

Bromeliaceae



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Front Cover:	<i>Ae. recurvata</i> var. <i>benrathii</i>	Photo by Ross Stenhouse
Rear Cover :	<i>Ae. phanerophlebia</i>	Photo by Ross Stenhouse

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Important things to remember to do:

NOW - Renew your membership of the society if you haven't already done so!

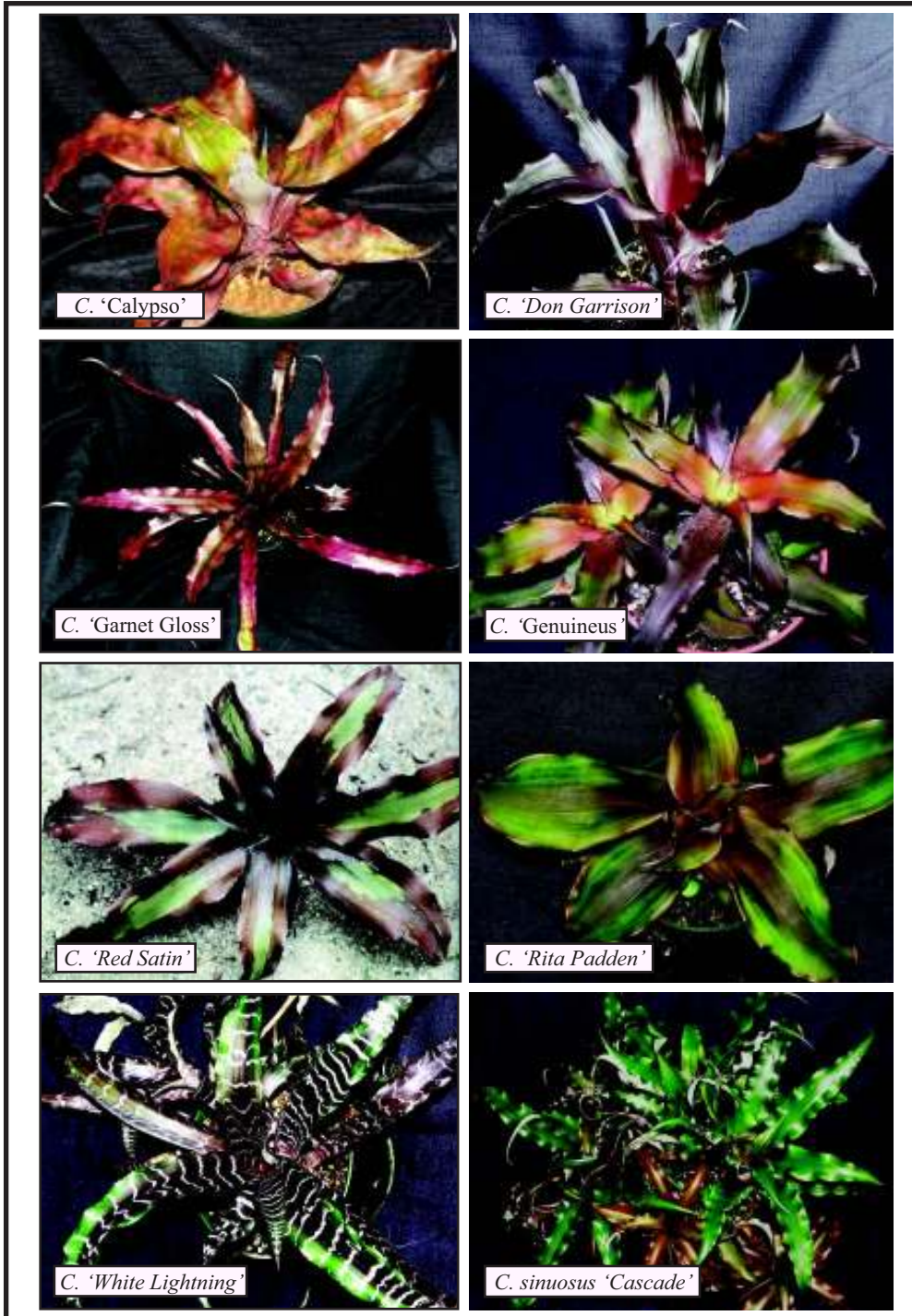
5,6 April Society's Autumn Show and Sale of Bromeliads at Mt Cootha Botanic Gardens.
May 18th [Sunday] 2008. Field Day at the home of Anne McBurnie and Philip Beard
24-30 June 2008 - World Bromeliad Conference No. 18 - Cairns, Australia

Books For Sale

The Society has the following books for sale:

• Starting with Bromeliads	\$18
• Pitcher Plants of the Americas	\$60
• Bromeliads: A Cultural Manual	\$5
• Back Copies of Bromeliaceae (2005, 2006 Editions)	\$4
• Bromeliads for the Contemporary Garden by Andrew Steens	\$36
• Bromeliads: Next Generation by Shane Zaghini	\$33

Postage and package extra. Unfortunately we cannot supply overseas orders. Please phone the Librarian, Mrs Evelyn Rees (07) 3355 0432 to order books.



Cryptanthus - Glowing Stars on Earth

by Geoff Lawn.
International Director, Cryptanthus
Society

Many Cryptanthus display trichome-laden, scurfed grey, gold or silver leaf patterns and markings or have a matte finish to their foliage base colour as their main attributes. However, there is also a select group of species and cultivars with glossy foliage which inevitably attracts serious growers and novices alike. These naturally- shiny types positively glow even in subdued light without having to be exposed to direct sunlight or wetted to become more “photogenic”.

Given that most glossy Cryptanthus are shade-dwellers in habitat, what is the purpose of this wax-like leaf shine on the obverse (upper) surface only, whilst the reverse is scaled or heavily-scurfed? Is this gloss to control light intensity and/or for photosynthesis? Does it function also in controlling moisture loss from the leaf tissues? What is this layer of cells comprised of and how does this reflection of light happen? Are these reflective cells right on the leaf surface or below the epidermis layer? Does the degree of sheen stay the same whether growing in shade or more sun-exposed positions?

Such detailed, specific information is still not readily available even in 2008 but in 2002 I consulted bromeliad biologist Dr. David Benzing who replied:

“I haven’t studied the questions you pose, nor has anyone else that I’m aware of, at least not in bromeliads.

