Bromeliaceae

VOLUME XL - No. 2 - MARCH/APRIL 2006

The Bromeliad Society of Queensland Inc.

P. O. Box 565, Fortitude Valley
Queensland, Australia 4006,
Home Page www.bromsqueensland.com

Front Cover:	*Tillandsia jalisco-monticola*	Photo by Ross Stenhouse
Rear Cover :	*Ae. chantinii* (variegrated)	Photo by Ross Stenhouse

Contents

Results of Popular Vote for March Meeting

Advanced		
First	Y. Daniels	*Vriesea* 'Speckles'
Second	Y. Daniels	*Neoregelia* 'Shamrock'
Intermediate		
First	B. & A. Kable	*Billbergia* 'Kip'
Second	L. Grubb	*Crystanthus* 'Ti'
Novice		
First	P. Barlow	*Guzmania* 'Grand Prix'
Second	A McBurnie/P. Beard	*Guzmania whitmacki*

Society Diary

NEWS REPORTS EVENTS

PRESIDENTS REPORT

(by Bob Reilly)

While we have had challenges along the way, overall the last year has been a successful one. As well as the usual field days and shows, we ran the largest, and I think the best, Australian and New Zealand Bromeliad Conference. While all this was happening, our membership increased to record levels, and we have over 50 societies that have established formal links with us.

These outcomes were only achieved through the efforts of over 80 volunteers, many of whom have worked tirelessly on jobs of one type or another for the Society over many years.

I thank all of you!

I would like to briefly mention some of the challenges that are ahead of us. They are at two levels, namely, the promotion of bromeliads generally, and the Society's future.

In promoting bromeliads, it is worth remembering at least three things.

First, most people grow their bromeliads in association with other plants, and often in the ground rather than in a shadehouse. Second, less than one per cent of these people will join any plant society, let alone a bromeliad society. Third, there will be an increasing emphasis on growing plants that require little water for their upkeep.

These three factors suggest a number of strategies that we can pursue as a Society that wishes to see bromeliads take their rightful, and prominent, spot in the plant world. They include:

· The development of printed material, such as the introductory book on growing bromeliads that will be published later this year, that any person can pick up and apply.

· Building and maintaining links with other plant societies and organisations, including magazine publishers and large nursery chains, which are willing to help promote bromeliads.

· Helping other Queensland bromeliad societies to form.

· Providing readily accessible, internet-based material on bromeliads that is relevant to growing them in sub-tropical and tropical conditions.

· Promoting the use of bromeliads as companions for other plants in landscape-type situations.

· Identifying, and promoting, those bromeliads that require relatively little water for their upkeep, and strategies for obtaining the "most mileage" from each kilolitre of water that is used on bromeliads.

We are already doing many of these things, and I am sure that if they receive even more emphasis in the future, then a steadily increasing percentage of Queensland gardens will have bromeliads in them.

The other set of challenges we face relates to our Society's future. Many of them relate to our continued growth in membership and operations. They can have the effect of making the Society less friendly for newcomers (which we all were once!), and making it more difficult to find people to do all the jobs that need to be done, especially on the Management Committee. There are also an increasing number of people who

cannot do jobs for the Society that require their attendance at regular meetings.

Some strategies that could help are:

· Continuing to help new bromeliad societies to form so as to give people practical alternatives to joining this Society. On this point, I think it would be good to see a society formed in the Ipswich/Lockyer Valley area, as well as one based on the bayside areas. Encouraging the formation of a Brisbane society that meets during the day, or daytime meetings of our Society (in addition to the current night time meetings), could also help.

· Appointing a membership secretary so as to reduce the amount of work the secretary has to do, and introducing the option of multiple year memberships so as to reduce the number of renewals the Treasurer and Secretary have to process each year.

· Developing "job sharing" arrangements so that several people can share a job that requires one person to be at every meeting (While obviously this is something that happens informally now, I think greater use could be made of this approach).

· Developing jobs that do not require attendance at regular meetings, especially Management Committee meetings, at all.

In conclusion, I wish to reiterate my thanks to everyone who has helped out during the year, and hope that an even greater number of members will contribute in 2006.

SOCIETY PROJECTS UPDATE

(by Bob Reilly)

The distribution of two, free bromeliad books, to each of the non-bromeliad societies that have established formal links with the Society, has been completed. The management committee has decided to extend these arrangements for any additional society that establishes these links in 2006. This measure has resulted in a lot of goodwill for our Society, as well as providing a source of bromeliad information for the members of over 25 societies throughout Queensland.

The supply of a bromeliad reference collection to the State Library of Queensland has been completed. 25 books were supplied, at a cost of over $2,800. People throughout Queensland will be able to borrow these books through their local public library.

A $500 donation has been made to the newly-formed Caboolture &Districts Bromeliad Society. Two books have also been donated to their library.

The Society has decided to prepare and publish an introductory book, titled: *Starting with Bromeliads*, on growing bromeliads in sub-tropical and tropical Australia. The project will be led by Bob Reilly and Ross Stenhouse.

The book will be about 100 A5-sized pages in length. (In other words, about twice the size of an edition of *Bromeliaceae*). It will contain over 200 colour photographs, more than 250 plant descriptions, information on growing bromeliads (this will be illustrated by colour photographs), using bromeliads in landscape settings, and sources for buying bromeliads.

A free copy will be sent to each person/organisation that receives *Bromeliaceae* in October 2006. The book will go on sale to members of the public, for $15, at the Society's Spring show at Mt Coot-tha Botanical Gardens on 11/12 November 2006.

Visit the society's web site on a regular basis, it changes

http://www.bromsqueensland.com

BOOK REVIEW: THE TILLANDSIA TECTORUM COMPLEX

(by Bob Reilly)

The Tillandsia tectorum Complex by Lieselotte Hromadnik, with the English translation by Derek and Margaret Butcher. The book was published in 2005 by Deutsche Bromelien-Gesellschaft e.V. (German Bromeliad Society), Frankfurt am Main, Deutschland. It can be purchased from the Society.

Throughout the book, the German text is accompanied by the corresponding English translation. The book has over 70 excellent colour photographs of the species' habitats, as well as their appearance, and close up shots of their infloresences. There are also numerous line drawings.

The book is a taxonomic revision of a group of silver-leaved tillandsias described as the *T. tectorum* complex. They are some of the most beautiful plants in the genus.

The book opens with an historical overview of the complex, and a review of the literature on them.

Ms Hromadnik makes the point that quite a few of the varieties and species in this complex occupy small geographic areas. Hence, more species and varieties no doubt await discovery, provided they do not become extinct due to habitat destruction.

She divides the *T. tectorum* species into four taxa*: T. tectorum* var. *tectorum* representing the long-stemmed forms, var. *globosa* covers the nearly stemless forms, var. *viridula* is an epiphytic form growing in the eastern Cordillera below 2,000 metres, while fo. *gigantea* covers the generally larger plants from Ecuador. The taxonomy of *T. heteromorpha* is also clarified.

New species described are: *T. lithophilia, T. chusgonensis. T. tomekii, T. stellifera, T. malyi,* and *T. oblivata*. Then, the taxonomy of three existing species, namely, *T. balsaensis, T. rupicola*, and *T. reducta*, is clarified.

A distribution map and botanical key for the taxa covered in the book follows, while the book concludes with a travel diary of one of the author's collecting expeditions in Peru.

This book is highly recommended reading for any tillandsia enthusiast. It makes interesting reading for anyone interested in grey-leaved tillandsias.

(Review date: March 2006)

See a Member's Garden

At the October, 2005, meeting of the Society the call was put out to members who were prepared to have fellow members visit them and have a look at their garden. These garden owners should be able to answer many of the questions that the newer members may have, or simply show how things are done.

If you are prepared to have fellow members pay you a visit please contact the Society's Secretary or the Editor.

We will be placing the list of garden owners on the society's web site in the very near future so look there for a definite list.

We now have another member on the list:

- **Joe Green,**
  South Eastern Brisbane Area,
  Ph. 3343 2650

- **Paul and Jane Blundell**
  Kurwongbah
  Ph. 3285 5643

The Editor's Desk

by Ross Stenhouse

I find it interesting to hear about the advances in technology and how they is affecting the publication and delivery of books and magazines.

Recently I was introduced to the concept of "Ebooks". An Ebook is a book that is delivered in electronic form, usually via the Internet. That in itself is nothing particularly new, however with the convergence of technology, that is broadband (cable or ADSL), the acceptance of payment methods such as "PayPal" and many homes having high speed/quality printers, it has become possible to deliver content such as Ebooks.

On the society's Internet site we have a number of back issues of Bromeliaceae, these are Ebooks that are available free. They are available from the Internet in a file format called a "PDF". PDF stands for "Portable Document Format" and was specially developed for use on computers where the document would be used on a number of different computer operating systems, for instance on the "PC" , on a "LINUX" box or maybe on a "MAC". A free viewer program is available for a wide range of computer operating systems making the PDF file a very commonly used medium for Ebooks.

When I first put up the Ebook version of this journal on the web site, some felt that this journal should be only available to members.

I am interested in see Ebooks being available for a small charge, from our web site. With some good planning, it may be a way the society can gain extra funds without any extra work. I always bear in mind that currently bromeliads are very popular and the society's bank balance is healthy, but that won't always be the case and having an alternate source of funds will be handy.

Finally remember the society has two publications, this journal and the society's web site, so check both for news!

GENERAL MEETINGS are held on the third Thursday of each month except for December, at the Uniting Hall, 52 Merthyr Road, NewFarm, Brisbane, commencing 8 pm.. Classes for beginners commence at 7.30 pm.

FIELD DAYS are held regularly in the gardens of members as advised.
MEMBERSHIP FEES: Family $20, Single $15 pa
The BSQ web page can be accessed at w.w.w.bromsqueensland.com

Bromeliaceae Copy Deadlines

Mar/Apr.....February 5th, 2006
May/Jun .....April 5th, 2006

Please forward all copy and photographs to:

The Editor, 15 Timbarra Crescent, Jindalee, Qld 4075
Phone: 07 3376 5558 Email: rossjanstenhouse@hotmail.com
Electronic copy RTF or MSWord 7.0 or earlier - Times New Roman

Bromeliad Growth Factors

(Notes from the talk on Bromeliad Nutrition at the February meeting Beginner's Session by Peter Paroz)

There are four factors essential for plant growth:-

- Light, Moisture, Air (carbon dioxide), and Minerals

Light

Light is very important as all plant life depends on photosynthesis; the conversion of the sun's energy to sugars in the leaves. Sugars are circulated in the plant to provide energy for essential activity in the various tissues. Any surplus is stored in the stem of the plant as starch as an energy reserve - along with an adequate reserve of essential minerals - to support the rapid growth after flower initiation.

