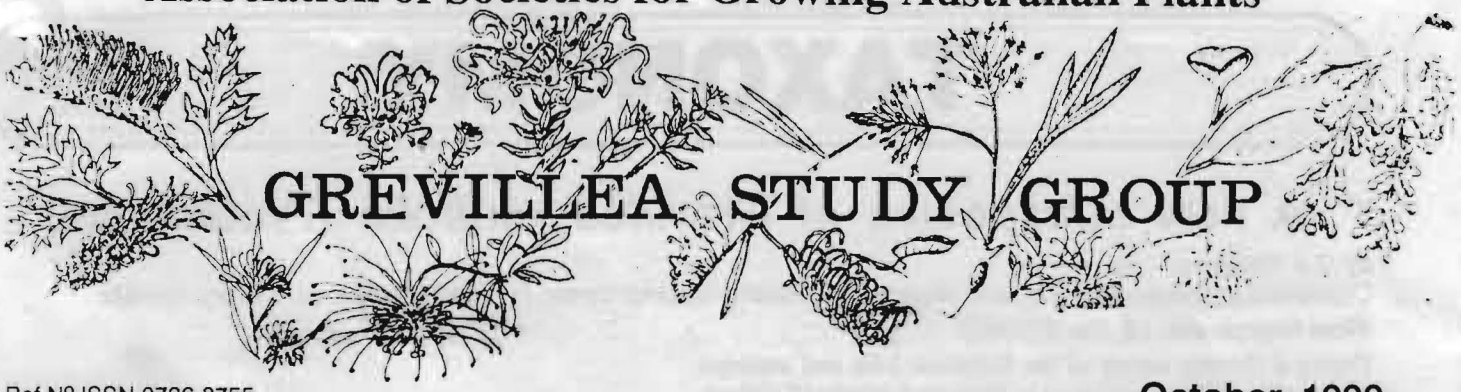
Association of Societies for Growing Australian Plants



Ref Nº ISSN 0726-8755

October 1999

Newsletter Nº 54

GREVILLEA STUDY GROUP NEW SOUTH WALES CHAPTER

■ Field Trip:
Friday November 5-Monday November 9

Grevilleas of the Blue Mountains and beyond.

This trip will encompass some of the Grevillea species of the Blue Mountains.

We hope to examine both forms of ***Grevillea laurifolia, G. acanthifolia, G. gaudichaudii, G. mucronulata, G. oleoides, G. sericea ssp. sericea, G. sericea ssp. riparia, G. sericea 'Blue Mountain', G. phylicoides, G. kedumbensis.***

We hope to visit the original site where ***G. rosmarinifolia*** type was collected on the Cox's River. We will also see ***G. mucronulata*** western form, ***G. arenaria ssp. canescens***.

A side trip to Kanangra Boyd to view ***G. sp. aff. linearifolia*** and to Tuglow Caves where ***G. rosmarinifolia*** and ***G. arenaria*** have hybridised in a natural setting.

One day visit to Burrendong Arboretum. Home-stay at Ken Arnold at " Clearview" Somerset Drive, Yeoval 02 6846 4072. The Arnold's have a beautiful native garden.

Gilgandra Reserve (suckering form of ***G. ramosissima ssp. ramosissima, G. triternata, G. arenaria ssp. canescens***). Parkes and surrounding bushland near Bumberry (***G. sp. aff linearifolia Temora***). ***G. polybractea, G. lanigera, G. floribunda*** (Grenfell & Dubbo area).

Intending participants should contact
Peter Olde 02 9543 2242.

Participants must be at Glenbrook Native Plant Reserve by 9am

■ Year 2000

Sunday March 5 10 a.m.
Kim & Deirdre TRONSON
21 Eaglecreek Rd WEROMBI 02 4653 1430
Subject: Australian Plants for Cut Flowers.

Preparation for the Autumn Plant Sale.

April 1 & 2
Mount Annan Botanic Garden - **Autumn Plant Sale**

SGAP (QLD REGION) INC. GREVILLEA STUDY GROUP

(Membership of the Group is restricted to financial members of an SGAP Region.)

MEETINGS FOR 1999: *All meetings commence at 9.30 am unless otherwise notified. For further information contact Merv. Hodge on (07) 5546 3322.*

SUNDAY, 31st OCTOBER

Venue: Home of Steve & Lorraine Hibbert,
18 Railway Street (**NOT Railway Pde**),
Nudgee

Phone: (07) 3267 6585

Subject: A grevillea garden on a suburban block.