I can say that leaf surface characteristics such as you describe in certain Cryp-

tanthus occur in other plant groups as well. Study of these plants has produced some answers. In some cases, the outer walls of the epidermal cells (upper side of the leaf) exhibit a laminated structure under high magnification. This wall differentiation probably affects light reflection and penetration, possibly enhancing photosynthesis by the green cells within. Light is reflected differentially depending on wave length accounting for the unusual colours and other optical properties of these leaf surfaces. The cuticle (the waxy layer above the epidermis) may cause similar “thin film” effects in other species. Some deeply shade-tolerant terrestrial orchids (e.g. certain jewel orchids) exhibit leaf epidermal cells each with a dome projecting outward. A felt-like appearance results (upper surface only). These domes may be acting as light integrators gathering scattered shade light in the forest understory and focusing it on green cells deeper in the leaf interior.

Epidermal trichomes and scales usually occur more densely on the underside of leaves where they shield the stomata and by doing so reduce water loss and possibly entry of pathogens through these same openings in the epidermis. Most bromeliads like most other plants possess stomates mostly or entirely on the underside.

The thickness of the cuticle on leaves is not always an indicator of how well the organ is protected from water loss. The chemical nature of that layer is also important.”

A certain translucency is evident in some hybrids such as *C.* ‘Diverse’ and solid-coloured leaves tend to show this luminescence better than on mottled foliage. In some cultivars the glaze is segmented by frosted cross-banding (e.g. ‘Puerto Rico’) whilst others have trichomes more on each leaf blade’s edges or towards the leaf axil (e.g. *C. sinuosus* ‘Argente’). Some cultivars are really semi-glossy (e.g. ‘Fudge Ripple’) as



C. 'Puerto Rico'



C. 'Satin Ribbons'



C. 'Thelma O'Reilly'



C. 'Chili Pepper'



C. 'Evon'



C. grazielae



C. 'Lava Flow'



C. 'Raspberry Ice'

one hybrid parent is scurfed to a degree.

To date lustrous-leaved *Cryptanthus* 'San Juan', forms of sinuosus (e.g. 'Cascade') and 'Arautiac' have been used most in hybridising for this effect. In theory at least, where both parents are predominantly shiny-leaved, the lustre on their offspring should remain undiminished but in the sole example found, *C.* 'Cynthia Johnson' (= 'San Juan' x 'Arautiac'), this did not occur. It seems there is still much to learn about whether this "glow gene" is completely or partially dominant or recessive in particular crosses. If the genes allow, there is the hybridising challenge to produce new combinations of characteristics--imagine a spoon-leaved, metallic black specimen or a chrome silver heavily-barbed *C. warasii* hybrid. One quoted tip from Florida breeder John Laroche: "*C.* 'San Juan' seems to be very dominant in its contribution to its progeny's appearance". [Ref: *Cryptanthus Society Journal* Vol.5, no.1, p.18 (1990)].

Positioning and also feeding do seem to make a difference to the degree of foliage gloss. For instance, my well-fed, large *C.* 'Florence Wasley' in moderate shade under fibreglass looks like lush two-tone green satin flushed red in the centre. The same cultivar, unfertilised and smaller at maturity under 70 % beige shadecloth has lighter green almost matte leaves suffused with red margins. Interestingly, both red and green leaf forms of *C.* 'Road to Buzios' display this foliage glow regardless of the light intensity, suggesting some cultivars' anthocyanin pigment ratio is rather fixed.

So we may not yet fully understand how and why this galaxy of Earth Stars shimmers, but it does not detract from enjoying the following dazzling array.

Species and species forms

acaulis var. acaulis 'Cabo Frio Cabbage' (SE-16)

acaulis var. acaulis 'Georgia Waggoner'

(SE-3)

cf. acaulis 'Road to Buzios' (SE-5)

acaulis var. ruber (glabrous clones)

bromelioides

graziellae 'Aurantiacus'

"gurkenii" (undescribed)

osiris

sinuosus 'Argente'

sinuosus 'Cascade'

undescribed species: SE-8, SE-9, SE-10, SE-22

warren-loosei 'Arautiac'

Named Cultivars

'Andrew Philadelphia'

'Betty Ann Prevatt'

'Betty Garrison'

'Black Magic'

'Calypso'

'Chickadee'

'Chili Pepper'

'Cinnabar'

'Crystal Jackson'

'Diverse'

'Diverse Pink(ie)'

'Double Fudge'

'Durrell'

'Eddie Ed Patton'

'Evon'

'Fat Man'

'Florence Wasley'

'Fudge Ripple'

The BSQ Web Site

Don't forget that the society has a web site. We place urgent and general information and information on the site. It also is a resource for smaller societies to get articles for their newsletters.

The URL is:

www.bromsqueensland.com

'Garnet Gloss'
'Genuineus'
'Hope'
'Iron Age'
'Lava Flow'
'Lirico'
'Mint'
'Mint Julep'
'Out of Africa'
'Puerto Rico'
'Raspberry Ice'
'Red Magic'
'Red Satin'
'Rita Padden'
'Rose Dust'
'San Juan'
'Satin Ribbons'
'Shining Light'
'Shining Red'
'So Much'
'Spellbound'
'Thelma O'Reilly'
'Volcano'
'Walking Tall'
'White Lightning'
'Will's Discovery'
'Windsong'

References

- Lawn G. 2002 . "Twinkle, Twinkle Little Stars". *Cryptanthus Society Journal* 17:2: 43-46.
Lawn G. 2006. Master Lists of *Cryptanthus* Species and Cultivars. *Cryptanthus Society Journal* 21:4:115-124.

Photo Credits

- C. 'Lava Flow', 'Red Satin' & *C. grazielae* from *Cryptanthus Society* archives
C. 'Chili Pepper' by Carole Richtmyer.
All other photos by Larry Giroux.

President's Report 2007

by BSQ President, Olive Trevor

The year 2007 has been another great year for our society, The Bromeliad Society of Queensland Inc. The popularity of our favorite plants grows year by year. This is due to many factors, but mainly to the shows and displays we do to show to the general public the plants that are available for them to grow now and in the future. Our two shows at the Mt Cootha auditorium are our largest events for the year and are always great social events as well as maintaining the levels of society funds.

Due to the extremely dry season the drought was probably responsible for our Autumn show to be a little on the down side. This was made up for by an almost record Spring show. In some ways the drought did us a great favour. With water restrictions imposed on South East Queensland residents many people were unable to water their gardens and plants died – except for their bromeliads. Gardeners soon found that their broms were tough and hardy survivors and wanted more. More wholesale nurseries are turning to bromeliads. We are seeing more and more tissue cultured bromeliads on the market. This is where members of the Bromeliad Society can do their bit by propagating by pups or offsets plants that can not be mass produced by culture such as variegated *neoregelias* and others. Another reason why our shows are so successful is that members of the public who love and collect bromeliads are able to buy a wide range of plants not available in retail nurseries. The queue-up outside forms before the show opens. People are keen to get first choice of some of our rarest plants that are not available elsewhere.

