

February 2014

Newsletter of the Friends of Lismore Rainforest Botanic Gardens Inc.



Signing the MOU ISMOTE On 19 September the Friends signed a Memorandum of Understanding with Lismore City Council. This was a momentous document in which each

President's Message The dry Spring and as yet the dry

obligations with the other.

organisation clarified its relationship and

summer have kept those of us who maintain our own garden as well as the Botanic Gardens busy with monitoring the health of our plants and watering a little more than usual for this time of year. The Botanic Gardens now consist of many different collections of plants, some more hardy than others. The more mature Gardens such as those in the older sections are now more

resilient to adverse weather

conditions with a protective canopy

roots. However, recent plantings, the ferns and smaller herbaceous plants are still in need of watering. Most of our efforts have gone into the new Entrance, **Uncommon Plants and Useful** Plants Gardens. The watering team includes our Gardener Damian, the Wednesday work group, the weekly roster group and last but not least Geoff Walker, our Watering Warrior. This amounts to over twenty people giving up time to keep the plants alive. Thanks to all of you who have soldiered on despite the hot weather and wonky timers. Let's hope the rains will be with us soon.

The extension of the water pipes with six extra taps and good water pressure has been a great improvement. We have hopes that one day soon we will have pipes delivering recycled water.

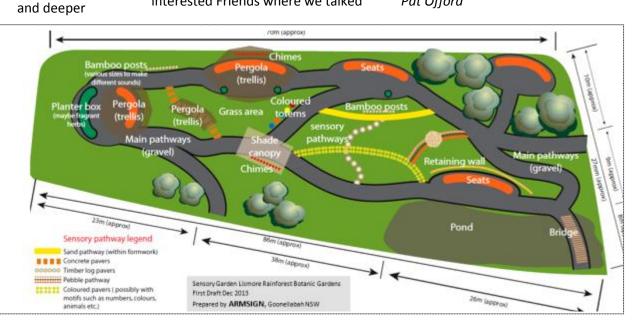
Our next project is to plan and build a Sensory Garden on the site alongside the road leading from the first to the second carpark. This is a big project that will take a few years to build and require considerable funding!

So far we have a preliminary plan prepared by Armsign. On 15 January we had a workshop meeting of interested Friends where we talked about concerns and ideas and how we should proceed with the venture. The plan was widely discussed and additions/changes suggested.

Several grant applications have already been submitted and there will be more that need to be completed in the next couple of months. We would like assistance in preparing these grants. So if you can help, please give Marie a call. Ways to help include gathering estimates, talking to sponsors or actually preparing the grant application for submission.

The next step on site will be to clear it, leaving native trees and checking ground surface, drainage and slope. The plan will be finalised after further consultation with community organisations. Marie Matthews has set up a Facebook account for the Gardens and has been posting some great photos over the holidays. If you are a Facebook user you could 'comment ','like' or 'share' with your friends thus spreading the word about the Gardens. Happy New Year to all of you and a big thank you to those who have helped with the nursery, watering, guiding, seed collecting and grant applications over the holiday period. Pat Offord





More about the Sensory Garden

Our Sensory Garden will have many aspects. For example, it will be a place for people to contemplate in a restful environment using the senses of smell, sight, hearing, touch and taste. Plants that demonstrate their sensory mechanisms can also be observed. Plants can sense stimuli such as light, gravity, smell and touch and will respond in many ways

Plant stems grow towards light and roots grow down in the direction of gravity force. The Paper Daisy below opens in response to the sun



Other plants move in response to insect movement. Bees, for example, carry pollen from one flower to another and the stigma of a flower will, in some species, move in response to the insect landing on the flower, and pick up pollen. This allows cross pollination within a species. Plants release a scent that might stimulate flowering or fruit ripening. We will endeavour to find plants that demonstrate these responses.

One of the aims of this Garden is to provide a site where people with mobility problems will be able to move easily. Wide level sealed paths with sheltered conversation pods furnished with wheelchair accessible tables and comfortable seating are basic needs. We plan to develop points of interest through the garden to stimulate and bring

Gifting by Macadamia Conservation Trust

enjoyment those who visit.