Sunday, 28th November

Venue: Home of Ron & Elaine Jell,
3 Fryar Court,
Clear Mountain

Phone: (07) 3206 4226

Subject: Labelling garden grevilleas

Sunday, 31st January, 2000

Venue: Home of Laylee Purchase,
41 Rocklyn St.,
Toowoomba, 4350

Phone: (07) 4630 2211

Subject: To be decided.

CANCELLATION NOTICE

The proposed field trip in the Bendigo and Shepparton areas by the Victorian Chapter over Melbourne Cup weekend has been cancelled because:

1. NSW members who might have participated are having their own field trip in the Blue Mountains and Beyond the following weekend,

2. We plan to reschedule the trip immediately following the Fred Rogers Memorial Biennial Seminar on Grevillea during Cup weekend in year 2000, and

3. Both Neil Marriott and I have other commitments over Cup weekend this year.

TAXONOMY

A new subspecies of *Grevillea variifolia* (Proteaceae)

by G.J. Keighery
Department of Conservation and Land Management, Wildlife Research Centre, PO Box 51, Wanneroo, Western Australia

From Nuytsia Vol. 12, No. 2 (1998)

During a floristic survey of the limestone hills and outcrops forming Cape Range peninsula in Western Australia (Keighery & Gibson 1993), it became apparent that ***Grevillea variifolia*** contains two distinct leaf variants that are geographically separated. The type form occurs on the massive Tertiary limestones of the Rough Range and the Quaternary calcarenite ridges between Coral Bay and Cape Cuvier, where the climate is more arid (Keighery & Gibson 1993). Plants from these low outcrops have smaller, harder leaves with pungent triangular points rather than broad shallow lobing between the more numerous points of leaves from Cape Range. These variants are considered to be morphologically and geographically distinct and are worthy of taxonomic recognition.

In their comprehensive treatment of the genus **Grevillea**, Olde & Marriott (1995a,b) foreshadowed the taxonomic recognition of geographic leaf variants in *Grevillea acuaria* F. Muell. ex Benth., *G. nudiflora* Meisn., *G. oncogyne* Diels and *G. pectinata* R. Br., without noting rank. They did recognise geographic leaf variants in *Grevillea apiciloba* F. Muell., *G. biformis* Meisn., *G. curviloba* McGill., *G. didymobotrya* *G. diversifolia* Meisn., *G. manglesii* (Graham) Planch., *G. nana* C.A. Gardner, *G. patentiloba* F. Muell., *G. pauciflora* R. Br., *G. rigida* Olde & Marriott, *G. sarisa* S. Moore, *G. shuttleworthiana* Meisn and *G. thyrsoides* Meisn. at the subspecies level.

In only one case, did they treat a leaf form as a separate species, distinguishing *Grevillea evanescens* Olde & Marriott from *G. obtusifolia* Meisn. They saw only limited material of *G. variifolia* and commented (Olde & Marriott 1995b: 217) that the species showed "some variation in leaf size, shape, degree of division and colour". Therefore, since geographic variation in leaf characters appears widespread in the genus and is usually accorded subspecies rank, this rank is adopted here.

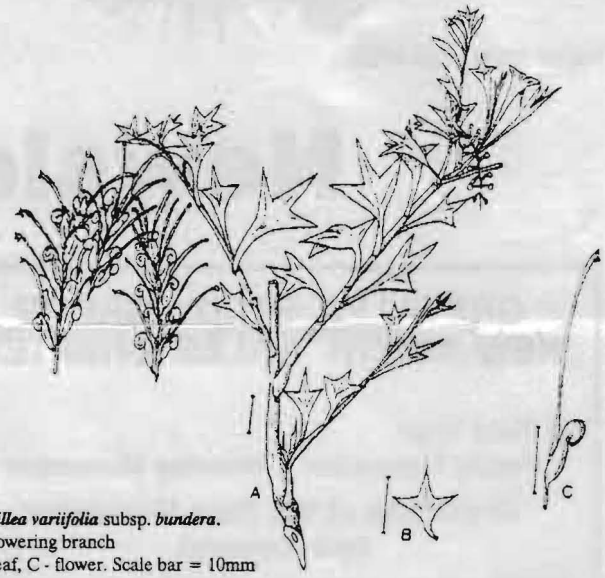
Taxonomy

Grevillea variifolia C.A. Gardner & A.S. George, *J. Roy. Soc. W. Australia* 46: 129-130 (1963). *Type*: Cape Range, near number 3 well, 2 June 1961, *A.S. George* 2477 (*holo:* PERTH 1137859).