Our society, The Bromeliad Society of Queensland Inc. has increased in size in the last year. We now have between five hundred and six hundred members. Even though there are many other bromeliad societies, The Queensland Society is still very popular with many country people. The reason for this is our wonderful magazine 'Bromeliaceae', which is of world standard. The Committee and members thank Ross Stenhouse for his great work in producing such a magazine. Please help Ross in this work by contributing photos and articles for the future Bromeliaceae.

I have attended two Society members' field days. One was at Jeff Sears and the other at Viola Hamilton's gardens. Both beautiful but very different gardens featuring bromeliads. Unfortunately, attendance at these gardens was very poor. Those who attended these gardens enjoyed their day with their society friends. Please try to support these functions in the future.

On the other hand Queensland Society members outnumbered other states at the 13th Bromeliad Conference in Port Macquarie. All agreed it was a great success and are looking forward to the International conference in Cairns in June. Nigel Thompson almost scooped the pool with his prize winning show entries, and the displays were spectacularly done by the Sunshine Coast Cairns Society as well as Queensland Society. Please support the B.S.I. show in Cairns with as much

Bromeliaceae ***Production Crew***

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**Proofreader, Custom Badge Collector
and distribution manager:** Roy Pugh

Regular Contributors: Derek Butcher,
Rob Smythe, Rob Reilly, Peter Paroz

enthusiasm.

Over one hundred and twenty members attended our Christmas Party in December. A hearty meal followed by our usual Christmas continuous raffle was enjoyed by all for another year.

Your committee welcomes all new members and hopes your membership of the society proves to be a time of friendship and learning about bromeliads. Your committee has worked to improve meetings by reducing the business content and increasing participation of members and plant discussions. Ann McBurnie has done a great job in organizing speakers and commentaries and we thank Ann for a job well done. I thank Chris & Jennifer Coulthard for all their wonderful work and help in running such a large society and lastly Glenn who does such a great job keeping records of our finances that are still in such a healthy state.

I hope you all have a great year with The Bromeliad Society of Queensland Inc.

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Neo. 'Blue Shark'

Neo. 'Blue Shark'

A. floribunda

A. floribunda

Ae. chantinii 'Stripes on Stripes'

Ae. 'Covata Too'

***Neoregelia*
carcharodon now
'Blue Shark'**

Author: Derek Butcher

1996 was a vintage year because it was when Len Colgan and myself went to Orlando to the World Bromeliad Conference. I was especially after a true *Neoregelia fosteriana* and a true *N. carcharodon* and Harry had written that both were in Florida, admittedly side by side with wrongly named ones - it depended where you looked! At Pineapple Place I saw both species but when nobody was looking I poked around the inflorescence of *N. fosteriana* and convinced myself it was not compound and was thus incorrectly named. The *N. carcharodon* was the 'Rubra' that Harry said was true and it looked so good I just had to have one. I bought a *N. carcharodon* and which was an offset (not a seedling) and it survived quarantine but took lots of years to acclimatise. It would not flower but each offset did look like it was getting used to Adelaide. In 2006 an offset went to Peter Tristram in NSW and in 2007 another offset went to Mick Romanowski in Melbourne.

I was somewhat surprised when in Jan 2008 Peter Tristram sent me photos of the plant in flower and with blue petals. Panic! Petals are supposed to be white!

Off to Harry Luther for advice. Plant not *N. carcharodon* but he did say *N. carcharodon* was on the BSI seed list in the 1990's. As Bill Morris instilled in me years ago, "Seed-raisers must always analyse their results!" Alas few do so!

This plant with the blue flowers needs a cultivar name and what better than 'Blue Shark'. The 'blue' to cover the error as well as the colour of the petals and 'Shark' to link

it to 'carcharodon'.

Even though I got my offset so long ago, there is a great chance that plants called *Neoregelia carcharodon* are still lurking in Florida 'waters' waiting to catch the unwary. It is possible that it could also have been imported to Queensland. So when next your *N. carcharodon* flowers please check the petal colour which should be white.

Photo Credits: Peter Tristram

***Hohenbergia lanata*
leads to *Aechmea*
floribunda
by Derek Butcher 12/2007.**

This all started in July 2004 when Michael Pascall sent me photos of a plant called *Hohenbergia lanata* that Peter Sargent had got from Olive Trevor. It certainly had a *Hohenbergia* type inflorescence but I could not link it to that species name. I did ask for a piece of the flowering inflorescence be sent down south when flowering occurred again. Michael has moved around since then!

Let me explain what I see as to how you can recognise a *Hohenbergia* without getting too technical. It looks like an *Aechmea* but the branches of the inflorescence are like pinecones, and like pinecones can be short and fat or long and fat! They are hard, like pinecones too! Sometimes, there is a lot of hair around, not much colour to the bracts, and the flowers are small and white with perhaps tinges of blue or yellow. In fact it follows the proverb that 'Beauty is in the eye of the beholder.'

Let us now move to current times where Peter Tristram had flowered a plant called *Aechmea floribunda* he had purchased from Jeffrey Kent and another called *Hohenbergia lanata* that he had obtained from



Catopsis sessiliflora

Hohenbergia correia-araujoi

Ae. purpureorosea

Canistrum seidelianum

Michael Symmons. He only saw minor differences between the two and I could only agree with him. The only difference seemed to be that *A. floribunda* flowered pale yellow and *H. lanata* pale blue.

Peter even sent me branches to butcher which I did and even scanned bits so I could send them to Harry Luther. Harry's first comment was that it was not *Hohenbergia lanata* but he would look further. Meanwhile Peter had butchered his *A. floribunda* and gave more information as the make-up of the flower. This time Harry was more positive. It appears that our plant has been sold by Seidel and Tropiflora for some years now as *A. floribunda* and he described it as *Hohenbergia*-like!

Let us now look at *Aechmea floribunda* which for some time was treated under the now-defunct genus *Streptocalyx*. It seems there were two sorts of *Streptocalyx* – ones from Ecuador that have great inflorescences like *A. napoensis* and others from Brazil where growers thought they were in for a treat!

Normally, *Aechmea floribunda* is huge and can flower up to 3m high. (A plant that size would have an abundance of flowers!). Smith tells us that the petals can be white or blue. Our flowering plant called *H. lanata* is about 2m high which had me looking at how *A. floribunda* was described in the early days. We know that Martius described it in 1830 but how good a job did he do? In 1899 Baker linked it to *A. organensis* but with yellow flowers. In 1935 Mez corrected the misconception of Baker, and Smith followed this conclusion. Smith in *Flora Neotropica* shows a link with Baker's interpretation to either the yellow flowered *A. caudata* or the blue flowered *A. organensis* which is a bit confusing!. So we can ignore Baker, but he was talking about a smaller plant and closer to the plant (size-wise) that we are growing!