Growers need to be aware of a number of levels of light intensity that are relevant to plant growth; and are different for different species.

The first is the Light Compensation Point. Plants grown below this light intensity gradually die off, the older leaves first, because the energy made from sunlight is less that that used in the upkeep of the plant.

Above the L.C.P., photosynthesis increases with increasing light intensity to the Light Saturation Point. Above the L.S.P., there is no increased photosynthesis; and at some higher levels again, leaf damage may occur.

It is not apparent to me whether sunburn is due to high visible light, high UVa or UVb, temperature, humidity or low air movement; or some combination of these factors.

Recommendation 1. *Grow your plants in as bright a situation as they will tolerate without damage, and for as long a day length as your position allows.*

Do bromeliads need fertiliser - No.

Bromeliads have evolved to colonise many nutrient deficient habitats. These plants may show slow growth, limited inflorescence size, limited seed set, and limited offset production but they have survived.

Do bromeliads benefit from fertiliser additions. YES

Plants do not need a lot of mineral elements. Bromeliad plants have a moisture content of 80-90%; indicating a dry matter content of 10-20%. If we ash the dry matter, (i.e. burn off the carbon) what is left is the mineral content, less the nitrogen which is lost. The ash is only a few % of the dry matter; so the overall concentration of all minerals in living plants is low.

Bromeliads need to accumulate mineral reserves to support inflorescence development and possible seed maturation, and offset growth.

Recommendation 2. *Bromeliads do not require a lot of minerals but benefit from a* ***regular balanced supply****. Weekly & Weakly*

The essential mineral elements for plant growth are divided into groups depending on the relative amounts required.

Primary Elements:- Nitrogen, Phosphorus, Potassium

Secondary Elements:- Calcium, Magnesium, Sulphur and Iron

Micro or trace elements, which are required in very much lower amounts:- Copper, Zinc, Boron, Molybdenum & Manganese.

Nutrient Sources

Potting Mix. For non–professional growers, the composition of potting mixes is usually unknown; even for the primary elements N. P. K.

Water Rain water will usually contain negligible nutrients. Surface water can contain useful amounts of calcium and magnesium but this depends on the source. If you

have a town water supply, you can get a water analysis from the local authority.

Soluble Fertilisers Bromeliads are very well adapted to utilise soluble fertilisers. The trichomes on leaf surfaces have evolved to give rapid absorbtion of water and nutrients.

CRF's Controlled Release Fertilizers I have nothing against CRFs as they are a useful addition to the gardener's tools of trade, especially for potted plants. However, the way they are promoted is not helpful. The useful life of a CRF is more related to the number of waterings rather than time. What you are not told is that the nutrient release gets progressively less with each watering; The macro nutrients leach at different rates so that the N. P. K. changes over the life of the pellet. Check whether the CRF composition includes Calcium and Magnesium.

The role of each essential nutrient is fixed and some elements are found in the sap while others are deposited in the plant's cell structure.

Potassium, nitrogen, and magnesium are labile, ie able to be moved within the plant, while iron and calcium are 'fixed'.

This is important in the interpretation of deficiencies from leaf appearance. Because nitrogen, phosphorus, potassium, and magnesium are moveable, the oldest leaves will show the deficiency symptoms. Whereas with iron, being fixed, the symptoms will appear in the new leaves.

Potassium deficiency is a likely cause of leaf tip die-back in the oldest leaves.

When I select a fertiliser, I look for one which contains all of the above macro elements with the trace elements.

I have been using Phostrogen for some time mostly on epiphytic tillandsias; but all bromeliads get the same treatment. Phostrogen has the composition (N 14, P 4.4, K 22.4, Mg 1.5, Ca 1.4 %) with sulphur, iron, manganese, boron, copper, zinc and molybdenum.

The benefits of good nutrition are more rapid maturation ie offset to flowering, larger inflorescences (more branches, more flowers), and more offsets. Note that good plant nutrition does not necessarily mean larger plants !

Further reading:- 'The Biology of Bromeliads' by David H. Benzing

Do You have any Good Water Saving Ideas?

We have initiated what I consider a number of good ideas through the pages of this journal. We would like to initiate yet another idea - the hunt for good water saving techniques in growing bromeliads.

This quest is topical because here in Southern Queensland we are in a critical situation with regards to the reticulated water supply.

Due to a combination of poor infrastructure planning by government and unfortunate weather, the main water storage dams are very low and the government has banned the use of sprinklers during the day. Unless we get rain shortly in the dam catchment areas, watering by hose will be banned and only watering by water cans will be permitted.

If we see the introduction of "Watering by Can" many members here in South East Queensland will find great difficulty in maintaining their plants in good condition. Fortunately bromeliads aren't particularly water hungry and there should be some methods that can be conveniently used to keep your plants in healthy condition.

So please send me an email detailing any good ideas you may have growing bromeliads under the restricted water usage conditions that will apply. The best ideas will be published in this journal.

Inside the Shadehouse

by Ross Stenhouse

The design of shadehouses is a bit of an art with everyone having their own ideas on what constitutes a good design. Many designs are the only practice that many people have in the field of structural engineering. In the last issue of this journal, an excellent article on the effects of light on bromeliads was presented. In that article, Rob discussed the subject of shade cloth and how it could potentially affect the growth of Bromeliads.

The focus of this article is just to point out a few tips on what to use within a shadehouse. In the photographs on the page opposite, I have shown three methods of suspending your plants above the ground. Each method has its own sets of advantages and disadvantages.

In Photograph 1. a sheet of wire mesh has been suspended above a second support layer using the more conventional bench support. The wiremesh certainly provides a very convenient way of hanging your pots, however there is a secondary effect generated by the hanging pots. That is the microclimate generated in the layer below. The top layer provides shade protection for the underneath layer and allows one to grow the plants that are tolerant of higher light levels, whilst having those that prefer subdued light on the bottom level. If you are wondering who owns all the Broms, the answer is Len and Olive Trevor. The photo was shot inside one of the shadehouses at "The Olive Branch" nursery.

In photograph 2. a very handy device for attaching to pipe upright supports. This is available for purchase from member, Greg Aizlewood .

Autumn Show 2006 Major Winners

Champion
Vr. hieroglyphica x fosteriana
O. & L. Trevor

Reserve Champion
Dykia 'Dragons Teeth'
G. Vauhkonen

Tom Schofield Memorial Award
J. Higgins

Nez Misso Award
Vr. hieroglyphica x fosteriana
O. & L. Trevor

Hudson Award
Neo. 'Big Mac'
P. Blundell

Grace Goode Award
Cryptanthus 'Red Tide'
B. Paulsen

Mary Grasselli Award - Novice
A. McBurnie & P. Beard

Best Piccairnioideae
Dyckia 'Dragons Teeth'
G. Vauhkonen

A full listing of all Autrumn Show Winners is on the Societies Web Site.

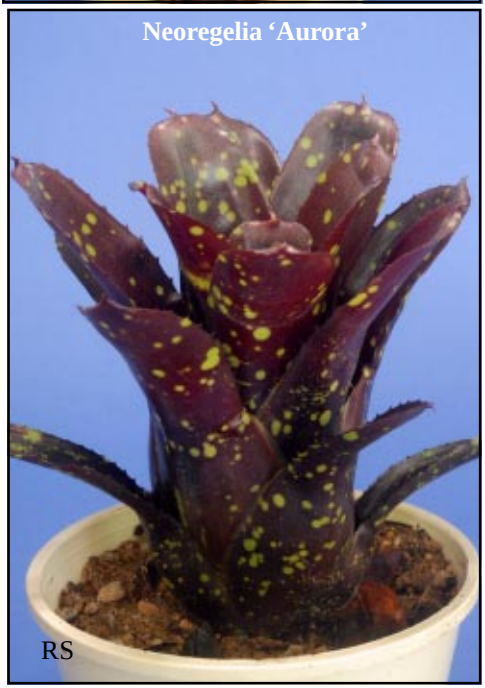
Bromeliaceae Production Crew

Editor: Ross Stenhouse
Proofreader: Roy Pugh
Caption Checker: Derek Butcher
Regular Contributors: Derek Butcher, Rob Smythe, Peter Paroz, Rob Reilly

Photographer's Code

RS - Ross Stenhouse
BB - Beryl Batchelor
DB - Derek Butcher
PB - Paul Blondell

Neoregelia *carolinae* with red lines on the leaves



Billbergia *‘Medowie Gift Pinkie’*

Billbergia 'Medowie Gift Pinkie'

by Derek Butcher

It is over 25 years now that I started collating Australian Bromeliad hybrids and in the early stages things were rather primitive. They were just lists with parentages and who had done the deed. No photographs or ways of describing plants. In those early years Bill Morris was a prolific hybridiser but was not keen on naming his hybrids. The girls – Olwen Ferris and Grace Goode – got their heads together and we had such things as Neoregelia 'Bill's Beauty'. This did not lie too well with Bill and he started to name his own hybrids but not all!

So my pushing for hybrid names to be registered is not new but this is an example of what can go wrong. In 1990 we got several Billbergia hybrids from Bill Morris in Medowie, NSW and, guess what, several were not named and therefore not recorded! He had selected two clones from one batch of an (amoena x 'Glory Be') but how long ago he had done the cross or how many offsets had changed homes were unknown. We called the plants 'Medowie Gift' and 'Medowie Gift Pinkie'.

Let us now move to February 2006 where Grace Goode had sent me photographs and requests to register hybrids that she felt worthy of recording.

These days with a super duper data base on the computer I (or anybody) can check for duplicate names and duplicate parentages and lots of other things! Grace had sent me details of an old Bill Morris hybrid that she and Phyll Hobbs wanted to call 'Pink Pearls'. I stumbled across this old (amoena x 'Glory Be') and it seemed that we were not the only ones to have got an offset from Bill in the distant past.

This checking of mine has also revealed possible double entries when hybridists have lodged registration for their new hybrid. When it is revealed that the same parents have been used before I send them a photo of the old hybrid and ask if their 'new' hybrid is different. Some, especially at F1 level have agreed to use the old name!! This leads me to another thing we used to do innocently in the past. I know Olwen for one, would remake a hybrid for a named hybrid because she had the parents as stated but not the hybrid. Seedlings were given the old name without checking if they were different!