Grevillea variifolia C.A. Gardner & A.S. George subsp. ***variifolia***

Mature leaves: with a petiole 3-6 mm long; lamina usually oblanceolate to narrowly cuneate, 17-43 mm long(usually greater than 25 mm), 15-22 mm wide; apex usually obtuse, rarely acute or pungent with 3-7 subsidiary points.

Distribution and habitat: North-west Western Australia in the Carnarvon Botanical District. Confined to the massive Tertiary limestones of the Cape Range.



Grevillea variifolia subsp. *bundera*.
A: flowering branch
B - leaf, C - flower. Scale bar = 10mm

Conservation status:. Many populations in Cape Range National Park.

Flowering period:. June to September.

Grevillea variifolia subsp. ***bundera*** G.J. Keighery, *subsp. nov.*

Typus: 15.6 km north of Coral Bay turnoff on Exmouth Road, Western Australia, 25 August 1992, *G.J. Keighery & N. Gibson* 323 (*PERTH* 04055217).

Mature leaves: with a petiole c. 2 mm long; lamina normally triangular, 11-15 mm long, to 8 mm wide, with up to 5 lobes, each lobe with a pungent mucrone 2-4 mm long.

Distribution and habitat: North-west Western Australia in the Carnarvon Botanical District. Confined to Quarternary Bundera calcarenites and Pleistocene limestones (Rough Range), usually overlain by recent red sand between Cape Cuvier and Rough Range.

Conservation status: Widespread and probably not in danger, but is not known from any conservation reserve.

Flowering period: May to September, with one collection in April. When surveyed in April 1996 no plants were flowering; flowering may depend on cyclonic rain.

Etymology: Named after the Quarternary Bundera calcarenites to which this taxon is a common and distinctive component of the shrub flora.

References

Gardner, C.A. & George, A.S. (1963). Eight new plant names from Western Australia. *Journal of the Royal Society of Western Australia* 46: 129-138.

Keighery, G.J. & Gibson, N. (1993). Biogeography and composition of the flora of Cape Range Peninsula. Western Australia. *In*; Humphries, W.F. (ed.) The Biogeography of Cape Range, Western Australia. *Records of the Western Australian Museum*. Supplement 45. pp. 51-85.

Olde, P. & Marriott, N. (1995a). "The Grevillea Book." Vol. 2 (Kangaroo Press: Kenthurst, New South Wales.)

Olde, P. & Marriott, N. (1995b). "The Grevillea Book." Vol. 3 (Kangaroo Press: Kenthurst, New South Wales.)

HISTORY

The Military Depot, Cox's River.

P. Olde

Early Journeys to west of the Blue Mountains

On May 28, 1813, Blaxland, Lawson & Wentworth arrived at Mount York and then descended into the vale below, thereby completing the first crossing of the Blue Mountains, west of Sydney. The party proceeded through the valley about two miles north north west through open meadow covered in grass two to three feet high and encamped beside a fine stream, the River Lett.

Blaxland observed that the "stones at the bottom of the rivers are very fine, large-grained, dark-coloured granite, of a kind quite different from the stones of the Mountains or any stones they had ever before seen in the Colony".

In November 1813, Governor MacQuarie sent another party under George William Evans to survey the area. Evans followed the same small stream to a point where "at 4 miles the stream alters its direction to the South, at which place the main Run joins from the West forming a considerable rapid Riverlett (the Cox's River); the land here gets better and the Country has a fine appearance;"

The First Road built by William Cox

The descent from Mount York was extremely steep and covered with loose rock but William Cox arrived in 1814 to build a road from the new Mountain way to the stream and beyond to Bathurst.

On December 9, using felled timber, his team built a bridge over the River Lett and by December 16 had completed another over the Cox's, measuring 45 feet long and fourteen feet wide with a causeway on each side filled with stone and covered with earth.

Cox's Pass and Cox's River named

Governor and Mrs MacQuarie set out in April 1815 to visit "the new discovered Country". On April 29, MacQuarie observed the pass, which he named Cox's Pass, to be a very abrupt descent, almost perpendicular. The vale below he named the Vale of Clwydd, after a vale in Wales. The vale terminated at a River running South formed by two smaller ones coming from the Westward and Eastward and "which unite at the distance of Five Miles from Mount York". MacQuarie named the river, Cox's River, in honour of William Cox, the road builder.