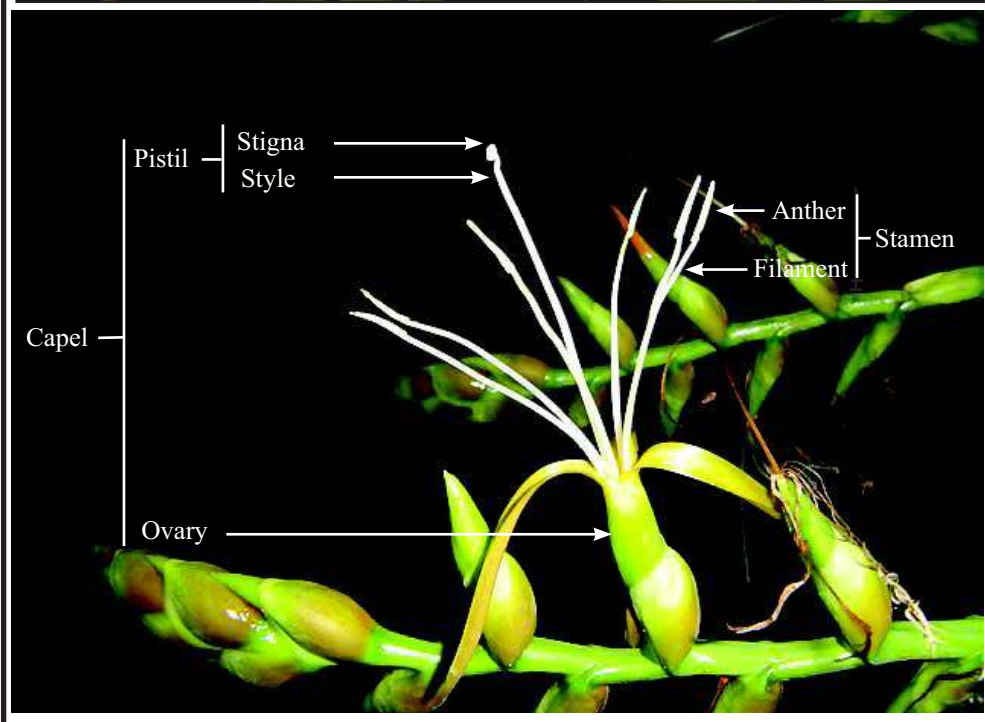
While many of the parts of our plant agree with the description of *Aechmea floribunda* it differs by having a smaller inflorescence and strobilate (pinecone) branches. We know that *Hohenbergia lanata* is incorrect and the name should be changed. *Aechmea floribunda* does not sit comfortably either and perhaps we should call it *Aechmea floribunda* 'Whyanbeel' after the place where this naming problem originated. As far as I am aware the true *Hohenbergia lanata* is not in Australia and if you have a plant with this name I strongly suggest comparing it with 'Whyanbeel'.

One thing leads to another because we found out that Iain McGregor in Western Australia is also growing an *Aechmea floribunda* which he had got second hand from Maurice Kellett in Victoria. Anecdotal evidence suggests that a 'small offset' removed with a saw, had it needing an extra seat on the aeroplane to get it to WA. The flower is scented and is self fertile and Maurice plans to get some seed to the BSI seed bank. He got the plant originally from Kent in California in October 1980 which is the same year that Peter Tristram imported his plant from the same source. I had thought that Peter Tristram's plant was different to Maurice Kellett's but that seems unlikely, now!

The Night Flowering *Alcantarea edmundoi*

Author: Rob Smythe

This bold and beautiful plant which because of its size attracts the attention of every visitor to my garden. It holds another fascination for me and this is the fact that it's flowers open within an hour after sunset. Why does it do this? I have looked at it in the morning and the anthers are completely stripped of



pollen. Surely a plant like this with anthers and stigma protruding out so far (see photo opposite) would not be moth pollinated.

Moth pollinated flowers are usually large petalled and white with some sort of landing platform. The exception is with the sphinig moth (hawk moth) which is a specialized moth and does not need this platform as it hovers like a humming bird and pollinates with its proboscis and not with its body. The petals on the above mentioned plant are thin and narrow and yellow.

All is wrong for a moth pollinator, other than for a sphinig moth. The petals also curl back which is an advantage for a hovering moth. The nectary is not obvious on dissection but nectar is everywhere except inside the flower. The unopened end of the spike is dripping with nectar. This suggests that the plant is actually distracting the usual nectar chasing pollinators away from the flower. Very curious.

I am raising questions and I hope you are not expecting definitive answers. Right! I'm too old now to be sitting up all night with my close up camera trying to capture the instant of intimacy between insect and flower. Been there, done that but now I will leave such escapades to the likes of our editor and camera buff, Ross. I am curious as to where this pollen has gone. I got up very early and saw what was going on. At day break our little native bees were swarming around the flower, surprisingly ignoring the nectar but piling all the pollen onto their hairy legs. Infrequently they appeared to mistake the stigma for the anther and bounced from it. In doing so pollen would have been transferred from anther to stigma. Why do they bounce off? The reason could be that at times the stigma can be like a glue pot and they know that they could get stuck there if they hang around.

This is exactly what happens when the same bee *Apia trigona* pollinates the native

orchid *Bulbophyllum baileyi*. The bee dies in the process .

I Alternatively the stigma could be dry and non receptive. The Alcantarea flower was quickly denuded of pollen. Nothing left for the birds which would have been likely day pollinators in the wild, if there was a significant nectary within the flower to attract their interest.

I dissected the flower and it was perfectly dry on the inside. We have a close relative of the humming bird in tropical Australia. I will keep an eye on them. I stayed for a while watching the bees then to my surprise a Crane Fly came in and did the exact same routine.

I think you all would at some time or other been terrified when a monstrously large mosquito landed on your arm. You think they are about to collect for the Red Cross. They differ from mosquitoes in that they don't bite and they don't fold their wings back. Wings stick out just like those on an aeroplane. So, it looks like, at this stage, that about any light weight insect could pollinate this plant as long as it was interested in pollen and not nectar. So this species is not maintained by a specific pollinator but by something in its genetics? What I observed, though interesting, does not explain why the flower opens at night. Is it the sphinig moth that pollinates or is it possibly that the pollen is carried by the wind as the winds may come up at night in summer in its native habitat. I have seen photos of Alcantareas massed on rock faces. The massing is necessary if they are to be wind pollinated. Because of its extremely long stamens and its similarly long carpel (see photo on previous page), this suggests that it could be a wind pollinated plant.