As you know, there are several 'old' hybrids still in circulation which were done in Europe in the late 1800's and which are supposed to have survived two World Wars. I feel sure that some could well be remakes and bear no relationship to the original description or painting. This is an area I call fun!

The Search for *Neoregelia* 'Burbank'

For many years now we Southerners have read about *Neoregelia* 'Burbank' of Olwen Ferris days but never seen it in the flesh - so to speak. It is said to be like a *Neoregelia carolinae* with red lines on the leaves.In the 1998 Cultivar Register it was pointed out that the plant grown in Florida as *Neoregelia carolinae v. rosea lineata* was really a *Neoregelia farinosa* with red lines! I confirm that this plant is in Australia. However, there is a *N.carolinae* type plant with similar lines.

Would some of your 'older' members have a look at the the photo of the plant on the page opposite and tell me if it is the fabled *Neoregelia* 'Burbank'?"

Derek Butcher


Billbergia 'Domingos Martin'
RS


Billbergia 'Domingos Martin'
(Too Much Shade)
RS


Plant on left shows effect of over-fertilization
RS


Billbergia pyrimadalis
RS

GROWING BILLBERGIAS

(by Bob Reilly)

This genus was named after Gustave Billberg, a Swedish botanist. There are over 50 recognised species, several hundred registered hybrids and probably well over a 1,000 unregistered hybrids in the world.

A common sight in many older, sub-tropical gardens is the Pineapple Lilly *(Billbergia pyramidalis)*. Another common billbergia is Queen's Tears *(B.nutans)*. Both usually form large clumps and produce flowers regularly.

Most billbergias though, will grow better under much more light. Many growers in southern Queensland find they will grow well under the equivalent of 75% shadecloth for late spring/summer/early autumn, and 50% shadecloth for the rest of the year. When billbergias are grown under too much shade, they can rapidly lose their spectacular leaf colour. For example, on the page opposite, there are two photographs of a *Billbergia* 'Domingos Martin' plant. The first shows the intense black leaf colouration that is a highlight of this plant when grown in good light, while the second shows the same, much less colourful, plant after it has been grown under the equivalent of 90% shadecloth for a month.

Some bilbergias have spectacular infloresences. For example, see the photograph on p.18 of *B. alfonsii-joannis*. However, they only last from a few days to a fortnight. Consequently, most people concentrate on those billbergias that have good leaf colouration, and treat their infloresences as a bonus.

Many people grow these plants, in small clumps, in 125 or 140 mm "squat" pots. Potting mixtures used successfully include:

- Well composted pine bark to which a continuous release, over a period of nine months, fertilizer such as Nutricote or Osmocote is added when the pups/plants are potted.
- A mixture comprised of 2 parts coarse river sand and 1 part peat moss or cocopeat. A variation of this mix is: 1 part coarse river sand, 1 part perlite, and 1 part peatmoss or cocopeat. Add Nutricote or Osmocote to this mix.

Billbergias will rapidly lose their leaf colour and produce long, lanky leaves (rather than the preferred compact ones) if they are given too much fertiliser. The photograph on page opposite shows a *B.* 'Hallelujah**'** which was, by mistake, heavily fertilised after it flowered, The resultant pup has poor leaf colour and form. Consequently, it is recommended you initially only apply continuous release fertilisers at rate of one third of the manufacturer's recommended dose for indoor plants when preparing potting mixtures for billbergias. With experience, you may be able to apply more without adversely affecting the plant. Foliar fertilisers are generally not recommended for use on billbergias.

Many billbergias will also grow well on trees, stumps and similar supports. They can be an eye-catching display once they have formed a clump of 10 or more plants.

Billbergias appreciate being watered on a regular basis. A watering schedule that has worked well for billbergias grown in southern Queensland sees them watered three times a week in late spring/summer/early autumn, and twice a week for the rest of the year.

The only pest likely to cause some problems is scale. This pest can be treated by applying a systemic insecticide such as Folimat. Avoid spraying the plants when the temperature exceeds 30 degrees Celsius, as otherwise leaf "burning" may occur (although such in-


Billbergia 'Afterglow'
RS


Billbergia 'Caprice'
RS


Billbergia *'Catherine Wilson'*
RS


Billbergia 'Ballerina'
RS

cidents are rare).

Billbergias readily produce pups after flowering. These pups, if removed when one third to one half of the parent plant's size, will flower within 12 to 24 months. However, many people prefer not to remove any pups until a clump of three to six plants has been formed. This is because most billbergias look better when grown as small clumps than single specimens.

The plant descriptions, and photographs used to illustrate some of them, are for plants grown in southern Queensland under the growing conditions described previously. The amount of light received in different parts of Australia varies considerably, so the appearance of particular billbergias may differ significantly as well.

The naming of billbergias, particularly hybrids, can be something of a vexed topic. This arises as many hybrids have not been registered or, in some case, appear to have been registered under two different names. So the approach I have used in this article is to use the name under which that particular plant is sold in southern Queensland.

Most of the billbergias described in this article are available from billbergia "specialists". Further, a range of them can usually be bought at the Society's autumn and spring shows at Mt Coot-tha Botanical Gardens.

However, some are recent importations into Australia, and may not be available for some time.

alfonsi-joannis A few, 10 cm wide, green leaves form a vase-like rosette up to 120 cm tall. It has a spectacular, up to 100 cm long, pendent inflorescence. The large bracts are lolly-pink, while the flowers have greenish-yellow petals.

'Afterglow' About 10, 5 cm wide, leaves form a vase-like rosette, approximately 40 cm tall, that "flares open" at its top. The pink-brown leaves have white spots and markings.

***amoena* 'variegata'** This is a very variable species. This form has 4 cm wide, green leaves with a distinct white edging.

They form an open, vase-like rosette about 30 cm tall. An interesting feature is that its pups form at the end of long "runners'. This attribute makes it a good plant for a hanging pot.

'Bonanza' A few, 3 cm wide, leaves form an open vase-like rosette approximately 70 cm tall. The brown-red leaves have white spots and faint, silver scurfing on both surfaces**.**

'Baton Rouge' A few, 5 cm wide, leaves form a vase-like rosette around 50 cm tall. The leaves are brown-red with white spots.

'Ballerina' A few, 3 cm wide, leaves form a vase-like rosette about 30 cm tall. The green leaves, which are heavily marked with white splotches and spots, flush a rosy-pink in good light.

'Bellissimo' A few, 4 cm wide, leaves form a vase-like rosette about 50 cm tall. The leaves' centres are creamy-pink, with white spots. The leaves' outer margins are brown-green with small white spots.

'Caprice' About 6, 5 cm wide, leaves form a vase-like rosette approximately 50 cm tall. The green leaves, that flush pink-brown in good light, have extensive white markings and spots.

'Catherine Wilson' About 6, 5 cm wide, leaves form a vase-like rosette approximately 40 cm tall. The leaves have curled tips. They are green-pink, with white spots and markings on their upper surfaces. On their lower surfaces, the leaves are pink with white-green spots and markings.

This hybrid has been around for many years, but it is still worthy of a place in any billbergia collection.

'Cold Fusion' A few, 3 cm wide, leaves form an open, vase-like rosette approximately


Billbergia 'Milagro'
RS


Billbergia *'Machacho'*
RS


Billbergia 'Bob Tail'
RS


Billbergia alfonsii-joannis
BB

40 cm tall. In good light, the leaves are a mixture of pink, brown and green with extensive white spotting and markings. The leaves' lower surfaces have faint, silver bands.

'De nada' About 10, 5 cm wide, leaves form an open, vase-like rosette approximately 40 cm tall. The brown-pink/red leaves have green and white markings, oriented lengthwise along their leaves.

'Despacho' About 10, 5 cm wide, leaves form a vase-like rosette around 60 cm tall. The pink-brown leaves are heavily marked with white spots.

'Domingos Martin' About 10, 4 cm wide, leaves form a vase-like rosette approximately 30 cm tall. The small, black spines form an effective contrast to the black-green leaves that are marked with silver banding and extensive white "splotches".

'Doreen Johnson' "Delight" About 10, 6 cm wide, leaves form an open, vase-like rosette approximately 40 cm tall. The brown-green leaves, which flush pink in good light, have extensive white spots and markings.

'Dorothy Berg' About 10, 6cm wide, leaves form a vase-like rosette approximately 40 cm tall. The green leaves have cream margins and thin cream stripes in their centres. In good light, the leaves flush pink-red.

'Fascinator' About 6, 4 cm wide, leaves form a vase-like rosette, approximately 40 cm tall, which flares open at its top. The predominantly white leaves, have pink-brown markings, especially towards their tips. The leaves' lower surfaces have faint silver banding.

'Gerda' About 10, 6 cm wide, leaves form an open, vase-like rosette approximately 30 cm tall. The leaves have prominent, widely spaced, black spines. In good light, the leaves are pink-green, with pronounced black spots and markings towards their base. The leaves' lower surfaces also have faint, silver banding

'Hallelujah' About 10, 5 cm wide. Leaves form a vase-like rosette approximately 50 cm tall. In good light, the leaves are coloured a mixture of "pinky"-white, brown-pink, and pink.

'Ian' About 6, 5 cm wide, leaves form a vase-like rosette approximately 40 cm tall. The green leaves have pronounced silver banding and markings on their lower, and to a lesser extent their upper, surfaces.

'Marland' About 10, 6 cm wide, leaves form an open, vase-like rosette approximately 60 cm tall. The pink-red leaves have white spots on both surfaces, and silver banding on the lower surfaces.

'Milagro' About 10, 5 cm wide, leaves form a vase-like rosette, approximately 60 cm tall, that flares open at its top. The pink leaves have white spots and markings.

'Muchacho' About 10, 5 cm wide, leaves form a vase-like rosette approximately 40 cm tall. The pink leaves have white spots and markings, and pink-brown tips. Silver banding occurs on the leaves' lower surfaces.

nutans A few, olive-green, 3 to 5 cm wide, leaves form a vase-like rosette up to 40 cm tall. In good light, the leaves have a reddish hue, and the plant is only 25 to 30 cm tall.

The pendent inflorescence has bright pink bracts and green flowers. The plant rapidly forms a clump.