On 29 September last year the Macadamia Conservation Trust gifted four species of wild macadamias to the Gardens. It was a coming together of the Friends of the Gardens and the Conservation Trust in a combined project to help preserve the now rare wild macadamia trees of eastern Australia. Although the Northern Rivers region has many macadamia plantations, the trees planted are cultivars and the originals macadamia species from which they were developed are fast disappearing. In his speech on the day Ken Dorey, representing

the Trust, stated:

"That there are wild macadamias, and that they need conserving, is not that well known in the general community. It is for this reason that the Trust is very grateful to the Lismore Botanic Gardens for hosting this day and for the part it will play in raising awareness of the plight of the wild macadamias.....

So what are the wild macadamias? Each of the four trees represents one of the four wild macadamia species - and this is the only place in the state that you can see these trees together.

The first is *Macadamia tetraphylla*, or the NSW bush nut. Tetraphylla has four leaves at each whorl – the other three species all have three leaves at each whorl.



Macadamia sign - 'Australia's Gift to the World'



Pat Offord, Rose Hand, Jan de Nardi and Marie Matthews at site of Macadamia planting

The next species is *M. integrifolia* - found from the border to about 150 kilometres north of Brisbane. It was under two integrifolias that an American sea captain [Robert Jordan], 130 years ago, picked up a bag of nuts and took them to Hawaii. As much as 50% of the genetics of Australia's 6 million orchard trees may be derived from those 'Hawaiian' nuts.

Much less common is the *M. ternifolia*. It is characterized by a bitter nut that is generally considered inedible.

The last, and even rarer, species is *M. jansenii*. Only found in one location near Miriam Vale, it has a nut the size of a pea. In what I think is one of the greatest achievements of the Trust so far we have, with the help of the local Gadigal people, replicated the 60 trees in this population at three other sites so that this species is much more secure from a disastrous event such as a fire." The four trees were planted adjacent to the Uncommon Plants Garden.

Next Sunday Workday 23 February

Gate open 7.30am to 8am

Contact Denis 0431 223340 Email friendslrbg@bigpond.com

Wednesday Work Group

Each week starting at 8 am

Contact Ros 6628 2909 Email rnrlittle@southernphone.com.au Wear protective clothing, bring insect repellent & something for morning tea.

Species profile... Alphitonia excelsa Red Ash or Soap Bush

Family RHAMNACEAE

Peter Gould

The Red Ash is a widely distributed, common tree on the margins of Subtropical, Dry and Littoral Rainforest, Vine Thickets, Scrub, Eucalypt forest and Eucalypt and Acacia savannas. It is found from the Mount Gulaga (previously known as Mount Dromedary) area south of Narooma in New South Wales, west to Narrabri and through Queensland and the Northern Territory to the Northwest of Western Australia.

While generally a small to medium sized tree, it is a highly diverse species often occurring as a large shrub in forest on poorer soils, it can grow up to 35 m or more. Floyd gives the dimensions of one exceptionally large tree in Koreelah State Forest as 42 m in height and 116 cm in diameter.



New growth showing the finely hairy underside of leaves, fine golden brown fur on branchlets and typical caterpillar damage

Leaves are simple, elliptic or ovate to oblong from 5 to 15cm long, dark, glossy green and finely veined above, with the underside being white with dense fine hairs.

The small cream-green flowers occur in terminal or axillary cymes.
The fruit is a dull black, globular

"The great French Marshall Lyautey once asked his gardener to plant a tree. The gardener objected that the tree was slow growing and would not reach maturity for 100 years. The Marshall replied, 'In that case, there is no time to lose; plant it this afternoon!"

John F. Kennedy

drupe containing powdery red flesh surrounding two hard cells each containing a single seed. The hard, long-lived seeds are usually scarified to ensure germination which can be erratic. Propagation by cuttings is effective.

Its leaves contain high saponin which produces a soapy foam which deoxygenates pools, stunning fish. Aborigines used the crushed leaves and berries as a fish poison. Leaves were also crushed, mixed with water and applied as a head bath to reduce headache and sore eyes. Infusions of the bark and root were rubbed on bodies to reduce muscular ache or gargled to cure toothache, and have been found to contain anti-inflammatory chemicals.

It is a food plant for the caterpillars of the Moonlight Jewel (*Hypochrysops delicia*) and Small Green-Banded Blue (*Psychonotis caelius taygetus*) Butterflies.

It is an excellent tree for farm forestry producing a soft, straight and fine-grained red timber that takes a high polish. It has been used for plywood, furniture, cabinetwork and veneer.