The stigma may only be receptive at night and the bees could be doing nothing productive for the plant in the morning. There are several features relating to the sexuality of



Ae. nudicaulis var. *aureorosea*

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the flower and the number of seeds per ovary which distract from the wind theory

2. Tonight while painting the inside of the house, I waltzed out into the garden and snipped off the stamens and a flower and a seed pod for dissection. The stamens I laid out on a piece of paper and during my frequent trips up and down the ladder, I watched for the pollen to be released. This happened about 3 hours after sunset.

Back to the garden and I checked it was the same for intact stamens. A slight flick on the raceme and pollen could be seen streaming through the torch beam. This is a tick for wind pollination. Next I dissected a maturing pod and it was full of lots of developing seed. A tick against wind pollination. The lack of an attractive scent is also a tick for wind pollination.

Maybe I should send this article to the Myth Busters Team on TV. I am told that so many people say Alcantareas are very difficult to cross. This raises a question. Did they try pollinating them at night around three hours after sunset? The other possible myth is Alcantareas are self sterile. I have only pollinated two as I have only had two that have flowered and I live in an Alcantarea oasis in a bromeliad desert. Both *Alc. glaziouana* and *Alc. edmundoi* selfed and seeded copiously. A third plant in a friend's garden selfed and this was *Alc. extensa*. Again I say are they self sterile or have they just been pollinated at the wrong time?

So if I have achieved nothing much with my nightly wanderings I would suggest that if you want to self or cross Alcantareas do it about 3 hours after dark as by the morning I think the stigma has dried up and would not be receptive.

I'll finish with a question. The flower is dry inside but outside and the whole of the inflorescence is covered with this oozing sweet slime loosely called nectar above. Nothing

comes for it not even ants. I can vouch that it tastes good. Why is it not collected?

References:

1. R Smythe, An observation on the Pollination of *Bulbophyllum baileyi* The Orchadian, 3, 5, p. 61 (1969).

2. Biology of Plants by Raven P. H., Evert R. F. & Eichorn S. F.

Thanks from a Country Member

Country members really appreciate the help they receive from fellow members. The email below is an example of the help one country member received. If you are in the position of being able to help - please do!

Hello Ross - Just wanted to say thank you for printing my letter in the Bromeliaceae magazine re swapping or buying small offsets in order that I might increase my collection, without a huge outlay.

Well it worked !! A fellow from Ballina contacted me by phone and we have had a wonderful time exchanging Bromeliads. We are both very happy with the arrangement and our collections are growing in size.

So thank you so much Ross from two avid collectors.

I hope that Lea has the same success as myself. She also lives out in the country, Maybe there is a Brom. collector in her area who would be willing to buy and swap plants with her.

I also wanted to recommend the Andrew Steen's latest Book "Bromeliads - The Connoisseur's Guide." "I am very impressed with its presentation and it's going to take some time for me to digest all the information.

Regards from Nola Mauler - Yamba NSW.



Hailstone Damage to Bromeliads

Author: Geoff Lawn

The following is from the society's bulletin board. It was sent in response to a query from a contributor about the recovering capacity of bromeliads with hailstone damage.

Rick,

Mature, flowered rosettes will not regrow damaged leaves -- their life cycle is finished apart from setting seed. If the damaged parent rosette is already pupping, you can trim some leaves off it to give more light, space and air for the emerging pups. However, the more foliage removed, the less energy from photosynthesis the parent can provide for it's attached pups. The alternative is to regard the specimen as propagating stock, removing it from the display area to a "maternity ward".

Where a single unflowered rosette is hail-damaged (but otherwise healthy) and an advanced size (more than half fully-grown) you can induce pupping by destroying the central growing point (meristem) with a sharp metal skewer, driven vertically through the central core. This drastic action is not advisable for rare or one-only varieties or if the specimen is already weak or sickly. It's best done during the warmer growing period too.

By all means cut off hail-damaged leaves or partly trim to live tissue if further leaf die-back (necrosis) occurs-- which tends to be more a cold Winter problem like frost-bite. Naturally, garden specimens are more prone to hail damage than those grown under shade cloth which softens the hail impact. Many small to medium-sized varieties out-

grow the damage in 12-24 months but larger or slower-growing types such as succulent Dyckias may take several years to fully recover -- it largely depends on the extent of the damage -- some "tough" leathery types simply bruise, whilst other "softer" types' foliage tissue actually dies. Dyckias and Hechtias are exceptions to the above notes inasmuch their rosettes have continual perennial growing points, so mounding clumps if left undivided virtually have to shed damaged outer leaves over several years.

Geoff.

Tissue Culture Bromeliads

Author: Ross Stenhouse

Hang around long enough with gardeners and you are bound to hear the term "tissue-cultured". What you are also likely to hear are war-stories about the trouble with tissue-cultured plants. The challenge is to sort the fact from the fiction when it comes to tissue-culturing plants. If you are like me, you haven't the facts to base an informed opinion upon. The society is fortunate to have Anil Ghodké as a member. Anil has a biotech business that specialises in the tissue-culturing of bromeliads and thus is an expert in the area. Recently I received the following letter from Anil:

"Hello Ross,

Wishing you a very happy and a prosperous new year.

It's been a while since my last email. Hope everything is going well at your end. I have put some more varieties in tissue culture and recently some beautiful neo hybrids. They are all under experimental multiplying stage and will be available in the near future. Meanwhile, plants from the lab are now grow-



ing well in the greenhouse and some plants are growing big in the shadehouse. I have started exporting and getting good response from overseas customers. Mainly the plants are going to Thailand, Taiwan, Vanuatu, Norfolk Island, New Zealand, French Polynesia etc. Customers are really happy with the quality and service. Many countries have some weird quarantine restrictions but with the help of the friendly people at AQIS, Brisbane and Quarantine headquarters at Canberra, I could send the plants to most difficult phyto regulations country like Taiwan.

Since QLD is promoting biotechnology, I am receiving really good help from Austrade and concerned Federal Govt. Departments. Anyway cutting long story short, its slowly catching up and I am glad that we have moved to Queensland. With the new hybrids that are coming up I am really excited that we will get really busy with overseas orders for Australian hybrids in near future. Also getting a good feedback from Australian local customers. Sending plants to NSW, VIC, SA, WA, ACT and all over QLD. Many of them are repeat customers which is a good sign.

*Warm regards,
Anil Ghodké
Plant Biotech Pty. Ltd.
Tel. +61 7 5471 6036
Fax. +61 7 5471 6728*

If you are interested in what Anil is producing, contact him or you can talk to Tracy, the Laboratory Manager and you can be sure of a warm welcome. Anil is committed to a quality product and he thinks "seeing-is-believing". That's why he says, if you happen to be on or visit, the Sunshine Coast you are more than welcome to visit the Lab and he or Tracy will be happy to give you a brief picture of bromeliad production in the laboratory.

