Reducing Heat Gain By Effectively Shading Your House With Vegetation

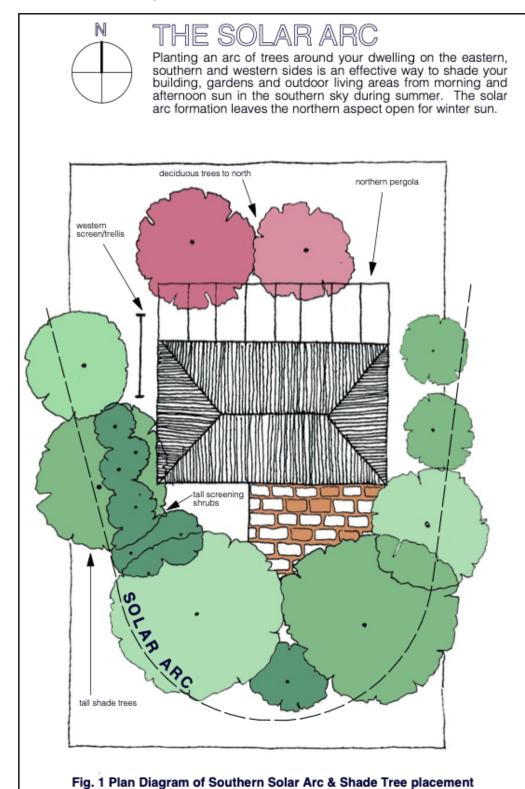
By effectively shading your dwelling with plants you can reduce summer temperatures around the house, minimise energy consumption and increase comfort.

What parts of my home should I shade?

The most important parts of a building to shade are windows and glass, where up to 87% of heat is gained (Your Home, 2017). Secondly, shade uninsulated walls and roofs. Finally, shading pergolas, outdoor living areas, carports and concrete slabs helps lower temperatures on the ground.

How do I effectively position shade trees or shrubs?

To effectively position shade trees and shrubs you must firstly understand the orientation of your site and dwelling in relation to the path of the sun throughout the day. Each orientation requires specific kinds of shading in order to establish effective cooling.



NORTH

The northern summer sun hits your home from above during middle of the the dav. Techniques to shade northern sun are referred to as horizontal shading, including horizontal awnings, pergolas, eaves, or tall trees above you Pergolas or structures with vines growing on them are well placed above northern windows/walls. Use deciduous vines and trees on the northern side to prevent heat gain in summer and allow warmth through in winter.

WEST

The low westerly sun adds the most heat to buildings. Western (and eastern) sun angles are low. These orientations require shading techniques that block low angled solar radiation from hitting walls and windows. This is referred to as vertical shading or screening. Shade western aspects with tall evergreen trees and shrubs below to screen windows (see diagram below).

EAST

Shade to the east with trees, shrubs or vines, the east can be partial shading. Screen walls and windows with shrubs and small trees to provide shade from the low sun angles. Evergreen trees are suitable. Deciduous trees can aso be used.

SOUTH

Summer outdoor living areas are well placed on the southern side of the house. Evergreen trees can be planted on the southern side as they will not block your winter sun.

KEY:



Deciduous plant



Evergreen plant

Low western sun Shade tree Shadow cast by shade tree onto wall and window

Fig. 2: Vertical Shading or Screening Use plants or screens to shade western (and eastern) windows and walls Use plants or screen from low sun angles

Other tips:

- Breeze filtering plant placement: In Alice Springs prominent winds tend to be from the east and south east in summer. Planting shrubs and trees at window level on this side of your house can assist in filtering and cooling wind before it reaches the house.
- **Groundcover:** Use ground cover plantings instead of paving to reduce ground temperature and reflected heat.
- Shade from trees can reduce the air conditioning costs of a typical house by up to 30% (Ennos, 2015).

Selecting Appropriate Plant Species for Shade in Alice Springs

When selecting plant species and plant placement take into consideration factors such soil type, water availability, direct sun, and available space.

Deciduous/ Evergreen	Common Name	Botanical Name	Height	Notes
	Native Species			
Evergreen	Mulga	Acacia aneura	4-10 m	Hardy, versatile soil tolerance, very drought tolerant, good for screening
	Cole's Wattle	Acacia <u>colei</u>	2-5m	Small tree, fast growing, good for screening and low shade required on western and eastern aspects
	Coonavittra Wattle	Acacia jennerae	2-5m	Spreading shrub or small tree, hardy and fast growing in well drained soils, suckers readily, good for screening
	Witchetty Bush	Acacia kempeana	2-4m	Hardy shrub, excellent for screening walls and windows on western and eastern aspects
	Cooba	Acacia <u>salicina</u>	4-12m	Fast growing, spreading habit, shallow rooted, suckers readily
	Whitewood	Atalaya hemiglauca	to 10m	Small shade tree, slow growing, young trees require frost protection, can tolerate rocky and clayey soils
	Desert Kurrajong	Brachychiton gregorii	to 10m	Great medium sized shade tree, dense canopy, prefers good drainage
	White Cypress Pine	Callitris glaucophylla	to 6m	Slow growing, long-lived, suitable to rocky sites, good for screening
	Ghost Gum	Corymbia aparrerinja	to 20m	Tall shade tree, weeping foliage, can drop large limbs- best positioned away from house or structures
	River Red Gum	Eucalytpus camaldulensus	20-30 m	Tall shade tree, fast growing, can drop large limbs-best positioned away from house or structures, deep rooted
	Coolabah	Eucalyptus coolabah subsp. arida	to 15m	Excellent large shade tree with spreading habit, versatile soil tolerance if irrigated, drought, frost and salt tolerant
	Salmon Gum	Eucalyptus salmonophloia	10-25 m	Large shade tree, wide spreading root system, slow growing, drought tolerant, can drop large limbs
	Thozets Box	Eucalyptus thozetiana	10-15m	Tall slender tree, less likely to drop limbs than many other Eucalypts, prefers sandy soils
	Little Ghost Gum	Eucalyptus victrix	5-6 m	Great small shade tree, better suited to smaller gardens and sites than the Ghost Gum
	Beefwood	Grevillea striata	to 15m	Slow growing, frost tolerant, long living
	Introduced Species			
	Citrus –Lemon, Grapefruit, Mandarin, Orange	Citrus limon, Citrus, paradisi, Citrus reticulata, Citrus sinensis etc	2-10m	Food producing
	Olive Tree	Olea europaea or similar	2-10 m	Food producing, frost tolerant
	Date Palms	Phoenix dactylifera or similar	varies	Food producing
	Climbing Species	THE STATE OF SHITME	14.100	T cod producting
	Jasmine	Jasminum species	climbing	Vine
	Passionfruit	Passiflora edulis	climbing	Vine
	Orange trumpet	Pyrostegia venusta	climbing	Vine
Deciduous	Jacaranda	Jacaranda mimosifolia	to 20m	Likes well-drained soil and regular water, spreading habit, great for summer shade on northern aspects
	Chinese Elm	Ulmus parviflora	12-15m	Do well in most soils provided there is good drainage
	Fig Tree	Ficus carica		Food producing, young trees may need frost protection, like well-drained soil and consistent water
	Mulberry Tree	Morus alba, Morus nigra or similar	8-12m	Fast growing, food producing, like deep fertile soil and pruning, good for providing summer shade to north
	Grapes	Vitus vinifera or similar	climbing	Food producing, require pruning, tolerate a range of soils, good for providing summer shade and winter sun