The fine light grey bark on young tree develops deep, rough fissures as the tree matures.

References:

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http://plantnet.rbgsyd.nsw.gov.au/cgibin/NSWfl.pl?page=nswfl&lvl=sp&name=Flin dersia~schottiana



Geoff and Rose planting a special tree with visitors from Yamatotakada Lismore's sister city in Japan. Geoff is corresponding with one of the visitors reporting on the wellbeing of the newly planted tree.

Our Macadamia Heritage... a short history

The hills around Lismore and much of the Northern Rivers are now covered with over two million trees in about 300 orchards. There are many processing factories including the world's largest at Alphadale. There are tourist outlets and much



The first commercial orchard in the world planted in the 1880's at Rous Mill.

of Australia's marketing is based in the region. We should be proud of how a local plant has transformed the district and added to the economy.

About 60 million years ago a plant we would probably recognise as a macadamia evolved from the Proteaceae family. It grew along much of the east and south of Australia and in New Zealand, but massive changes have resulted in the macadamia retreating to small isolated pockets scattered through the Northern Rivers and Southern Queensland, becoming almost extinct and separating into four known forms or species.

In the Northern Rivers, macadamias grew in clusters within rainforest in the Richmond, Brunswick and Tweed valleys. The local species is *Macadamia tetraphylla* often called the Rough Shelled Macadamia or the Bush Nut. It often grew in association with two related rainforest trees, *Floydia prealta* [the Mullumbimby Nut] and *Hicksbeachia pinnatifolia* [Red Bopple nut]. Clearing, fire and residential development have led to over 80% of the wild macadamias

being lost throughout eastern
Australia. The Big Scrub stretched
from Ballina to Lismore to
Mullumbimby and contained about
90,000 hectares of rainforest, much
of it including the macadamia. Sadly
less than 200 hectares now remain.

Foreign camphor laurel has taken over and presumably 99% of the wild macadamias there have been lost from this area. It may be a slight consolation that one of the inhabitants of the Big Scrub has been widely planted in its place.

The

Bundjalung, Nuyangbal and other Aboriginal people came to the Northern Rivers more than 10,000 years ago and discovered the tree and its crop. In the rainforest low light, competition, rats and insects resulted in few nuts being produced so they were a treasured but rare food sometimes used in trading. Margery Oaks from the Richmond River Historical Society advised that the most common Aboriginal name for the nut sounded like gyndl which was Anglicised to kindal or kindal kindal. Few local records exist of the use of the nut by the Traditional Owners but there is no doubt they would have shown the early settlers the tree. The women were usually the gatherers. They knew the trees and collected, dehusked, dried and cracked the nuts between rocks and sometimes roasted them in the ashes of their fires.

Cedar cutters and permanent settlers began to arrive about 1845 and in time established pastoral leases and small farms. This involved clearing the rainforest for its rich soils.

One of the earliest records of macadamias was a letter written in

1872 mentioning that the Bush Nut tree growing in what is now the Sub Tropical Fruit Research Station at Wollongbar had produced a good crop that year. It was likely to have been a wild tree. Sadly, uninformed bureaucrats from down south ordered the tree cut down about 15 years ago to allow for more trials.

The early squatters and settlers quickly became aware of the nut trees growing in their rainforests. The first cultivated macadamia tree in the world was planted in the Brisbane Botanic Gardens in 1858. Jim Armstrong planted a few trees at Dorroughby in the1870's. His property was later acquired by Jack Middleton in 1945 who planted more trees and experimented with grafted selections.

The first commercial orchard in the world was planted by Keith Fredericksen at Rous Mill in the early 1880's. This property was later owned by Charlie Staff, an industry pioneer. It grew to five acres of M. tetraphylla seedlings which were only cleared in the early 2000's with just two or three trees now remaining. By 1900 there were five small macadamia orchards in the Northern Rivers. TG Hewitt, one of the founders of the Northern Star newspaper, planted an orchard in the 1890's. His son became an avid promoter of the nut and members of the Hewitt family still grow macadamias on the Alstonvile plateau.

The first guide book, titled "Cultivation of the Australian Nut" by Fred Turner of the NSW Department of Agriculture, was published in 1893.