Their web site is worth a visit. One visit

to the site will convince you of Anil's dedication to the propagation of Bromeliads. As a promotion of their products, Anil's company, Plant Biotech is offering a discount of 10% to BSQ members until the end of June 2008. (The discount doesn't apply to 'Specials'). In order to qualify for the discount you must tell them that you read their ad in Bromeliaceae.



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Aechmea 'Pinegrove Lass' - Dunstan



x*Bilimelia* 'Sebastian Lauele' courtesy of Kew Gardens and Harry Luther

Growing Bromeliads in the Tropics

Author Geoff Lawn

The following is from the society's bulletin board on the society's web site. I put a posting there because I had heard that bromeliads grow larger in the tropics.

Ross,

Tropical climates near sea level and closer to the Equator generally have milder Winters than further south (or north if in the northern hemisphere.), particularly near the coast where the ocean moderates temperature extremes. They may experience some low temperatures there (say below 12 degrees Celsius), particularly at night, but their duration and frequency is less than in more sub-tropical or temperate climates where Winter checks their growth rate.

The tropics also don't get big seasonal swings of daily light lengths and places like north Queensland or south Florida have the advantage of dry Winters but with loads of sunshine. All these factors affect the annual length of the growing season and places like Singapore on the Equator or the Phillipines can grow huge multi-layered rosettes in say Neoregelias but the seasonal variations are so slight that they may not be triggered into flower but just keep growing and yet do pup.

So it's the weather, climate, day length, light intensity (no cloud cover?) and temperature range which to a big degree determine plant size as much as water requirements, growing medium nutrients plus fertilisers. The other big factors not to be ignored are how well does the particular plant's growing conditions approximate it's original habitat (or ancestral parents if a hybrid) and whether better grown as a epiphyte, terrestrial or

lithophyte? In other words, are it's inherent needs being met, given that some species or cultivars are more adaptable than others?

Geoff.

The two images on the opposite page (top) were supplied by Rob Smythe to illustrate the size that bromeliads can grow to in the tropics. Rob is standing in the one on the left to give a visual size reference

Aechmea 'Pinegrove Lass' or is it xBillnelia 'Sebastian Laruelle'?

by Derek Butcher Jan 2008

A new broom sweeps clean. Ever since Ross Little took over the reins at Pinegrove I have been peppered with identity problems and this latest is a humdinger! Think of a plant that has been grown for over 25 years and now surfaces!

First, Ross got Bruce Dunstan to take a photo of an odd looking plant that he thought was reminiscent of *Aechmea lasserii*. I agreed with this guess but the plant had blue petals. So I tried it out on the Internet. Walter Till said, "Hybrid!" but Harry Luther stunned me by saying *Billbergia viridiflora* x *liboniana*. You see he had a copy of a painting done in 1885 for Morren and a copy of the copy is shown here. Investigation was needed!

In 1885 this was just a *Billbergia* hybrid that Morren didn't even bother to name. This is what I translated from the French in Belg. Hort 35: 251. 1885

"A *Billbergia viridiflora* hybrid by *Billbergia Liboniana* provided the fertile seeds whose progeny has just decorated with flowers at the Liege Botanical Garden. They are interesting in that they combine many of the characters of their parents, but are deprived absolutely of the aesthetic advantages that

could make it desired in horticulture.

In 1922 we know that *Billbergia liboniana* became a *Quesnelia*!

In 1942 in Chevalier's Catalogue we find that this plant had been given the name of 'Sebastian Laruelle'.

In 1979 the name appears in the 'International Checklist of Bromeliad Hybrids' as *xBillque* 'Sebastian Laruelle' but nothing else. The name *xBillque* is invalid and has since been replaced by *xBillnelia*.

How had the plant got to Pinegrove in the first place? Harry tells me that early in the 1980's he received an unknown plant from Texas – he thinks! It was not an impressive plant and was not accessioned into Selby Gardens records. However, Ros Buchanan sent a 'chunk' back to Pinegrove Nursery in Australia where it has happily grown since. Apparently the Selby plant died and Harry does not want a replacement. In his words he says, "A dead ringer for the Morren plant. I can only expect this thing is the oldest bad hybrid in existence!"

Here, I have to disagree with Harry in that I would drop the 'existence' because even in 1885 it was considered 'deprived' and I think its origins are more likely to be in the 1970's in the USA. I cannot see this sort of hybrid surviving two World Wars or being a remake with this parentage. Our plant has leaves that can turn reddish in sunlight and has a inflorescence that is compound at the base, in line with *A. lasseri* and I feel is a hybrid of it.

I have no idea if offsets from this plant have escaped from Pinegrove in the last 25 years but if they did AND you still have this plant you will know that it will be recorded in the Cultivar Register as *Aechmea* 'Pinegrove Lass'.

In addition, if this plant is still being grown in Texas or elsewhere perhaps someone can tell me its origins!

Nutritional needs of *Guzmania* 'Ostara', a cultivated Bromeliad

Author: Ir. Eline W. de Vos
Photographs by Corn. Bak® BV

Introduction

All plants are dependent on certain chemical elements for their growth and flowering, of which the macronutrients nitrogen (N), phosphorus (P) and potassium (K) are the most important. Calcium (Ca) and magnesium (Mg) follow closely. The plant's requirements are completed with minute amounts of trace elements, such as iron (Fe), boron (B), zinc (Zn), manganese (Mn), copper (Cu) and molybdenum (Mo).

Each plant species has its own preference in amount and combination of these nutrients, but there are some basic rules concerning nutritional needs that apply to all plants. Bromeliads, however, are a quite exceptional group of plants, since they tend to live in rather infertile environments. Especially the (facultative) epiphytes among the Bromeliaceae family have adapted to living on the scarcity of nutrients that accumulate in the tank. As a result their growth rate is typically very slow.

Cultivated Bromeliads can exhibit accelerated growth, when given the right environmental and nutritional conditions. Commercial growers tend to fertilize up to the plant's limits, in order to achieve a short cultivation time. This can easily lead to problems with plant quality because of accumulation of one or more elements. Another underestimated problem can be caused by suboptimal ratios of macro elements. An optimal NPK



Fig. 1 Excess of Boron

Fig. 2 Excess of Boron

Fig. 3 Excess of Copper

ratio will give the grower the opportunity to apply larger quantities of fertilizer before problems arise. With Bromeliads, decreased plant quality because of a nutrient deficiency is much less common.

To easily recognize nutritional problems in Bromeliads, at Corn. Bak® BV, the Netherlands, experiments are conducted to determine the damage characteristics for element excess and -deficiency for commercially important cultivars. The symptoms of damage are recorded on photo. Since we are a supplier of young plant material, this knowledge can be quite valuable for our customers. Therefore, all test results are available on request.