The Governor's party encamped on the left bank of the western branch where there was good grass and plenty of fine water for their horses. After a few days they proceeded on to Bathurst, returning there on their way back on May 13.

In 1815, W. Hassall, Superintendent of Government Stock, also visited the area and by March 27, 1816 was able to inform the Grovernor that "Cronen & his men have built a most excellent stock-yard, with a good marking pen and also three huts in a line with rear of the stock yard, ... one for the Soldiers."

Military Depot formed

After an attack by hostile natives in early 1816 which saw the new depot plundered, Macquarie ordered Sgt Jeremiah Murphy to proceed to Cox's River with a detachment of the 46th Regiment and to remain there for the protection of Government stockmen and cattle and provision depot, and to keep open communication between the coast and Bathurst.

A guard was to be mounted daily, consisting of a lance corporal and three privates, and one sentry both night and day was ordered to be posted over the arms and depot. An escort of three soldiers was to be provided for protection of Government herds or provisions travelling on the road.

These were the first beginnings of an area that was to become one of Allan Cunningham's favourite collecting areas. The area marked the end of a day's journey over the mountains.

First Botanical Collections recorded

On April 11, 1817 Oxley's first expedition to the interior pitched tents and camped on the bank of the river for the night. Allan Cunningham noticed in the Vale of Clwydd " the very remarkable change of Country differing from that on the Mountains both in the Vegetable Productions and the nature of the Soil".

He gathered seeds and specimens and on the banks of the river he found ***Grevillea acanthifolia*** and ***Grevillea aspleniifolia*** in great luxuriance.

FALL OF THE WEATHERBOARD - from "Australia in the 1870's"

HISTORY

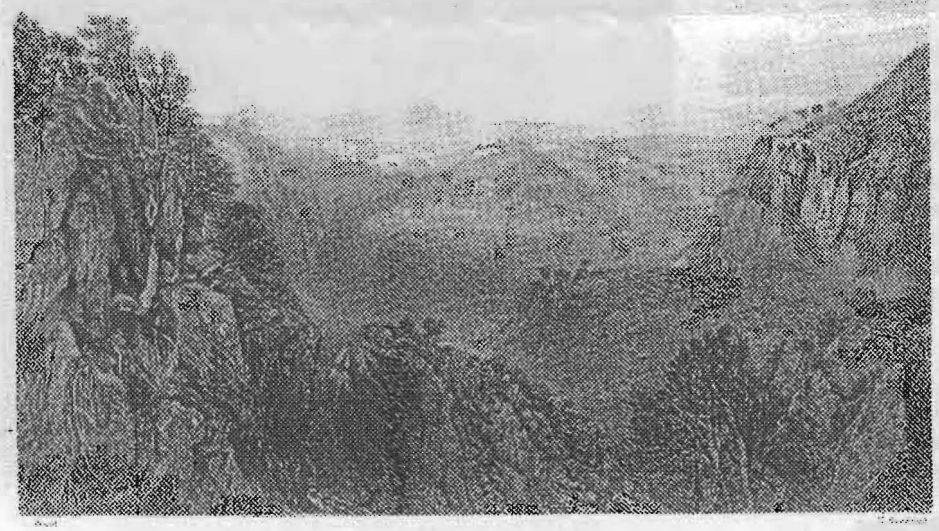
G. acanthifolia subsp *acanthifolia* from *Grevillea Book Vol II*

Five months later, in September, the returning explorers recrossed Cox's River and halted near the depot for the night. The horse that carried part of the botanical collection fell in crossing the uneven rocky bottom of the river and gave Cunningham "abundance of employment in rescuing those of my plants from destruction that had suffered by the accident."

Freycinet visits Military Depot

In November 1819, members of Freycinet's expedition round the world were taken to Bathurst by William Lawson, arriving at the Cox's River military depot about midnight.

(below) View from Top of Grose Head - "Australia in the 1870's"



1822 trip by Allan Cunningham

In 1822, while proceeding westwards, Allan Cunningham stayed again at the camping ground by Cox's River.

He descended Cox's Pass on October 7, using a young tree as a brake, and journeying through the rich but swampy Vale of Clwydd to the low rocky flats near the junction of the river and rivulet.