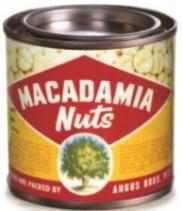
Many macadamias were planted in the Tweed valley from 1900, usually in conjunction with bananas in the belief that macadamias would provide an income after the bananas declined from disease. John Waldron, a boxing champion, tasted the nut and from 1906 gave the rest of his life to growing, trying to select superior types, processing and marketing them from his orchard at Eungella below Mt Warning. It is estimated that he

cracked about eight million nuts with a hammer from the 1920's until 1960.

Forman Crawford first planted macadamia in 1921. He wrote of it in the history of the Alstonville district (then named Duck Creek). In the early 1960's he planted one of the first grafted orchards at Uralba. In 1983 a single macadamia from a wild local source was planted on a hill behind the Lismore Showgrounds. That tree probably still remains as a symbol of the local wild macadamia heritage.

While the species indigenous to this area is Macadamia tetraphylla, most of the commercial macadamias are varieties developed from Macadamia integrifolia, the Queensland Bauple or Smooth Shell Nut. Unfortunately the early tetraphylla nuts taken to Hawaii in the 1890's had thick shells and were rejected so that the global industry developed on the northern species, but there are hybrids with M. tetraphylla. M. tetraphylla kernels are not as creamy white as M. integrifolia but are sweeter and preferred by many however, they darken when roasted because of the higher sugar content.

The Australian Nut Association was formed at Murwillumbah In 1932 and a Lismore branch soon followed. The Association was determined to ban the use of the name "Bush Nut" and provided for the expulsion of members who continued to use that name. Sadly the use of the name Australian Nut declined and was replaced by the botanical name as used in Hawaii. The Whittle family ran a pharmacy in Murwillumbah and grew macadamias in the local hills. They invented and built a blade type cracker. Its value was slowly recognised and now most of the world's macadamias are cracked using this principle. Steve Angus and his brothers had a fruit shop in Lismore. They moved to Murwillumbah and in 1950 built what became the first Australian commercial processing and marketing business. WC Gray and



An Angus tin – a product of Murwillumbah in the early 1950s and the first Australian retail pack

his son Kevin bought 80 acres at Fraser Road Dunoon in 1960 and planted "The Alamo" possibly the largest grafted orchard at that time. Most of the early orchards declined and were lost. They had been mostly seedling trees until the 1960's.

Two entrepreneurs Tom Hoult and Mel Braham had tasted roasted and salted macadamias but they found they were almost unobtainable. They formed Macadamia Plantations of Australia at Dunoon, as a legitimate tax shelter for investors with the capital necessary to develop large efficient macadamia farms. The economy of the region was transformed Information from The Macadamia Story by Ian MacConnachie published in USA in 1983

www.australianmacadamias.org/download.php?file=m acstory.pdf

The genus *Macadamia* was named after Dr John Macadam in 1857 by colleague [and botanist] Ferdinand von Mueller. Macadam was an Australian (Scottish-born) chemist. medical teacher and politician. In 1855, he moved to Melbourne, and in 1858 was appointed Victorian Government Analytical Chemist. He was a Member Legislative of the Assembly in the Victorian Parliament, and Postmaster-General of Victoria in 1861. Between 1857 and 1865 Macadam served as Honorary Secretary to the Exploration Committee of the Royal Society of Victoria which organised the ill-fated Burke and Wills expedition. Wikipedia

[The Aborigines'] main method of cracking the shell is interesting. They found a hard rock with a depression, which would hold the nut and placed a flat wedge shaped stone on top. This was struck with a heavy stone and it worked effectively. It's worth trying and does less damage than a hammer. At some of the Aboriginal feasting grounds, the early white settlers found heaps of shells. At Redland Bay, south of Brisbane, despite many piles of shells, there were no native trees within 10 kilometres. [Presumably] nuts were collected in a dilly bag and carried to the tribe.

From Ian MacConnachie's 'The Macadamia Story'



Gubbi Gubbi artist Lyndon Davis demonstrating cracking macadamia nuts the traditional way Photo with permission L. Davis and I. MacConnachie

Prague Botanic Gardens

During a recent overseas trip Peter Gould visited a number of botanic gardens. This is his experience at Prague.

The "old" Prague Botanic Gardens in Albertov, an inner suburb, contain an eclectic mix of plants from all over the world, many of which are grown in containers that are taken indoors during the harsh winters. The old gardens have been somewhat overshadowed by the more modern gardens at Troja, in the city's north, with its high tech greenhouses.