In 2003, nutritional experiments were done on *Guzmania* 'Ostara', which is a large hybrid with orange bracts (Fig. 1). Worldwide, approx. 2½ million plants of this cultivar are sold annually.

Method

Guzmania 'Ostara' plants were tested from the moment of potting, up until flowering. Different groups (36) were created, each containing 20 plants of a similar starting height. They were grown in a greenhouse at 19-20° C (66-68° F) and 70% RH (relative humidity). The potting soil had a pH of about 5,5 and was minimally fertilized with PG mix 12-14-24 (trace elements included). EC (Electrical Conductivity, a measure for the salinity) of the soil was 0.3 mS. The soil was therefore not entirely free of nutrients. During 59 weeks each group manually received a specific fertilizer mixture, which always differed from the control group in only one element.

The water used in a Dutch greenhouse is traditionally rain water that is being collected in large basins. This has a very low EC (0.1 mS) because of a minimal saline content. The different fertilizer mixtures were applied from above, wetting the leaves; filling the tanks and also reaching the potting

soil. Because of the salinity of the fertilizer (EC ~ 1.0 mS), the leaves were always given a short spraying of clean rain water after applying fertilizer to avoid leaf burn. Fertilizer mixtures were applied once every week (summer) or once every two weeks (winter). In between fertilizer applications clean rain water was supplied from above, wetting leaves and soil alike. This was done as often as the plants required it, but with a minimum of two times a week, always making sure that there was enough water between the leaves and in the tank.

The composition of the control group fertilizer mix (as tested in two groups) is shown in Table 1.

For all the micronutrients and Mg one group was grown on a fertilizer mix with an entire lack of the tested element. They were also tested in two excess groups: for the elements Fe, B, Cu, Mn and Zn there was one group that received 20 times, and another that received 60 times the amount of the control group. For Mo that was respectively 120 times and 480 times. For Mg 11 times and 22 times.

The control group did not receive any aluminum (Al), chlorine (Cl) or calcium and therefore functioned as a "deficiency" group for these elements. These elements were all tested at different excess concentrations. Also, Ca was tested in two different formulations: the liquid calcium nitrate which all growers use, and a Ca fertilizer from a biological source. See Table 2 for an overview of excess test group compositions.

For the macronutrients N, P and K, growers usually work with the ratios listed on the fertilizer bags, for example 20-5-30. These numbers describe the weight percentage of Ntotal, P2O5 and K2O in the bag. In this example that would mean that 1 kilogram (2,2 lbs) of (undissolved) fertilizer contains 5% = 50 grams (1,76 oz) of P2O5. Note: do



not confuse this molecule with its element P. 50 Grams of P₂O₅ contains 21,8 grams (0,77 oz) P. However, the aforementioned ratio is commonly – in short – referred to as the NPK ratio.

When using the same notation, our control group has an NPK ratio of 15-5-40. For all three elements, one group was tested on a deficiency, and another on an excess. The ratios tested are shown in Table 3.

At a certain plant size, the groups were induced for flowering with acetylene gas. Some weeks before and after induction no fertilizer was applied, in order to facilitate the switch from vegetative to generative stage.

At two points in time soil samples were analyzed: directly before flower induction and at the end of the experiment, when the plants were ready for sale. This was done by the lab analysis method of 1 volume soil : 1,5 volumes water. From some groups also leaf samples were analyzed.

Results and discussion

General observations

Surprisingly, only a few groups showed clear symptoms of damage (see Table 4). Apparently the tested nutrient concentrations were not extreme enough. The omission of one single micronutrient or Mg from the fertilizer mix never led to any visible problems. It can be argued that the plants never faced a total lack of any micronutrient, since the soil was slightly fertilized from the start. It seems that this initial supply is sufficient for the entire growing period. From previous experiments we know that a total lack of all micronutrients at the same time invariably leads to slower growing plants with a lighter coloring.

Not one of the tested excess levels for Fe, Zn, Mn, Mo, Mg, Al and Cl elicited a visible response in the plants. In most cases,

the excess of these nutrients was fully absorbed by the roots. The soil analyses showed no higher levels than the control group. Exceptions were Fe and Mg; these accumulated in the pot and reached levels of up to five times that of the soil of the control plants. G. 'Ostara' is either quite tolerant to the elements mentioned, or the test levels were not high enough to evoke damage.

The soil analyses also presented us with some classic examples of antagonistic interactions. Because of a Ca excess, Mg, Mn and Zn levels in the soil were also raised, due to competitive absorption-inhibition.

Boron

Quite early on in the experiment, damage started to show in both excess groups. At first this manifested itself as a yellow discoloration, later on turning into desiccated brown foliage. The longer (or: more of) a boron excess was applied, the longer these necrotic leaf tips became. In our

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60x test group we found brown leaf tips up to 9 cm (3,5") long. From the soil analyses we can deduce that an amount of 8 $\mu\text{mol/l}$ (0,09 ppm) B in the soil is enough to cause the characteristic leaf tip damage (see Fig. 2).

The leaves of the boron test groups contained a significantly higher amount of B than those of the control groups; over 5000 μmol per kg dry matter (vs 80 in the old leaves of the control). 5000 μmol per kg dry matter (54 ppm) seems to be the absolute limit the leaves can hold, since this was the same for both old and young leaves in the excess groups. Anything above this will be accumulated in the soil, as the plant no longer absorbs it. It is however notable to see that, in the control groups, the younger leaves contain 15 times more B than the older leaves. According to literature, boron is not a very mobile element in the plant. But in *G. 'Ostara'* apparently some sort of relocation is taking place in favor of the younger leaves. Therefore the younger leaves will probably be more susceptible to boron damage.

Copper

Shortly after inducing the plants for flowering, it became clear that an excess of copper (20x and 60x) causes the older leaves to change color. The green fades away, the leaves turn a yellowy red and they start to curl up lengthwise. In an even later stage (or at a higher excess dose) the leaves desiccate from the tip down and turn brown. This affects only the few oldest leaves on the plant. See Fig. 3.

Copper is not a very mobile element in the plant. This can also be seen in the tissue analysis; the amount of copper in the older leaves is clearly higher than in the younger leaves. The soil analysis did not show a much raised Cu level, whereas the tissue samples contained a concentration of Cu that was 10 times that of the control group.

Calcium

In *G. 'Ostara'* no leaf damage was observed because of a calcium excess. But when using calcium nitrate in the fertilizer solution, a crystalline white residue can often be found on the tank and leaf margins (Fig. 4). Under certain circumstances this can lead to leaf burning. The basis of the leaves (at tank height) will then turn crenate with brown edges.