Ole' About 10, 7 cm wide, leaves form a vase-like rosette approximately 50 cm tall. The black-green leaves have white spots and markings, especially towards their tips. The leaves' lower surfaces have faint, silver banding.

'Othello' A few, 5 cm wide, leaves form a vase-like rosette approximately 30 cm tall. The brown-red leaves have white spots and faint, silver scurfing on both surfaces.

pyramidalis About 10, 10 to 15 cm wide, light/dark green leaves form an open vase-like rosette approximately 30 cm tall.

Its inflorescence is compact and pyramidal in shape, with red bracts and flowers. This


Billbergia 'Ralph Graham French'
RS


Billbergia 'Windigig Special'
RS


Billbergia 'Strawberry'
RS


Billbergia *'Yayee'*
RS

plant rapidly forms a clump. It was introduced to cultivation in 1815.

There is an attractive variegated form with creamy-white margins called *B.* 'Kyoto'.

'Prig' About 10, 6 cm wide, leaves form a vase-like rosette approximately 50 cm tall. The pink-brown leaves have faint stripes of silver scurfing.

'Ralph Graham French' A few, 6 cm wide, leaves form a vase-like rosette approximately 60 cm tall. The leaves are edged with a narrow, pink-white stripe. The remainder of the leaves' upper surface is brown-green, while the lower surface is brown with silver barring

'Robert Saunders' About 6, 5 cm wide, leaves form a vase-like rosette approximately 40 cm tall. The leaves' upper surfaces are a mixture of brown, pink, white and a small amount of green, while the lower surfaces are brown-pink.

'Roo' About 10, 7 cm wide, leaves form a vase-like rosette approximately 40 cm tall. The brown-red leaves have white spots on both surfaces and faint, broad, silver banding on their lower surfaces..

'Sange' About 10, 5 cm wide, leaves form a vase-like rosette approximately 50 cm tall. The pink-brown leaves have white spots. On their lower surfaces, the leaves also have silver banding.

'Spotted Sensation' About 8, 8 cm wide, leaves form a vase-like rosette approximately 50 cm tall. The leaves are pink/brown-green, with pronounced white spots. The leaves' lower surfaces, especially when they are young, have faint silver banding.

'Spotted Wren' About 10, 5 cm wide, leaves form a vase-like rosette, approximately 30 cm tall, that flares open at its tips. The brown-pink leaves have pronounced white spotting on both surfaces, while the lower surfaces have distinct, narrow, silver bands.

'Storm' About 10, 5 cm wide, leaves form a vase-like rosette approximately 50 cm tall. The green-brown leaves have extensive white spotting and markings on both surfaces, and extensive faint, silver banding on their lower surfaces

'Strawberry' A few, 5 cm wide, leaves form a vase-like rosette, about 30 cm tall. The leaves are a mixture of white, pink and green. Billbergia

'Strawberry Cream' About 10, 5 cm wide, leaves form a vase-like rosette approximately 35 cm tall.

The base of the leaves is white, becoming green with extensive white spotting at their tips. In good light, the plant flushes pink. The leaves' lower surfaces have faint silver banding.

'Tarantella' About 10, 5 cm wide, leaves form a vase-like rosette, approximately 50 cm tall, that flares open at its tips. The brown-pink leaves have white spots. On their lower surfaces, silver banding occurs.

'Vicky Chinside' About 10, 4 cm wide, leaves form a vase-like rosette approximately 30 cm tall. In good light, the leaves are pale, pink-green on their upper surfaces. Their lower surfaces are brown-pink with prominent silver bands. The leaves have distinct, small, black spines.

'Xmas Cheer' About 6, 6 cm wide, leaves form a vase-like rosette approximately 50 cm tall. The leaves' upper surfaces are brown-green, while the lower ones also have silver banding

'Yayee' A few, 3 cm wide, leaves form a vase-like rosette approximately 35 cm tall. The leaves have extensive white markings and spots. They are pink-red at their base, and pink-brown-green towards their tips.

WATER QUALITY ISSUES

(by Bob Reilly)

Bromeliads showing dead leaf tips and white, "salt" deposits at the plant's base (see the photograph on p.24**)** and on the top of the potting mixture, are displaying signs of being exposed to poor water quality. (Although the dead leaf tipping can also be due to other causes such as nutrient deficiencies, as well). Less obvious signs that may also be due to poor water quality include poor growth and flowering.

While there is no doubt good water quality is a major "plus" when growing bromeliads, there is a lack of quantitative information on this subject. Much of the information discussed here comes from Wiley (1976).

Water quality has two major elements:

- First, its pH. A pH of 7.0 is neutral, while a pH above 7 is alkaline, and one below 7 is acidic. For a change of one point in the pH scale, the acidity or alkalinity changes tenfold.
- Second, the amount and type of dissolved solids in the water.

According to Wiley (1976), many bromeliads prefer to be watered with water having a pH in the range of 5.5 to 6.5. Most town water supplies have a pH above this range. (You can check the pH of your water by using a pH test kit that can be purchased from pet stores selling aquarium supplies).

If you wish to acidify your water, Wiley (1976) recommends that you use citric acid dissolved in water, which is then "injected" into your water supply through a "proportioner". (This device is similar to that used to apply foliar fertilizers through a hose).

Baensch & Baensch (1994) recommend using a mixture of nitric and phosphoric acids instead of the citric acid, but caution more care is needed in its preparation and use.

Wiley (1976) suggested using the following water salinity parameters as a guide, but stressed that many bromeliads may not tolerate even these levels (conversely, some can tolerate higher levels):

- Total concentration of dissolved salts should be less than 350 parts per million (ppm).
- Sodium less than 30 ppm,
- Boron less than 0.5 ppm,
- Chlorides less than 5.5 ppm, and
- Sulfates less then 5.6 ppm.

The amounts of these salts in town water supplies should be available from the water supplier. However, note that during droughts the salinity levels in town water supplies can increase significantly, as the water in the dam/bore is not being replaced with low salinity water. The salinity levels in water obtained from taps at your house will have slightly higher salinity levels than the levels nominated by your water supplier, as they usually measure salinity levels at their water treatment plants, and additional small amounts of salt can dissolve into the water as it passes through the distribution network.

For bore water supplies, the Department of Primary Industries (or its equivalent) in your state should be able to tell you where you can have your water tested. Rainwater supplies such as those in rainwater tanks should have very low salinity levels. Grey water (that is, "used" water obtained from bathrooms, laundries and so forth), will have higher salt levels than town water supplies due to the salt added from detergents and other chemicals.

If your water has excessive salinity, then the following strategies may be of assistance:

- You may decide to only grow bromeliads that will at least tolerate your water. For example, "hard-leaved" bromeliads such as neoregelias and most aechmeas are usually

more tolerant than soft-leaved ones such as vrieseas and, especially, guzmanias. Many grey-leaved tillandsias also appear to tolerate relatively high salt levels. Unfortunately there is little information available on the salt-tolerance levels of different types of bromeliads.

- You can put in a device, such as a reverse osmosis plant, to remove the salt.
- Every year, you can replace the potting mixture for each plant, so as to reduce the salt build-up in the mix.
- You can install rainwater tanks, so that the plants can be watered periodically with water (rainwater) that has very low salt levels. This will help "flush away" excess salts in both the potting mix and, effectively, in the plant's leaves.
- If you only have a few plants, put them out in the rain for a good soaking at least once a month if you are growing them under a solid roof or against the side of a building.
- If you are foliar fertilising bromeliads, then use low salinity water, for example rainwater, for this purpose if you can. This is because the dissolved nutrients increase the water's salinity levels.

References

Baensch, Ulrich & Baensch, Ursula (1994) *Blooming Bromeliads*, Tropic Beauty Publishers: Nassau, Bahamas

Wiley C, A, (1976) Water and Good Growing, *Journal of the Bromeliad Society*, March-April 1976, v. XXVI (2), PP 59-65.

Author contact details

Email: bob.relly@nrm.qld.gov.au Phone: (07) 3870 8029

BSQ Field Day - May 27

At the home of Lyn & Spencer Grubb
See the Calendar of Events for Details

Hot Days a Problem?

The following is an extract from the March, 2006 edition of Brom Watch Townsville, a journal published by Rob Smythe

Q. How do you cool plants down on very hot days. With out going into a lot of discussion I would suggest the following. I will give discussion next month.

A. If growing in a bush house use a misting spray and an extractor fans. Fans should only be used with moisture. Moisture does cooling, fans reduce the humidity,(Did you know that a fan running in a closed dry room actually heats up the room). If plants are growing in a garden bed douse very heavily with water. Not only the plants but the root area around the plants. A light watering could stew the plants roots especially if you are using a stone mulch.

Q. what do you do with burnt plants?

A. Badly burnt plants should have damaged leaves removed. Cut them off just above the edge of the burn ie just leave a trace of burn. There is a scientific reason for this but I can't remember what it is. If you have to remove total leaf, tear it down the middle and pull each half to the side. Any burn in the centre remove quickly as this can turn into crown rot. Why remove leaves? Stops rot, exposes a lower leaf to light and hence photosynthesis. When to do it? Only try it once you are sure the heat wave is finished otherwise you will burn newly exposed leaf. The positive is that you (your plant) will now get pups. Strangely pups are more resistant to burn so sudden exposure by removing mother's leaves generally won't cause them to burn. When is a leaf burnt? When it goes soft or is translucent or looks like brown paper.


Aechmea fasciata (hybrid)
RS


Aechmea fasciata (hybrid)
RS


Aechmea fasciata (hybrid)
RS


Neo. 'Marble Throat' showing
Salt Deposits on Base
RS

EVER-IMPROVING CULTIVARS OF *AECHMEA FASCIATA*

(by Len Colgan)

Reprinted, with permission of the Bromeliad Society International, from the Journal of the Bromeliad Society, January-February 1986, v. XXXVI (1), p.34.

Many years ago, I purchased a plant with the label *Aechmea fasciata* (BROMELIAD) from, of all places, a city department store. Later I was introduced to members of the Bromeliad Society of South Australia, and from that meeting both my interest and collection grew. I now have hundreds of plants of which about one half are *Tillandsia* species.

Towards the end of each summer, however, I still look forward to having one or two descendants of my initial *Ae. fasciata* come into bloom, especially since I have noticed that, generation by generation, there has been a consistent improvement to a point that it has now developed into a plant unequalled in any live specimen or photograph of the species that I have seen.