As the banks of the river seemed productive of curious plants and also afforded wholesome grass seed to his horses, Cunningham decided to remain here for some days.

The two Grevilleae he had noticed in 1817 he now saw in full bloom. He provided a description of ***Grevillea acanthifolia*** in ***Barron Field's Geographical Memoirs of New South Wales*** where he noted that the species was to be found in peaty bogs on the Blue Mountains and banks of Cox's River.

Cunningham also described three other Grevilleas from the area. On P.329 he describes ***Grevillea sulphurea (syn. G. juniperina)*** - a shrub frequent with ***G. acanthifolia*** on the grassy flats, Cox's River.

He also mentions ***G. cinerea Brown*** which he described "as a beautiful species, found on Cox's River and Rocky Hills beyond Bathurst".

G. cinerea Brown is a synonym of ***G. mucronulata*** but it is thought that Cunningham had confused this species with ***G. arenaria subsp. canescens*** (at that time known simply as ***G. canescens R. Brown***).

On P. 328 he gives one of the few valid descriptions of Grevillea that he made - ***Grevillea rosmarinifolia*** - a shrub of robust straight growth, and with reddish showy flowers which grows on banks of the Cox's River.

More precisely, in a letter to his brother Richard, Allan notes of his collection of ***G. rosmarinifolia*** that it is to be found "on the flat at Cox's River just below the Military depot growing on the immediate bank of that brook where also are to be observed ***G. sulphurea*** and ***G. canescens*** ....if not destroyed by cattle. When you visit that grassy flat, think of the various scenes that have been exhibited on it. Gov. MacQuarie and his suite with an immense cavalcade rested on it in 1815 and many a tent has since stood on it."

HISTORY

Trips to "Bald Hill"

On October 8 he set out by a native path along the right bank of Cox's River, making in a south-westerly direction for a barren rocky hill seen from the high ground near the tents and which the soldiers of the depot assured him held a considerable variety of flowers.

At length he ascended a portion of the ridge whose entire absence of timber trees made it conspicuous on the abundantly wooded range.

He observed there a most interesting assemblage of fine plants, of which he collected a number.

On October 10, the day before Cunningham set off for further pastures, Barron Field arrived at Cox's River declaring that "Mount York afforded the first view of the promised land of Australia".

On his return to the "old resting place at Cox's River" on December 30, Allan Cunningham rode eagerly off to Bald Ridge, in the fullest hopes that its variety of curious plants would afford him some packets of ripe seeds.

Cunningham again reached the Cox's River on the early afternoon of April 3, 1823 on his way to Bathurst, for which he took off the next morning in pouring rain. He also stopped here on the way to Bathurst on December 26, 1824 returning to pitch his tent there on the way back on 1 January, 1825. He fully occupied the whole of the next day " on the interesting banks of that stream, as also on the summit of Bald Hill distant about 3 miles from our tent."

Encamped at Cox's River on the following October 14, he rested his horses all the next day,spending October 15 roaming over his favourite botanising ground. He revisited this familiar site in 1826, 1829 and 1831.

Victoria Pass Road Built

Increasing traffic made it imperative to improve the route between the Blue Mountains and Bathurst, and in 1830 Thomas Mitchell began his famous road, descending from the Blue Mountains via Victoria Pass, avoiding Mount York and Cox's Pass altogether.

Military Depot Abandoned

Soon after this, the military station at the confluence of the Lett and Cox's River was abandoned.

In 1837, the area was sold to James Blacket and became known as 'Glenroy'. A road was made from Hartley to Oberon (Bullock Flats) in 1867 through Glenroy at a higher level than the present road to Jenolan Caves. Subsequently a deviation from a point within Glenroy crossing to another point on the same road was opened in 1890.

The abutments of the bridge used to cross the Cox's river can still be observed above the present bridge at Glenroy.

Today's road to Jenolan Caves beside the River Lett follows yet another deviation from the original road which is entered after the River Lett bridge is crossed below Hartley and was made at a lower level than the old road on its right.

A memorial monument, unveiled in 1936, today marks the site of the old camping ground.

References: Havard W.L. & Dowd B.T. (193-)Historic Glenroy, Cox's River. Blaxland Shire Council

PROPAGATION

The Seed Bank

by Judy Smith

If you would like free seed please send a self-addressed envelope with a 70 cent stamp to Judy Smith, 15 Cromdale Street, Mortdale 2223.

