuminata*)

Foxtail palm (*Wodyetia bifurcata*)

Cuban royal palm (*Roystonea regia*)

Palms with top-heavy canopies

Fishtail palms (*Caryota urens*, *C. no*, *C. maxima*, *C. rumphiana*, etc.)

Fan Palms (*Livistona decipiens*, *Corypha utan* and *Bismarkia nobilis*)

Fiji fan palm (*Pritchardia pacifica*)

Cairns fan palm (*Livistona muelleri*)

Sabal palmetto (*Thrinax* spp.)

Less resilient plant types

Bamboos – best to only grow clumping forms.

African tulip (*Spathodea campanulata*)

Brazilian fern tree/tower tree (*Schizolobium parahyba*)

Golden bouquet (*Deplanchea tetraphylla*)

Gum trees (*Eucalyptus*/*Corymbia* spp.)

Swamp bloodwood (*Corymbia ptychocarpa*)

Yellow poinciana (*Peltophorum pterocarpum*)

Plant structural cues

Natural guying trees

i.e. supporting capacity from prop roots and aerial roots:

Pork fat tree (*Clusia rosea*) from the Caribbean is a small, bushy semi-epiphytic tree found in Caribbean coastal scrubs, with excellent tolerance to salt, drought or sun and shade, developing aerial roots like a fig (especially in humid understorey), and is particularly well suited to elevated podium planters.

Chinese banyan (*Ficus microcarpa*) is widely distributed through the tropics of Asia and northern Australia, often forming banyan like colonies on steep rocky coastlines. The species includes many variations well known as indoor plants.

Beach screw palm (*Pandanus tectorius*) is widespread through the pacific coasts from South East Queensland to Hawaii, and generally survives cyclones, although some heads of foliage may snap off.

Low branching,

spreading form trees, their low centre of gravity assisting with stability:

Sea grape (*Coccoloba uvifera*) occupies Caribbean beach scrubs, typically its stout, sprawling limbs provide good shelter (and excellent climbing for kids), broad leathery leaves make it an attractive tub plant indoors, and it also produces tasty fruit in the garden.

Pokosola (*Ochrosia elliptica*) given space tends to become a spreading, mounded shrub only a few metres tall, glossy leathery foliage offsets showy red fruit (toxic if eaten).

Frangipani (*Plumeria*) typically occur in dry scrubs in the Caribbean, often near the coast, their branches flex a lot, before snapping under severe conditions, however these slow growing trees are usually small enough to avoid any significant damage, and have the advantage of striking readily as whole branches.

Native gardenia (*Atractocarpus* [syn. *Randia*] *fitzalanii*) is a small compact tree deservedly popular in gardens for its dense glossy foliage and fragrant flowers. In habitat it can be found in boggy soils fringing paperbark swamps and mangroves, and on beaches just above the high tide as an understorey to *Calophyllum*. STG

Observing what plants tolerate a cyclone provides guidance in selecting the right specimens for your garden.

Go to **www.stgmagazine.com.au** for more about palms for cyclone areas & less resilient plant types.