I take no credit and I am just as mystified as others. With no special care or treatment, the plants merely flower at will and then produce offsets with each generation surpassing the preceding. The leaves have become broader and much more heavily banded, and the spines have become more conspicuous. The most inexplicable, spectacular improvement has been in the intricacy and size of the inflorescence compared with size of the plant itself.

In July 1985, right in the middle of a cold winter, a spike appeared in a plant which was standing amongst all sorts of species in a plastic-enclosed shadehouse. I assumed the inflorescence would abort or else be dwarfed. Instead, it produced the best inflorescence yet: 9.5 inches in diameter, 6 inches high, and very dense. Can someone explain these unusual forms of behaviour?

Editorial comment (Bob Reilly) If the original plant had been chemically-induced into flowering prematurely, then the plant may have needed several generations to produce its best inflorescence and overall size. However, there may be other factors at work here as well.

WATER AND GOOD GROWING

(by C. A. Wiley)

*Editorial comment (Bob Reilly) Reprinted, with the permission of the Bromeliad Society International, from the Journal of the Bromeliad Society, March-April 1976, v XXVI (2), pp 59-65. While the importance of water quality is often acknowledged, little "hard" or quantitative information on it has been published. In this article, Mr. Wiley, from the United States of America, gave his views on the subject, and several related matters such as the use of foliar fertilizer*s.

One of the most important elements in growing bromeliads is water. Most of us have been growing plants without worrying about water. Why worry about it now? I answer this question by saying, "…I want to grow some of the problem plants and not have them die for me, I want my plants to mature without brown tips on the leaves, and I don't like the accumulation of salts around the base of the plants." These are the kind of problems associated with high concentrations of dissolved salts in the water.

When you decide to something about


Tillandsia fasiculata var *densispica*
RS


Tillandsia cyanea with variegrated leaves and bract
RS


Tillandsia cyanea
leav


Neoregelia 'Blood Red'
RS


with variegrated
ves.
RS


Tillandsia cyanea 'Anita'


Vr. 'Purple Cockatoo'
RS


Neoregelia 'Blushing Tiger'
RS

watering, if you have poor quality water, you can expect definite improvement in growth, and this can be accomplished by a modest commitment on your part to spend a little more time when watering, and a maximum of $5.00 for equipment. Beyond this, a number of incremental improvements in growth can be achieved, limited only by your pocketbook and determination. Remember, good growing is good watering.

RULES FOR WATERING

The first rule is "never sprinkle". When you water, do a lot of it. Flood your bromeliads completely. Once a month, or even more frequently in the summer, after you finish watering all of your plants, go back in half an hour and do it again.

The second rule is "acidify your water". To understand this, it is necessary to know about acidity, alkalinity, and the pH scale. A pH of 7.0 is neutral, pH above 7.0 is alkaline, and one below 7.0 is acid. For a change of one point in the pH scale, the acidity or alkalinity changes by tenfold: i.e. pH 6.0 is ten times more acid than pH 7.0, and pH 5.0 is one hundred times more acid than pH 7.0.

ACIDIFY YOUR WATER

For diagnostic purposes, the pH value of the water is just as important to the grower as a blood analysis is to a doctor. A pH test kit may be purchased at any aquarium store where they sell tropical fish and tanks for use in the home. Such a test kit should be used to check the water you put in your plants before it is acidified. The easiest way to acidify water is to use a proportioner that injects a small amount of acid into the main water stream as you do your watering.

A number of proportioners are available on the market. The method of use is the same in each instance. The acid solution is put in a container and a plastic tube from the proportioner brings the solution up for injection. One ounce dry measure of citric acid is sufficient in most instances to reduce the pH of 100 gallons of water by one point.

One of the proportioners on the market is set for 128 to 1.In this instance, dissolve one ounce of citric acid in one gallon of water and turn on the hose. Another one of the inexpensive and reliable proportioners has a ratio of 16 to 1. In this instance, dissolve one ounce of citric acid in one quart of water to prepare a stock solution. Four ounces of this stock solution in one gallon of water will be the amount for this proportioner. In those instances where smaller quantities of water are needed, 0.25 ounce of the above stock solution can be added to one gallon of water for direct use. **In all instances, check the pH of the acidified water before you put it on your plants**. The quantity of citric acid may be adjusted until the pH comes within the range of 6.5 to 5.5.

Most water in the United States delivered to homes through the usual water mains has a pH above 7.0. This may be true even where the natural supply is acid, because the water company can save a considerable amount of money as a result of reduced pipeline replacement when they add calcium to the water to make it alkaline. The best way in any event is to call your local water company and ask for an analysis. When you receive this analysis, in addition to a pH value, you will find a list of elements and compounds in solution, together with a figure representing the total of dissolved salts in parts per million.

THE BENEFITS FROM USE OF ACIDIFIED WATER

The principal benefit from the use of acidified water is making nutrients available. For terrestrial bromeliads, the pH value of the growing medium determines the availability of nutrients.

NITROGEN, an important nutrient element, is adequately available to plants within a pH range of 6.0 to 8.0.


Aechmea ‘Pink Rocket’
RS


Aechmea 'Ensign'
RS


Bilbergia disticha
RS


Bilbergia 'Marie Bess'
RS

PHOSPHOROUS, one of the mineral elements, is needed in large amounts at least equal to the amount of nitrogen. This is the nutrient for new growth, root development, and formation of seed. It is available only within a pH range of 6.5 and 7.5. At a pH below 6.0, the plant tends to grow leggy and weak, even with adequate light.

POTASSIUM is the nutrient necessary for flower production, and to build resistance to disease and cold. A pH of 5.5 is about the limit on the acid side for plants to assimilate potassium in adequate quantities.

SULPHUR and CALCIUM are essential elements for plant growth. Calcium is needed for cell wall and membrane construction. Sulphur is needed as one of the major components of some amino acids making up most proteins. These elements are available over a range of pH 6.0 to 8.0.

MAGNESIUM and IRON are instrumental in the formation of plant fibre. Magnesium is a structural component of the chlorophyll molecule, and is available in adequate quantities within a pH range of 6.0 to 8.5. Iron is not available in adequate quantities except in an extreme acid condition at a pH of 6.0 and lower.

MAGANESE, BORON, COPPER, and ZINC are essential trace elements present in most commercial fertilizers. They all require a pH of 6.5 or lower for assimilation.

POTTING MIX VERSUS WATERING PROCEDURES

The potting mix will eventually have a pH the same as the water used. Each of the elements needed for nourishment by your bromeliads becomes unavailable outside the listed pH values, being taken up and locked in by the organic material in the potting mix.

The various components of the potting mix and their proportions are less important than the watering procedure. If the mix won't hold moisture, it may be necessary to water every day; on the other hand an "over-potted" bromeliad with a "heavy" mix may not do well if watered more often than once every 10 days or 2 weeks.

TROPICAL RAINFOREST CONDITIONS

We can improve our growing conditions if we understand conditions in the tropical rainforest. These can be summarized as follows:

- Warm, humid conditions promote rapid decomposition of debris.
- Required nutrients are available from the decomposition of debris.
- First rains wash a rich nutrient over all plants.
- During the growing season it rains about every day.
- Nitrates are exhausted first, phosphorous and potassium are the principal elements of nutrition at the end of the growing period and on into the dry season.
- Dry season promotes dormancy.
- Wet, shady conditions tend to become acid.
- Dry, desert conditions tend to become alkaline.

LIFE CYCLE OF TANK TYPE BROMELIADS

In epiphytic bromeliads, the pH of the water in the tanks will change from time to time. These changes can be followed with a pH meter and may be of value in the determination of selective nutrient uptake at each life cycle phase. It is important that measurements be made at the same time each day. Respiration will result in a changed carbon dioxide concentration, and consequently pH values.

It is also important to use pure water in preparation for tests of this type. Build-up of calcium and magnesium from most tap water will completely mask any meaningful pH change. Another complicating condition that

should be avoided for testing purposes is the possible introduction of organic debris and its decomposition, which will make the water more acid.

• SEEDLING PHASE: The demands of new growth and root structure exhaust the acid elements of the nutrient supply much more rapidly than the other elements. The three principal fertilizer elements might be proportioned in the ratio 1: 4: 2 (nitrogen, phosphorous, potassium). This ratio will ensure an adequate acid balance. At this phase, however, the tanks are hardly large enough to hold sufficient water for a pH test.

• JUVENILE PHASE: In their native habitat, most tank bromeliads at this phase have their tanks fairly well developed. Changes in the pH of the water can be followed very easily. Vegetative growth is accelerating. All of the nutrient elements, on the average over the yearly cycle, are required at about the same rate. At the end of the growing period each year, nitrogen is at its lowest ebb. At the beginning of the following year's growing period, however, nitrogen is again available to the plants in relatively large amounts. Normally, the pH of the water in the bromeliad tanks during this phase is relatively stable. In their native habitat, this is assured by heavy and frequent rainfall during the growth period, and a minimum amount of nutrients in the tanks at the beginning of the dry season.

• MATURITY PHASE: This is the phase that starts when vegetative growth is complete and potassium is then taken up in increasing amounts. This is the phase crucial to the success of the bloom. As potassium is taken up by the plant, phosphorous is left in solution, and the pH becomes increasingly acid.

• FLOWER PRODUCTION PHASE: This is the pay-off for everything that has gone before. Healthy stock with a proven superior inflorescence may fail to throw a good inflorescence if the preferred proportions and quantities of nutrients fall short of requirements during any of the previous phases. Very little, if any, nutrient is required or taken up during the flower production phase; therefore, pH tests will hold fairly constant between 6.0 and 7.0. Potassium stored in the leaves will flow into the inflorescence. After the final stage of flowering, phosphorous will again be taken up in an amount about twice as much as any other nutrient.

• SEED PRODUCTION PHASE: Nothing much will happen unless pollination took place. Nothing much will happen even if good pollination took place unless sufficient phosphorous-rich nutrition is still available in the leaves. Most tank-type bromeliads take up to a full year to mature their seed. The drain of stored nutrients necessary to produce a viable seed crop is such that the production of vegetative juvenile growth is seriously hampered. The drain of potassium during flower production, followed by the drain of phosphorous for seed production, will completely exhaust many of the less vigorous bromeliads.