Seed for sale

G. candelabroides	*x3*	*G. pilillifera*	*x2*
G. crithmifolia	*x2*	*G. plurijuga*	*x4*
G. decora	*x7*	*G. polybotrya*	*x3*
G. didymobotrya	*x1*	*G. pteridifolia*	*x1*
G. dryandri	*x9*	*G. pterosperma*	*x10*
G. endlicherana	*x2*		*(5 x SA, 5 x WA)*
G. eriobotrya	*x8*	*G. pulchella*	*x3*
G. glauca	*x4*	*G. pyramidalis*	*x5*
G. huegelii	*x1*	*G. quercifolia*	*x2*
G. leucopteris	*x3*	*G. refracta*	*x2*
G. monticola	*x1*	*G. robusta*	*lots*
G. paniculata	*x3*	*G. stenobotrya*	*x3*
G. petrophiloides	*x3*	*G. synaphaea*	*x3*
		G. teretifolia	*x3*

Free seed

(stocks are very low)

G. banksii red (grey leaf)	*G. longistyla*
G. banksii white prostrate	*G. macleayana*
G. caleyi	*G. monticola*
G. 'Caloundra Gem'	*G. petrophiloides*
G. delta	*G. phanerophlebia*
G. endlicherana	*G. rivularis*
G. insignis	*G. 'Sid Reynolds'*
G. intricata	*G. stenobotrya*
G. johnsonii	*G. triloba*
G. juncifolia	*G. trifida*
G. linearifolia (white)	*G. venusta*
G. longifolia	*G. 'White Wings'*

PROPAGATION

How Old *IS* That Plant

by Richard Tomkin, Changers Green Nursery, Gin Gin, Q

Over a number of years growers have told me, on many occasions, that they "used to be able to grow such and such Grevillea but can't keep one alive for very long nowadays". There is always some plausible reason for the failure - too dry, high pH, wrong root stock, old farm land, cutting grown etc and the matter was mostly forgotten or filed away in that cobwebby place where some memories lurk for years.

Then, along came "Dolly" the sheep - that cloned sheep - remember her? It turns out that this 3 year old sheep seemed to be the equivalent of 6 years old - her 3 years plus her mothers age at the time of cloning (for more information contact your friendly geneticist).

So what has this to do with Grevilleas (or any other plant)? If this transfer of age or aged genes occurs in cloned plants - that is, reproduced from living tissue rather than seed - then your new plant is probably far from new, very far.

There are two cases to consider.

Scenario A.

1. Mr Smith holidays in the Northern Territory and finds a good specimen of *Grevillea dryandri*. The plant is of unknown age but let us call it 4 years old, from which he removes pieces and sends them to a grafter or cutting propagator in lets say Victoria.
2. Victorian propagator succeeds and from those original plants strikes some more to send to fellow propagators - add 2 or 3 years.
3. "New" plant, now 6 to 7 years old, is repropagated and grown on for 2 to 3 years and then sold. Plants are now 8 to 10 years old.
   If the original plant lives for 10 years it might be unreasonable to expect a further 10 years from a clone.

Scenario B.

1. A new hybrid is created and grown for 4 years to determine its final shape, size, colour and flowering period etc (or they should be!) and then it is sold to a propagating nursery.
2. The new owners strike a few hundred and repot them for 1 year. Cutting material is removed from these stock plants and struck. The "new" plants are potted into 150mm pots and either sold straight away or grown on to a size where more material is removed and then the plant is sold, a bit bushier. Plant age is now 5 to 6 years old, however subsequent propagation will add more years.

So, how old is your recently purchased *G.* 'Honey Gem' or *G.* 'Robyn Gordon' or whatever? Probably as old as the original This potential problem is readily overcome with species by growing seeds every few years to maintain vigour but hybrids can only get older and older.

Before someone gets a negative edge in this, it is all dependent on how old an original plant would survive. Plants like apple trees live for hundreds of years so not too much trouble is expected, however if a plant is short lived and survives for only 5 to 10 years as I suspect some Grevilleas are (probably those that set lots of seed and flower very early in life) then by the time we "own" one it is probably past its use by date already!

I realise that a certain amount of rejuvenation must occur during live tissue propagation (cloning) and with it increased vigour, but any transfer of aged genes as well may account for faster aging later.

All of this is pure speculation on my part but having heard the woes of growers and seen reduced vigour over the years - I wonder!

Which rootstock is it?

I am an occasional buyer of grafted Grevilleas.