Both gardens maintain close links with the Science Faculty of Univerzity Karlovy (Charles University), and the Albertov gardens boast a unique "Geological Park" developed in cooperation with the University.



This sign recognises the contribution of the Science Faculty of Charles University

The Prague Geo Park is an open-air collection of boulder-sized mineral samples, complete with explanatory



Well-designed interpretative signs (in both Czech and English) explain the origins and distribution of each rock type.

signs, ranged along an avenue some 8 metres wide by 50 metres long. Each sign contains a description of chemical composition, geological origins, a distribution map, and a photographic enlargement of the crystalline structure of each rock. Each boulder has a cut and polished face showing the brilliant textures and colours of that rock type. The Prague Geopark is an



Polished face of rock revealing its underlying pattern and colour

inspirational success story showing what can be achieved through cooperation between a Botanic Garden and the local University. I can't help but think how much more impressive a 'Geopark' based on the spectacular geography of our region could be. The geology of Northern NSW and Southeast Qld, including the complex volcanics of the Mt Warning Caldera, the marine and meta-sediments of the coastal belt and the ancient sedimentary rocks

exposed in the river valleys, determines the distribution of plant communities, and has unique tales to tell. I would love to see a similar display in our gardens, possibly put together with the help of the staff and students of Southern Cross University.

Gardens Conference at Gold Coast in August

Friends of Gold Coast Regional Botanic Gardens are hosting the AFBG National Conference from 8 to 10 August 2014. They look forward to welcoming delegates from the Association's more than 50 member groups from botanic gardens within Australia, as well as two from overseas.

Professor Tim Entwisle, who coined the term *Sprinter* in 2009 to describe the early native spring flowering season, will be the keynote speaker.

Register via the web site http://www.friendsgcrbg.org.au/eve <a h

Audio Sign Installed



Denis Matthews and visitor Joan Bergen trying out the 'talk' buttons on the new audio sign outside the EEC

On 24 January we had installed, outside the Environment Education Centre, our first Audio Sign. Special thanks must go to NRMA Community Grant which funded the purchase of the sign. Also to the local firm Armsign, for manufacturing and installing it. This is the just one of the many improvements we plan to make the Gardens more user friendly for the whole community, not just those who are physically and mentally healthy.



Part of any waste disposal and landfill site is the need for future rehabilitation and Lismore City Council has addressed this in two innovative ways, through the creation of a botanic garden and through the establishment of phytocaps.

The aim is to return the area to a significant wildlife and recreational habitat, through sensitive, locally sourced planting, to extend rainforest and woodland habitat corridors in the area and to preserve and rehabilitate endangered rainforest and woodland habitat.

Lismore Rainforest Botanic Gardens In the year 2000 Lismore City Council embarked on a program to create a regional botanic garden at the existing waste facility site. Friends of Lismore Rainforest Gardens, a voluntary group which had been formed in 1994 to encourage the establishing of a botanic garden, helped facilitate this

program.

Over 6000 trees and other rainforest plants have been planted, with species found only in a 200 kilometre radius of the site. Canopy has formed in many areas, native groundcovers have emerged and many of the trees are flowering this year. Paths and signs have been installed through the gardens and picnic tables and seats can be found at several sites. By using a global positioning system (GPS) the Friends have recorded the position of all trees planted. This information is

Wasteland to Rainforest.... Botanic Gardens, Phytocaps and Koalas

fed into a data base, which also records their provenance.

Phytocap Rehabilitation

Since 2007 Lismore City Council has been one of five trial sites Australia wide for the research program, Australian Alternative **Cover Assessment Program** (AACAP) conducted in collaboration with several Australian Universities.

Existing New South Wales State Government landfill guidelines outline comprehensive landfill capping and rehabilitation methodology of compacted clays, rubble and earth layers.