All dry-growing tillandsias, and most other epiphytic bromeliads have a very low metabolism level. In their native habitat, nutrient levels are usually much less than 50 parts per million (ppm). This means something less than 10% of the amount usually recommended on the package of commercial fertilizers. To exceed this amount may possibly cause conditions that inhibit the plant's ability to take up a specific element when needed. Failure of an infloresence or a viable seed crop is not necessarily an indication of insufficient phosphorous or potassium, but possible an excessive quantity of nitrogen. *(Editorial comment: Bob Reilly Most people recommend using liquid fertilizers on bromeliads which are low in nitro-*

gen compared with potassium and phosphorous, as well as applying the fertilizer at rates well below the manufacturer's recommended levels for indoor plants, for the reasons, [as well as others], mentioned in the last paragraph).

The one most important element for further consideration is: "What is the effect on the outlined changes if tap water is substituted for pure water"?

• CHANGES IN pH: With pure water, the most drastic change in pH is during the maturity phase when potassium is taken up, and the water in the tanks goes from acid to more acid. With tap water, concentrations of calcium and magnesium may completely submerge these effects and all tests are alkaline.

• CHANGES IN NUTRIENT ELEMENT CONCENTRATION: Further research is necessary in this area; however, a number of phenomenon relating to these problems are understood. These are principally associated with the ability of the plant to take up required nutrient elements. Some of the components of tap water may tend to inhibit a plant's ability to take up a particular required nutrient. One such situation is the taking up of sodium with, or in preference to, potassium under certain conditions.

Many problems associated with the use of alkaline water tap water may be minimized by acidifying it before use.

Changing nutrient requirements from phase to phase during the life cycle of tank bromeliads points up the necessity of making changes in your feeding program. It becomes obvious that a feeding program is a must if you want prime quality plants. When your plants are actively growing, feed them with a balanced mix. When your plants begin to terminate vegetative growth, feed with a low nitrogen, high potassium mix. When your plants tend to become dormant, reduce quantity and frequency of feeding.

Your feeding program should be designed giving due consideration to conditions as they exist in the bromeliad's native habitat. These conditions are: nutrient supply is very dilute and the bromeliad metabolism is very low.

Rainwater is the quality standard for good water. It has a normal characteristic pH of slightly acid, that is, about 6.8. Usually some complex nitrates are held in solution in an amount between 1 and 10 or 12 ppm. This is not much, but without it, plants would not look so lush and green after the first good soaking rain. That is the kind of water bromeliads like. However, except for the fact that most of them can survive with poor quality water, very few of us would have any bromeliads. The water supply in many areas, in addition to being alkaline, is also degraded by high concentrations of dissolved salts,

The limits of concentration for most bromeliads are:

- Total concentration of salts: less than 350 ppm.
- Percentage of sodium: less than 30 ppm.
- Boron: less than 0.5 ppm.
- Chlorides: less than 5.5 ppm.
- Sulfates: less than 5.6 ppm.

Many of the high elevation bromeliads find even this concentration of salts intolerable. On the other hand, many bromeliads in cultivation have adapted and are able to tolerate concentration in excess of those listed here. The full potential of many bromeliads cannot be realized, however, unless total dissolved salts in the water supply is less than 50 ppm. *(Editorial comment: Bob Reilly. On this point, it is worth remembering many bromeliads do not come from the rainforest, and some have adapted to, relatively speaking, "high salt" environments)*

The most practical method for purification is reverse osmosis. Systems are available

Images from David Brown and Barbara Rowe's Garden

[that produce] from five gallons of pure water a day, up to any required amount. The cost ranges from 2 or 3 cents a gallon on down to a few tenths of one cent, depending on the quantity of water required. Reverse osmosis for the purification of water is a process based on the characteristics of certain materials that, under pressure, will allow water molecules to pass, but will reject molecules larger than water.

Molecules of dissolved salt on the average range somewhat larger, and as a result about 90% of dissolved salts are eliminated. In most instances then, the pure water from reverse osmosis approaches the quality of rainwater. *(Editorial comment: Bob Reilly. Modern technology can achieve virtually salt-free water, if required. The cost of water obtained from reverse osmosis plants also depends upon the concentration of dissolved salts in the water you put into the plant).*

The importance of pure water can be appreciated if one considers what happens to water in the tanks of bromeliads as evaporation takes place. When half of the water evaporates, the concentration of dissolved salts doubles. When 10% of the water is left, the concentration has become 10 times the original amount. If the water supply has a dissolved salt content of 300 to 400 ppm, evaporation will bring the concentration up to the point where the salts will come out of solution and crystallize on the base of the plant.

High humidity will slow down evaporation. Pure water will not build up to a high salt concentration between waterings, and heavy watering to entirely flush the plants' tanks will help you to achieve the full potential of your bromeliads.

ALGAE (SLIME) IN BROMELIADS

(by Rob Smythe)

Reprinted, with permission, from Brom Watch, Townsville, January 2006, p. 1

[Algae in bromeliad tanks] is not liked by most growers but it does keep the mossies out. It is easy to get rid of. If you spray your plants with canola white oil spray to kill scale, the detergent in it will also kill the algae. You can also use very dilute Alginox solution. Use about 3 millilitres of Alginox to 5 litres of water and pour it into the wells *[of the bromeliads]*. Actually displace the water in each well. Alginox can be found in the 'Pool Care' area in your supermarket.

There is another problem caused by filamentous algae and it is purely aesthetic. It gets caught on the spines of the growing leaves, is drawn out of the water, and bleaches to white.

I like to see some algae in broms, not spirogyra the filamentous type, but the single cell blue green algae, as this feeds the mossie predators when the mossies are absent. This *[absence of mosquitoes]* is easily maintained by introducing predators from a specially prepared pond containing very weak fertiliser.

EXPERIMENTS WITH WATER SUPPLY

(by Dottie Oishi)

Editorial comment (Bob Reilly): Reprinted, with permission of the Bromeliad Society International, from the Bromeliad Society Journal, March-April 1988, v. 38 (2), pp.58-59. This article refers to an article on watering by Charles Wiley that appears on pp. BBBB of this edition of Bromeliaceae.

I have been experimenting with acidify-

Images from David Brown and Barbara Rowe's Garden

ing our water supply. There have been some very interesting findings and enough testing to confuse totally a non-chemist like me. The article, *Watering and Good Growing* by C. A. Wiley intrigued me to the extent that I bought a Wardley's Senior Deluxe pH Test Kit for Aquarium Water and set up my lab. That's a lot funnier than you know.

My lab consisted of a cafeteria tray (very clean) balanced on several pots over, in, and around my potting mix. I have a lab coat, but the temperature and humidity in the greenhouse warranted halter and shorts instead. Not the best of conditions, just interesting and fun.

A similar test with different fertilisers proved worthwhile. The African violet fertiliser was rated at 12-36-14 and I liked the low nitrogen, but not the alkalinity. Peter's 20-20-20 alone made the water acid. Hyponex 7-6-19 did likewise.

Get and read a copy of Mr. Wiley's article. Believe me it took several readings, but now I'm fairly certain that a lot of my feedings have been in vain. If the soil becomes the same pH as the water it receives, then mine is alkaline. Bromeliads cannot assimilate their nutrients under these conditions. Although they look really good to me, I'm wondering how much better they would look if they could use all the goodies I give them.

Okay. Another fun, but very smelly, test that I made was to work on the "banana peel deal". I've long since forgotten where I read that chopped, ripe banana peel in vase-type bromeliads are beneficial. After a couple of years of testing, I've seen no damage to the cups.

Not knowing what the peel could yield, I took two very ripe bananas and made my preteen son eat them so I could have the peels. I chopped them and put the pieces in a gallon container filled with rainwater. After two weeks, the smell resembled that of rotten neoregelia blooms and then some. If they could smell any worse, I don't know how! But the pH turned out to be a whopping 6.3. So banana peel is a natural acidifier?

If you would like to do a little recycling of banana peels, here's the easiest way to handle them. Split the ripe peel into 5 to 10 mm wide strips, then chop or slice pieces about the same size in length, and let them dry. They are then easy to drop into the cups of your bromeliads. By the way, I didn't notice any discoloration of the leaves from the peels.

I experimented as follows:

Took 1 (US) gallon (3.8 litres) unsoftened city water	7.4
Added 0.25 tsp. white distilled vinegar (5%)	6.8
Added another 0.25 tsp. of same	6.5
Then took 1 gallon of rainwater	7.3
Added 0.25 tsp. white vinegar	6.8
Added another 0.25 tsp. of same	6.5
Added 1 tsp. Ferti-lome African Violet fertiliser (low salt)	7.3!

Note the jump in alkalinity. It took 2.25 tsp. more of vinegar to get the pH down to 7.0, or neutral.

Want to know the society field trips for 2006 and late breaking news - Look on the society's web site
http://www.bromsqueensland.com

Paul and Jane Blondell's Garden and Shadehouse.

2006 AUTUMN SHOW

(by Bob Reilly)

The Society held its 2006 Autumn Show on the 4th and 5th March 2006 at the Mt Cootha Botanic Gardens. The plant competition, displays, and range of plants on sale were outstanding.

There were over 100 plants, in 20 classes, in the competition. This is the best "showing" for many years. Some highlights for me were a:

- striking clump of *Dyckia* 'Dragons' Tooth',
- lovely specimen of *Guzmania sanguinea* with a strong, orange "flush" through its leaves,
- beautifully marked specimen of *Vriesea heiroglyphica x fosteriana*, and
- well-presented novelty display titled "Black and Beautiful" which consisted of a clump of an aechmea with black foliage, "supported" by carefully chosen accessories such as a mirror.

Displays were mounted by our Society, the newly-formed Caboolture & Districts Bromeliad Society, the Gold Coast Succulent & Bromeliad Society, and the Sunshine Coast Bromeliad Society.

Our society's display was based around two "islands" of bromeliads, each of which contained a tree covered with grey-leaved tillandsias. The base of the trees were surrounded by interesting plants, including: clumps of profusely-flowering *Tillandsia* 'Creation'; *T. jalisco-monticola* plants with large, multi-branched inflorescences, flowering guzmanias, and brightly-coloured neoregelias.

The Caboolture & Districts society's display was constructed on several "levels", allowing plants of differing heights to be displayed very effectively. Plants which stood out included: a large bowl of *Quesnelia* 'Tim Plowman', an *Alcantarea vinicolor* showing excellent leaf colouration, and several large bowls of cryptanthus.