When buying a car, I am usually impressed by the showy part, but before parting with my money, check to see what's under the bonnet. However with grafted Grevilleas it isn't always that simple.

Fortunately *Grevillea robusta* rootstock is usually easy to identify. In my sandy shallow soil I know what to do - dig in well-rotted manure, plant with slow-release fertilizer, and give lots of water. Otherwise it won't grow.

Different rootstocks need different growing conditions. The "robusta" treatment would kill some of the others. If I knew *Grevillea* "Royal Mantle" was the rootstock, I wouldn't do anything special.

Whilst being somewhat afraid of mentioning "The Great Rootstock Debate", I hope it is fair of me to say that as time goes by we will see more non-robusta rootstock. (Phew! that was hard to say!)

So could I please ask: "how about mentioning the name of the rootstock on the label?"

Ian Cox, *(Sydney)*

NEWS IN BRIEF

Grevillea raybrownii

On a SGAP trip to Wanganderry Tablelands a few years ago with Alan Fairley and Philip Moore we identified a few Grevilleas: *baueri, oleoides, arenaria, diffusa and "triternata"*.

I presume the "*G. triternata*" we saw was the one now named *G. raybrownii*.

In the *Grevillea Book* distribution of *G. raybrownii* is mentioned as being in an area bounded by Dapto, Robertson and Berrima. However our sighting occurred about 30 kilometres north of Berrima or about 25 kilometres north-west of Mittagong.

I have seen a similar Grevillea just south of Mittagong near a carpark for a walking track leading to an old iron ore mine, close to the expressway, where it grows near *G. baueri* and *G. arenaria*.

Ian Cox, *Sydney*

CUT FLOWER STUDY

Respiration and ethylene production by harvested *Grevillea 'Sylvia'* flowers and inflorescences.

D.C. Joyce, A.J. Shorter, P.A. Joyce & P.R. Beal

adapted from Acta Horticulturae 405, 1995 for the Grevillea Study Group Newsletter by P. Olde

Abstract.

Respiration and ethylene production by *Grevillea 'Sylvia'* flowers and inflorescences were measured to characterise the postharvest senescence processes of this new cut flower crop.

The respiration rate on day 0 (harvest) of flowers at sequential development stages decreased to a minimum in the fully developed flower, and then increased after the perianth was shed.

In contrast, ethylene production increased at an intermediate development stage, during perianth abscission and senescence.

Respiration and ethylene production rates both decreased by day 1 after harvest. Accordingly, the respiration and ethylene production trends across development stages which were evident on day 0 were greatly attenuated on days 1, 2 and 3.

Respiration rate for whole inflorescences declined rapidly with 6 hours of harvest to a comparatively steady state level.

Provision of sugar in the vase solution maintained respiration at a higher steady state level. Ethylene production by whole inflorescences tended to rise progressively from harvest until the studies were terminated.

Introduction

Grevillea inflorescences rarely last more than 7 days in the vase. Extension of longevity of harvested grevilleas is, therefore a matter of commercial interest. In order to arrive at optimum post harvest treatment and handling recommendations, improved scientific understanding of the senescence physiology of grevillea flowers and inflorescences was sought.

2. Some of the materials and methods employed

2.1 Plant material.

G.'Sylvia' stems were cut from plants at a plant nursery near Brisbane, Australia. The leaves were trimmed from the stems in the field and the stems were recut and immediately stood in deionised water. Transport was by air-conditioned vehicle to an air-conditioned laboratory within 1 hour of harvest. There, the stems were again re-cut under water to 20-30 cm length.

2.2 Vase solution

A base vase solution of 10 mg available chlorine per L, provided as DICA (dichloroisocyanurate, sodium salt) was used to inhibit the growth of micro-organisms.

2.3. Individual flower experiment

Separate inflorescences were used to provide flowers for each of six maturity stages.

2.4 Whole Inflorescence experiments.

Daily:

Five replicate inflorescences with mostly mature flowers were sealed into individual glass jars. Respiration and ethylene production were determined daily over 6 days.

Hourly:

Respiration and ethylene production were determined daily for 6 replicate inflorescences.

3. Results

Individual Flowers

Respiration

Respiration rates for freshly harvested individual flowers (day 0) were highest for the young flower and perianth abscised stages and lowest for the intermediate mature flower stage.

Respiration rates for all stages dropped by day 1, with the differences between development stages recorded on day 1 being attenuated.