The AACAP program trialled phyto (or plant based) techniques and the concept of a 'phytocap' for modern landfills is now being increasingly considered in the United States and other parts of Australia. This involves placing a layer of soil over the landfill and planting it densely with site specific vegetation. Percolation within the AACAP trial area has been recorded at less than 2% of precipitation for the three years of monitoring and has remained very low, despite above average rainfall, throughout 2010. Before the trial site was removed percolation was recorded less than 1% of precipitation and reinforces the point that with the soil type used at Wyrallah Rd, a cap thickness of 1.3 m and a fully functioning

vegetative cover, the hydraulic performance of a phytocap will meet the performance criteria required by EPA of less than 5%. Lismore City Council applied to the Department to vary the existing landfill site license to enable phytocapping to be used as a landfill capping and rehabilitation technique and became the first landfill licenced to use the AACAP method for rehabilitation in NSW. The site was officially opened by NSW Minister for the Environment, Hon Robyn Parker in September 2013.

Koalas

The conservation and enhancement of rainforest and woodland areas around the Lismore Recycling and Recovery Centre has allowed a regionally significant population of koalas to become established. The phytocap area, which is planted with over 1,200 koala feed trees, will add significantly to the koala habitat. The koalas can be found throughout the site, both in the gardens and the operational areas. A number of mothers with babies have been observed and it is not uncommon to see koalas walking on the ground in between trees during the day. During a recent koala counting period 24 koalas were observed onsite.

From Submission by Kevin Trustum to the Waste 2014 Conference, scheduled for Coffs Harbour, later this year.



Recent phytocapping planting viewed from Botanic Gardens entrance with operational area of Lismore Recycle and Recovery Centre in the background

The Snow Wood tree... and its cousins

Each season in the Botanic Gardens brings surprises to the Friends. Long-awaited flowerings and the subsequent seed pods make our toilings worthwhile. The colourful flowering of the Snow Wood -Pararchidendron pruinosum is a good example. Four years ago our Nursery germinated fifty-five Snow Woods for planting and for stallsales. After its fluffy yellow flowers in Springtime, this tree is festooned with apricot-coloured coiled and twisted seedpods. Growing on the north of the track leading into the Grandis Creek picnic area, its apricot colour stands out in the shade. This Pararchidendron is closely related to the Archidendrons in our Gardens. These are Archidendron grandiflorum, A. hendersonii and A. muellerianum. The prefix 'para' - is from the Greek, meaning 'near or like' (the other genus). So they are closely related.

Snow Wood, a small attractive tree with light green leaves derives its name from the white-ish "powder" on its foliage. It once grew on the margin of rainforests. If you give it shelter from the cold sou-westerlies of our district, Snow Wood will flourish even in full sun. It grows out in the open upon Richmond Hill and is a heavy seeder beside Caroona - Marima Nursing Home in Goonellabah. It is not tolerant of



Pararchidendron pruinosum - the Snow Wood seed pod



... and its close cousin *Archidendron* grandiflorum, Veiny Lace Flower pod.

heavy frosts. The Gardens Nursery has planted further seeds of Snow Wood and expects a fast germination.

It is planned to use these spectacular seed-pods in the Gardens' Collections for exhibition to visiting school groups.

Geoff Walker

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The beautiful Blue Tongue *Melastoma affine* flower

Melastoma affine - Blue Tongue or Native Lasiandra

Family Melastomataceae

This plant is undergoing a bit of an identity crisis at the moment. It was first described in 1823 by Scottish botanist David Don but recent genetic studies have thrown doubt on this classification. In 2001 a revised taxonomy was published in which this species was included as *Melastoma maladathricum*. Currently most authorities in Australia do not accept this except in Queensland. So at the moment all naturally occurring populations in Australia are still called *M. affine* except in Queensland where it is called *M.malabathricum*. It is a good example of the effect of DNA analysis on the taxonomy of the plant world.

All this controversy aside, this is a very attractive bushy shrub, growing to two metres, with dark green foliage, with prominent longitudinal veins and contrasting red stems. It has lovely showy mauve to purple flowers. The flowers only last a few days but the shrub flowers over many months so there are always a show of flowers. The fruit is blue-black, sweet and said to be edible. In fact the Genus name comes from melanos, meaning black and stoma for mouth referring to what you get if you chew the berries. The common name blue tongue also refers to the colour of your tongue after eating the fruit. It is presently fruiting in our Useful Plants Garden.

In Australia, it is found from the Kimberleys across the Northern Territory and Queensland and down as far south as Kempsey in New South Wales.

It grows naturally in moist areas in sclerophyll forests. In the garden it will grow in a wide range of soils and situations but is sensitive to frost and dry conditions. Grows best in full sun in warm to hot conditions with regular watering. It requires pruning to look its best. *Rosemary Blakeney*