In the Gold Coast display, there were many unusual and interesting plants such as: *Hohenbergia leopoldo-horstii*, *Tillandsia fasiculata x flabellata*, and a *Fasicularia* species.

The Sunshine Coast society's display featured large vrieseas and alcantareas, surrounded by colourful billbergias and neoregelias.

The sales' area was well supported by members, with over 20 people bringing in plants for sale. This show saw the widest range of bromeliads ever on sale. In total, there would have been over 700 varieties/hybrids on sale.

Some of the genera which were well represented this year compared to previous years included: *Pitcairnia*, *Dyckia*, *Cryptanthus*, and *Orthophytum*. Even though it was not the best time of the year for them, there were many colourful neoregelias. As always, there was a large number of well-presented guzmanias. There was also a good range of tillandsias and aechmeas.

Thanks are due to the many people (over 60) who helped out in various ways over the weekend. Without their support there would not be such shows.

A Different View of the Bromeliad Bonanza Show

The preparation for the show usually starts days before for the people involved in setting up displays, getting plants ready for sale and getting plants ready for competition.

Bob Cross works tirelessly for our society with little or no recognition. He stores all


BB


BB
Autumn Show
2006

the set up gear for our displays at his house and usually has to load it all onto his truck himself to bring to the show. He never complains but he also needs lots more help.

I am sure any members who could be of any assistance with this work even for a few hours would be of great help to Bob. He obviously does it for the love of Bromeliads and the friendships he has made over the many years he has been doing it.

THANKYOU Bob.

The other member of our association who works tirelessly in show set ups is Nancy Kickbush. Nancy is usually the first to arrive at 7.00am on Friday to take delivery of all the tables and have them set up in place for the sellers who start to arrive with plants around 10am onwards. This show was the first one to trial marking all the benches for the sellers, and even though this is extra work for Nancy it worked out a lot better and made the show flow evenly.

THANKYOU Nancy.

The next person to mention is our treasurer Glenn Bernoth. I am sure all the sellers would appreciate the work involved for Glenn with counting and allotting the money as well as making sure all is available for the operations of the show. Once again you never hear Glenn complain and his favorite saying is "we'll get there" without any panic or concern. He is very easy to work with and I am sure, like me, the club members are impressed with the work he is doing.

It then comes down to all the workers. People who work out on the sales benches, people who look after the plant areas, people who are there to help customers with knowledge on growing Broms, our library people and so the list goes on.

It was lovely to see four societies involved this time with the displays. There was our Brisbane Club; the North Coast, the South Coast and the new Caboolture District which made our show look absolutely great.

For any members who have missed being a part of these shows you don't know what you miss out on. The friendship and pleasure you get out of it is well worth the effort.

The next show we will have to set up will be the Brisbane Exhibition. We need plants for display, help with the set up on the Wednesday afternoon before, people to man the stand for short periods during the show and the help with pulling down on the Sunday morning. Please consider being a part of this for the sake of the club.

As the old saying goes -u many hands make light work.

Beryl Batchelor.

Neoregelias and Light Part 2

Author: Rob Smythe MSc

The practical side of the paper "Neoregelias and Light" Published in Bromeliaceae Vol XL-#1-Jan/Feb 2006

Popular science is such an inexact science these days especially with health issues. Don't eat eggs, eat eggs, no fats, must have fats, drink red wine , don't drink red wine, sleep on magnets, avoid electromagnet fields. If it was an exact science having oxidants(bad) vs antioxidants(good) in your blood, you would not be allowed to breath. Oxygen even to a layman is obviously an oxidant.

I will now try to interpret my findings (broad brush) without knowing full details of the localities that I am referring to. This discourse may help you make up your own mind. You might think along these lines, if it is optimal in Townsville to use 50 % light for a minimum of 7 hours 20% light (80% shade) would do the same as 7 x 50/20 hrs = 17.5 hours of light. A bit long for a day's light but

Autumn Show 2006
Gold Coast Succulent & Bromeliad Society Display

BB

BB

Autumn Show 2006
Caboolture & Districts Bromeliad Society Display

I must admit I once ,when in Voss, went sight seeing at 11 pm in the Flam Valley in Norway.

This 17.5 hours calculation is wrong (with non linear maths 1+1 does not equal 2). The data I have in front of me[1], which is not in my first paper, has allowed me to calculate a more correct figure namely around 11 hours of full daylight. This produces the same amount of photosynthesis under 80 % shade as 7 hours under 50% shade produces. This calculation based on data[1] tells me that 20 % light delivers 64% of the photosynthesis of 50% light.

The data[1] (graph)I have in front of me, I can interpret as follows. It suggests to me that there is a large reserve of chemicals manufactured by plants during the night. When the plant is then illuminated there appears to be a lot of chemicals in reserve available for photo synthesis so the rate of photosynthesis is shown to be higher than expected at lower light levels but this tails off as light is increased until eventually photosynthesis levels out completely.

If you are not a scientist I suggest you skip the next two paragraphs.

If I understood just what the experimenters did, I might apply a bit of chemical theory (kinetics) and give a more exacting answer. For the chemists out there the graph suggests, initially, a first order reaction with respect to light intensity limited by concentration of stored chemicals (CO_2 products) in the photosynthesising cells. As these peter out the increase of light flux no longer increases photochemical rate. The flattening of the graph suggesting to me that bulk of the chemicals synthesised and stored overnight are stored in non photosensitive cells or in vacuoles in photosensitive cells, is slowly permeating into photo sensitive area. It is now the rate of permeation that gives the constant output and not the intensity of the excess light. That is all too difficult for me to address mathematically even if I had raw data and the assumptions might be incorrect. The data was not collected long enough to be sure my theory is correct.

What does this suggest?

Where you have long days year round 80 % is probably nearly as good as 50 %.

If you have long days in summer and short days in winter you will find that plants might be late to colour using 80% shade.

Where you have short days all the year round you may have to spray plants with a can of paint to get colour. Alternatively you could grow them in the basement under artificial lighting. My friend does just this in the US of A.

My suggestions for you if you are building a new bush house is given below.

Comments in square brackets are from growers who have read a draft of this paper.

The Dry Tropical Coast: Townsville, Bowen etc. because of our long periods of daylight and cloudless skies you could use anything between 50% to 80 % shade. Best results colour wise will be towards the 50% mark but you will have to devise methods to keep plants well watered and cool on the hotter days. Towards the 80 % your plants will grow as well (colour as well! I am not sure) but you may have to wait till later in the year to develop good colours. In Townsville I see a dramatic improvement in colour going from 70% down to 50% shade. 50% good colour present all year. 70 % good colour for most of the year. 80% ??

Wet Tropical Coast: Cairns, Babinda, Innisfail, Ingham, Tully, Darwin etc I would not even consider 80 % shade as plants will, for long periods, be out of colour and too soft. I am assuming there is such a season as 'The Big Wet'. In Townsville I call it 'The Big Humidity'. 200mm and 2 days of rain! this 'wet' is not much of a 'wet'.. We are in to

Autumn Show 2006
Sunshine Coast Bromeliad Society Display

Autumn Show 2006 - Champions

March when I am writing this. I am finishing this article while Cyclone Larry is outside trying to blow my broms off my trees. I do know a grower in Cairns who has a growing house 80% and a colouring house 50%. The hazard of only 50% shade is that the wet can stop suddenly, switching into full tropical sun which could quickly damage these softened plants if the wet spells were sufficiently long. If you are working and you said to the boss, "Gotta go.It's stopped raining, gotta cover my broms!", I don't think it would go over very well. Though I, being retired, would go for 50% you might need to consider the other options.

[Correspondent in Cairns—whilst I generally agree with your observations there is one aspect of brom growing I have observed and I now practice and with my unmeasured pure un-biased opinion seems to work; that is indirect bouncing light. I now, and in the future, will be constructing greenhouses with a somewhat light reflective floor giving the broms a second chance at collecting light rays. For my last greenhouse (3 years) I used the most reflective white rocks/pebbles available on the floor and compared to the other greenhouse (6 years) which has black rocks as the floor the colours achieved are better, food for thought!]

Author's comment—I agree with you whole heartedly as lower leaves are under utilized.

[Correspondent from Ingham— I grow them in full morning sun and only get bleaching and burning if the temperature goes over 38 degrees]

Tropical Hinterland: Charters Towers Moranbah.

[Correspondent from Moranbah— the summer temperatures are between 35c and 49c.]

This would suggest to me you would go for 80 % shade and devise watering and cooling facilities so that plants did not get hot or dry out. 50% of course would give better results if heat and water could be optimised but I think the challenge would be daunting.

Dry Inland Tropics:

I would assume in addition to what I have said about the tropical hinterland you would have to have heating for very cold nights. I slept out in the bush one night in this area and my sweaty socks were frozen stiff when I woke up freezing. You don't have to be a chemist to know salty water (brine) freezes well below zero. We all got out of our tents and stood as close to the fire as possible and used our bodies to form a chimney. I remember this as my kebab night.

Deep South: I have lived in Norwich in England where I had to collect the kids from school at 3.30pm and it was pitch black at this time in winter. Living in the tropics the day lengths don't change that much and Townsville has the perfect winter. Cloudless winter skies and caravans with NSW and Vic numberplates crowding our streets. Not quite as poetic as the returning of the swallows to Capistrano but when the vans fly in it does remind us that it gets cold down south. As we move south the day lengths reduce so eventually the 80 % shade would not be an option. I am guessing, but this 'cut out' might be around about Grafton, following the subtropical belt of the sugar cane farms spreading down that far. I am not sure, but I think I have seen good full year colouring in Bundaberg under 80% shade. Brisbane - I believe I have seen not a complete year of full colour but a rather extensive period under the same.

[Comment from correspondent in Gossford NSW—-I have had a lot of trouble getting enough colour in my neos as we have a lot of tall gum trees that shade them at different times. Also I don't water very much as we only have bore water and I don't have

enough time. However last year I put all the neos pups that I had potted at Easter on our verandah which faces North and I got good colour by October, when I transferred them back to the shade houses. The big neos I put in front of a shade house which gets full sun to about 11.00am and then tree shade. Some bush houses have 50% shade. One, our newest is only 30%shade but it does have the big gums over head which makes it 50-60% shade]

[Comment from correspondent in Woy Woy NSW—New Years Day - hot northerly winds, temperature up to 45 deg. and bush fires raging in the surrounding hills. I think that the haze caused by the smoke reduced the UV and light intensity if not the temperature and so saved many of my broms from total extinction.]