By days 2 and 3, the respiration rate of young flowers fell more than the rates for the five later development stages. After 2 days the trend in respiration became a serial increase in rates over the six development stages.

Ethylene production

For freshly harvested flowers (day 0), the trend in ethylene production was for low levels in young, immature and mature flowers, followed by an increase, peak and decline through open flower, senescent flower and perianth abscised stages, respectively.

Excised perianths of open flowers on day 0 produced somewhat more ethylene than the remainder of the flower.

Comparatively high initial (day 0) ethylene production by flowers at the open flower, senescent flower and perianth abscised stages fell by day 1 to levels nearer those produced by young, immature and mature flowers, and remained constant on days 2 and 3.

Whole Inflorescences

Respiration:

Respiration rates of whole inflorescences fell within 1 day of harvest to steady stae levels maintained for a further 5 days, when the experiment was terminated. Most of the initial fall in respiration rate following harvest occurred within 6 hours of monitoring.

Ethylene Production:

Ethylene evolution by whole inflorescences increased from harvest to day 5, and decreased again on day 6.

Discussion:

High rates of respiration at harvest day for individual flowers at the young flower and perianth abscised development stage may reflect rapid growth, perhaps in the context of small cell and rapid cell division.

The absence of a respiratory peak for individual flowers at the senescent flower stage suggests that these flowers are 'non-climacteric'.

The marked decrease in respiration rate between day 0 and day 1 for individual flowers at all development stages, to an apparent plateau maintained over days 2 and 3, might reflect exhaustion of readily

CUT FLOWER STUDY

accessible respiratory substrates. This is supported by a similar trend in whole inflorescence respiration rates.

Provision of sucrose in the vase solution raised the steady state respiration level and has been associated with increased vase life...

Provision of sucrose in the vase solution raised the steady state respiration level and has been associated with increased vase life in ***Grevillea 'Sandra Gordon'*** and ***G. 'Majestic'***.

The peak in ethylene evolution by isolated flowers associated with flower opening and senescence suggests that ***Grevillea 'Sylvia'*** is ethylene 'climacteric' with intervening attenuation between day 1 and day 3.

However, the capability of the whole inflorescence to produce ethylene is not lost because of the mixed development stages on a single rachis. Increasing ethylene production by whole inflorescences over time indicates a progressive senescence process.

There is no obvious explanation for the lack of correlation between respiration rate and ethylene production evident on day 0 for single flowers. The rapid fall in respiration rate, within 1 day of harvest, is the dominant change for both single flower and whole inflorescence respiration, being followed by comparatively steady state respiration levels.This may in turn be a result of the early decline of respiratory activity.

Progressively increasing ethylene evolution during senescence of the whole inflorescence suggests that its evolution occurs in response to developing tissue 'stresses', such as loss of subcellular compartmentation and developing water deficit.

Steady state respiration levels are maintained by the inflorescence in the face of increasing ethylene production and perianth senescence but the reason for this is unclear.

Reminder

Articles for inclusion in the newsletter can be emailed to Peter Olde: petero@gco.apana.org.au or mailed as hard copy or via PC disk to the editor or by fax on (02) 9579 4093

A Note from the Treasurer

Please ensure all cheques are made payable to Grevillea Study Group, not Peter Olde.
Thanks

OFFICE BEARERS

Leader: Peter Olde, 138 Fowler Road, Illawong 2234. (02) 9543 2242

Treasurer and Newsletter Editor: Christine Guthrie, PO Box 275, Penshurst 2222. Phone/fax (02) 9579 4093

Curator of Living Collection & Herbarium: Ray Brown, 29 Gwythir Avenue, Bulli 2516. (02) 4284 9216

Seed Bank: Judy Smith, 15 Cromdale Street, Mortdale 2223 (02) 9579 1455

FINANCIAL REPORT

OCTOBER 1999

Income		Expenditure	
Subscriptions	$195.00	Newsletter Publishing	200.00
Plant Sale	9,414.00	Postage	115.10
Interest	2.61	Stationery	22.00
		Bank Charges	6.47
	$9,611.61		**$343.57**
Balance on Hand 14.9.99		**$15,007.84**	

* * * * * * * * * * * * * * * * * * *

If a cross appears in the box, your subscription of $5.00 is due.
Please send to the Treasurer, Christine Guthrie, PO Box 275, Penshurst 2222.
Please make all cheques payable to the Grevillea Study Group.

1998	1999