Author's note—though comments do not tell what shade cloth was used, which would be irrelevant in a smoke haze, the temperature tolerance is worth noting.

Very Deep South: Adelaide. Here we have that swinging weather pattern. Cold one day blistering hot the next. 50 % shade is the only option this far south but a throw over or a misting and fan system for the blistering days would help. Glass might even be necessary for the colder areas. I'm getting out of my depth of experience. Is it true that if you don't like the weather in Adelaide wait 10 min and it will be great? No, sorry, that was Hobart.

[Comment from correspondent in Victoria—My first brom house was in Melbourne. I had problems with the neighbour's trees so to get plenty of light I used clear laser light. Gave great light but when the summer came I found I had to cover it with green shade cloth because the plants burnt with the sunlight coming through.

Have since moved to Drysdale, 1.5 hours south of Melbourne where the climate is much more temperate, being near the water, no frosts in winter time and plenty of moisture in the air at night. Have built myself a shade house using 75% wheat coloured shade cloth and it works beautifully. It seems to allow a lot of light in. It seems to be bright even if the sun isn't very strong. Get beautiful colour in the Neos; certainly not the colour of Queensland or even Sydney but extremely good by Melbourne standards].

Very Very Deep South: Hobart, any growers there? Pretend you are in Coober Pedy, grow them underground (kidding).

[Comment from Adelaide correspondent—Your comment about Coober Pedy makes me comment that I do know of a person there who grows Tillandsia. It is surprising that in the dugouts you can get quite a lot of indirect light. I have pointed out, quite strongly, that direct light will really test them!].

Don't know much about Tasmania except it has a chocolate factory in Hobart and Tasmania is moving away from or towards Australia at the same speed as my hair is growing. What! Did you say Tasmania is part of Australia? Learn something every day. I thought Australia was the mainland plus the land of the long white cloud. Better watch myself as I know we do have readers in New Zealand. I lived in NZ in the 80's and can distinctly remember seeing those cute little plants crawling along sticks in a glasshouse in a park that I think was called 'The Domain'. Didn't know a brom on a stick from a cordyline at that time. I quite liked the climate in Auckland if you could only work out which way the wind would blow. Always got soaked from all sides while using an umbrella. Could visualize neos growing quite well from Auckland up through the Bay of Islands. Though I saw them growing under glass in Auckland I am tempted to think they would

Continued on page 48

Bromeliad Society International News

from the Australian BSI Director Lynn Hudson.

The first major event is the World Bromeliad Conference 6-11th June, 2006 at San Diego.

The Speakers are our own Olive Trevor and Len Colgan; Dennis Cathcart; Bruce Holst; Phil Bunch; Jeffrey Kent; Tom Knapik; Peter Wong; Grant Groves; John Arden; David Shiigi; Ray Coleman; Chester Skotak and Paul Isley. Some of these names and people you know and you probably grow the plants that they have collected and/or hybridised. Some of the seminars will take you on collecting trips while others will show you new and to-drool-for bromeliads.

The Tours have been scheduled for Tuesday, Wednesday and Thursday, the seminars Friday, Saturday and Sunday. Have you ever wanted to see the nurseries of John Arden, Paul Isley and Jeffrey Kent? Here is your chance; you can roam among the thousands of beautiful bromeliads but no dribbling! Also on the tour list are the famous San Diego Zoo and Quail Botanic Gardens.

The Tillandsia Symposium is on Wednesday as is the Judges School.

The Plant Show will attract a wide range of bromeliads, some you will see for the first time. Plant Sales? Yes, for sale there will be plants by the score, just begging to be purchased and brought back to Oz! Books, badges and mugs etc. will be on the sales tables. They accept Traveller's Cheques, US cash and plastic.

San Diego is a fascinating area, with an American/Mexican flavour. The weather will be mild and perfect and the food delicious, having a broad selection range.

For more information see http://bsi.org for Hotel Accommodation details and Registration Form. Early bird discounts apply prior to April 30th.

Did you attend the 13th Australian Conference? Have you been bitten by the Conference Bug? Would you like to meet the people you read about and hear of? Don't dream about it, just do it. Go on, spend the kid's inheritance - you earned it! You will have magical memories to nibble on for years and years.

Letters to the Editor

Dear Ross

In response to your recent request for members to open their gardens to fellow members of the society, my wife Jane and I would like to add our garden to the list..

Also in the November/December 2005 issue, you mentioned having members supply photos of their shadehouses for inclusion in the societies web page. In regard to the above, I have enclosed a CD showing (a) bromeliads in shadehouses and gardens and (b) other plants in shadehpuses and gardens. The photos were taken with a Kodak Z740 digital camera, 5 megapixel using PICASA software. There are about 3000 bromeliads in shade houses where begouias, succulents, sub-tropicals and other plants are grown and about 300 in open gardens. We would also welcome a Field Day visit in the future. As we both enjoy growing a wide variety of plants in shadehouses and gardens and there is plenty of room on our 7 acre property, I am sure most members would enjoy the visit.

Congratulations on the magazine, particularly the Q&A section and the expanded use of colour photos and text.

Regards

Paul and Jane Blundell

Dear Editor

For many years now we Southerners have read about Neoregelia 'Burbank' of Olwen Ferris days but never seen it in the flesh - so to speak.

It is said to be like a Neoregelia carolinae with red lines on the leaves.In the 1998 Cultivar Register it was pointed out that the plant grown in Florida as Neoregelia carolinae v. rosea lineata was really a Neoregelia farinosa with red lines!

I confirm that this plant is in Australia. However, there is a N. carolinae type plant with similar lines. Would some of your 'older' members have a look at the enclosed plant and tell me if it is the fabled 'Burbank'?

regards

Derek Butcher

See page 43 for photo of plant to which Derek is referring Ed

---

Dear Ross,

The concern and speculation on the effects on hobbyists by any patented or PBR-protected bromeliads in Australia as expressed per last Bromeliaceae (Jan/Feb. 2006 issue p.44) are unwarranted. BSQ Members should re-read my comprehensive 2-part article on this subject in Bromeliaceae May/June 2004 and July/Aug. 2004 issues.

There it was explained that the only PBR-protected bromeliad is Neoregelia 'Martin', bred by Chester Skotak and granted this status for 20 years from 1 Sept., 2003 for local distributor agents Futura Promotions Pty. Ltd. (Marlborough Nursery) of Brisbane. The application to PBR-protect Neoregelia 'Lila' was withdrawn on 8th. Dec. 2003 so growers can openly sell this cultivar without prosecution. As of 27th. Feb. 2006, this is still the current situation according to the PBR online database :http://pbr.ipaustralia.optus.com.au/ The two patents on genetically-modified pineapple crops will not affect hobbyists because they will not have access to these stocks in the foreseeable future. Plant Patents under Australian law tend to be for novel gene sequences whereas plant-breeder rights (PBR) cultivars are mostly for each new plant variety as a whole.

Legally patenting or PBR-protecting new varieties is a relatively expensive, drawn-out process and must be done individually in every country where coverage is sought (unless for the 25-member countries of the EU). For the rather small Australian market this action is financially unrewarding and the applicant must monitor any infringements to ensure prosecution. So "widespread patenting" of bromeliads is not going to happen in this nation just yet. Aussie growers other than Marlborough nursery or its' authorised licensees who sell Neoregelia 'Martin', whether so-labelled or not, do so at their own risk. However, growers can give away freely N. 'Martin' or use it as breeding stock to produce other hybrids, providing the progeny are sexually bred clones and not merely vegetative sports off the original clone of N. 'Martin'—these remain the intellectual property of the PBR titleholder. There is nothing to prevent end users (the gardening public) from growing or propagating these PBR or patented plants, for whom indeed they were bred. It only becomes a legal problem once they are sold or traded for financial reward or material gain without the permission of the PBR or patent titleholder.

Geoff Lawn.

I think Geoff has raised a number of interesting points and educated us fairly well as to the situation in Australia as regards PBR. - Ed)

CALENDAR OF EVENTS

BSQ Field days for 2006

May 27 - Lyn & Spencer Grubb, 34 Warren Crescent Deception Bay. Phone 3888 3796 9am-1pm plant sales, morning tea & talks Members please bring a plate

Sept 9 - Bruce Dunstan "Stockade Nursery" 70 Wades Road Bellmere 9am-1pm Plant Sales

November 25 - Len & Olive Trevor "Olive Branch" 232 Canvey Road Upper Kedron Phone: 3351 1203 9am-3pm plant sales 9.30am, morning tea & lunch, talks and tours of bush houses Members please bring a plate

Bus Trips for 2006

October 28 Depart Uniting Church, Methyr Rd New Farm at 7am, Pick up at Woolworths, Gympie Rd Chermside approximately 7.20am. Arrive back Brisbane approximately 5.30pm

- Visit to Margie & Alex Tymson, large tropical garden. No Plant sales
- Visit Linda & Graham Percival, 1 Purcell Rd, Bells Bridge, Gympie Lunch & plant sales

Continued from page 45

grow under less demanding conditions further north. The Bay of Islands reminds me so much of the seascape in North Qld but I have to check my feelings as it is at about the same latitude as Sydney. South Island growing, I imagin,e would be a challenge.

Well, this started off as 'Growing Neoregelias in Townsville'. I had better stop or I may finish up like David at the last Australian Brom Conference where he showed his brom growing in snow on top of a mountain. He failed to say it grew there for just as long as it takes to photograph it. I did catch the wink in his eye though.

Summary is:

All things being equal like similar fertilizer stress. The following probably applies for the growing of neoregelias in shade houses.

50% shade is the best if you can handle overheating.

Up to 80% shade can be used if days are long enough.

This means as you move south suitable long day lengths appear later and later in the year and so colour could eventually peter out and only 50% shade is practical.

Your ability to moderate over heating and or excessive cooling will have to be considered when choosing a suitable shade cloth.

Thanks to Deanne, Dorris, Frank, Jim, Merv, Derek and Geoff for responding to this draft article.

1) Benzing,D. H and Renfrow. Bot. Gaz 132(1) 19-30 1971

Does BSQ need a Seed Bank?

The Bromeliad Society of New Zealand Inc. operates a seed bank on behalf of its members. Growing bromeliads from seed is very interesting and a good way to grow a large number of plants. If there is a need, is there anyone prepared to operate such a bank on behalf of the society?

Aechmea chantinii (variegrated - German Clone)