We have seen this specific type of damage in other Bromeliad cultivars, that is why we are very reluctant in using calcium in the fertilizer mix. In our own nursery Bromeliads grow on a fertilizer with no calcium at all, with very good results. Our customers get the same recommendation, but rarely follow this advice. This is because of the widespread belief that calcium is one of those chemical elements that have a key function in plant physiology. Of course this is true for most plants, but here we see an important difference with Bromeliads and other plants. Bromeliads have a very slow growth rate because of their adaptation to scarcity, and maybe their need for calcium is very limited because of the same reason. It is our experience that the small amount of calcium that is mixed into the potting soil (to get the right pH) is enough.

When comparing the formulation of the calcium fertilizers, we find that the biological calcium does not leave the characteristic white residue on the leaves. Therefore the risk of leaf burning is less. That is why we would recommend that a grower uses biological calcium instead of calcium nitrate, if he wants to use calcium at all.

Nitrogen

A nitrogen deficiency causes lightly colored plants that stay behind in growth. The plant shape becomes short and stocky with pale yellowish, broad leaves, that can even develop yellow or brown necrotic patches



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(Fig. 6). The inflorescence is also very short and light, but brightly colored.

When presented with a nitrogen excess, the plant turns a darker shade of green and grows long narrow leaves, that sometimes have small brown leaf tips. Very characteristically, flower induction can be (partially) inhibited, causing the occurrence of green inflorescences or plants with no inflorescence at all (Fig. 6). The physiological background of this phenomenon is that the switch from vegetative to generative stage can not be made on a high nitrogen level. Because of the nitrogen, the plant stays in “growing mode”.

Phosphorus

G. ‘Ostara’ experienced little discomfort from a deficiency of phosphorus. In the excess group, small yellow or brown leaf tips appeared (Fig. 5). In the soil samples of the excess group, the phosphorus level was hardly raised. Consequently, the plants must have absorbed most of it. Only one excess level was tested, but from experience and other experiments we know that phosphorus is an element that can easily cause large brown necrotic leaf tips when applied in overdose. The damage looks quite similar to that of boron excess, and is irreversible.

Potassium

Both deficiency and excess showed characteristic symptoms; these could visually be seen on the plants as well as in the soil samples. The deficiency caused dark green plants, whereas the excess group consisted of lighter colored plants. Both groups showed yellow leaf tips, and especially the excess group had lots of yellow leaf patches. The deficiency group showed a lot of brown necrotic leaf spots.

Conclusions and recommendations

- Deficiency of a single micronutrient will seldom lead to damage in *G. ‘Ostara’*. An excess of Fe, Zn, Mn, Mo, Mg or Al must

be quite high in concentration before damage occurs.

- Never add extra boron to the fertilizer mix; if the soil is pre-fertilized with PG-mix, boron will be sufficient for the entire growing period. Any boron excess will invariably lead to brown necrotic leaf tips. Aim to never exceed a soil boron level of 6 $\mu\text{mol/l}$ (0,06 ppm).

- When in excess, copper can cause damage to the oldest leaves. This starts as a yellow-red discoloration of the entire leaf, and leads to desiccation of the leaf from the tip down. The damage does not show until the later plant stages, and can better be predicted from tissue analysis than from soil analysis. We found considerable damage at 0,5 $\mu\text{mol/l}$ (0,03 ppm) Cu in the soil. This corresponded with 500 $\mu\text{mol/kg}$ dry weight (33 ppm) in the plant.

- Calcium nitrate leaves a white crystalline residue on tank and leaf margins. This can lead to burning of the margins. Calcium of a biological source does not display this problem. At Corn. Bak® BV, we advise against the use of calcium, but if you must use it we favour biological calcium.

- When lowering the nitrogen concentration in the fertilizing solution, you get a stockier plant with short, broad leaves. Its colour then changes to a lighter green, towards yellow. The inflorescence will turn very bright. When applying more nitrogen, you get luxuriant plants that are dark green with long narrow leaves. With a nitrogen application that is too high, the inflorescence stays green or the plant remains entirely in a vegetative stage, giving no inflorescence at all. Therefore always make sure not to fertilize the plants for a short period around flower induction time.

- A true phosphorus deficiency is not often found in *G. ‘Ostara’*. An excess of the element can easily lead to (large) brown leaf



Pit. 'Minda Red' (unreg)

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tips.

- Potassium plays an important role in Bromeliads. Both deficiency and excess can give cause to a lot of leaf damage in the form of discoloured leaf tips or spots. It is often difficult to visually distinguish deficiency from excess. Soil or tissue analyses may then be decisive.

Table 1. Control group fertilizer composition.

	in 1 liter fertilizer:
N	122 ppm 8,7 mmol
P	17 ppm 0,6 mmol
K	263 ppm 6,7 mmol
Mg	8 ppm 0,3 mmol
Fe	0,2 ppm 3,6 µmol
B	0,04 ppm 3,7 µmol
Cu	0,1 ppm 1,5 µmol
Mn	0,1 ppm 1,9 µmol
Zn	0,1 ppm 1,5 µmol
Mo	0,001 ppm 0,01 µmol

Table 2. Composition in ppm of single elements in fertilizer solution of excess test groups. Compare with table 1.

	excess 1	excess 2
Fe	4	12
B	0,8	2,4
Cu	2	6
Mn	2	6
Zn	2	6
Mo	0,16	0,48
Mg	88	176
Ca	70	210
Al	5,6	-
Cl	35	70

Table 3. NPK ratios tested. (Sometimes an element that is not being tested in a group, is also slightly different from the control group. In those cases it was technically impossible to create the exact desired ratio with the available fertilizers. It is unlikely, though, that this caused any problems for the test plants.)

	NPK ratio
control group	15-5-40
N deficiency	4-6-39
N excess	33-5-39
P deficiency	15-1-36
P excess	15-24-40
K deficiency	15-5-14
K excess	15-5-90

Table 4. Results. + : clear damage, - : no visible effect. See text for details.

	deficiency	excess 1	excess 2
N	+	+	
P	-	+	
K	+	+	
Mg	-	-	-
Ca	-	-/+	-/+
Fe	-	-	-
B	-	+	+
Cu	-	+	+
Mn	-	-	-
Zn	-	-	-
Mo	-	-	-
Al	-	-	-
Cl	-	-	-



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Guzmania 'Penny Wise' was *G. pennellii*

by Derek Butcher Feb 2008

This all started with comments made on the internet. You see I had this photo of *G. pennellii* on the web site fcbs.org and someone said I was wrong! Panic! This is how the story unfolds.

In 1980 or thereabouts a plant was imported from Jeffrey Kent called *Guzmania pennellii* into Coffs Harbour, NSW and Peter Tristram had his arm twisted on several occasions to release an offset. It grew well and flowered well in areas to the north. I know that John Catlan got an offset.

Who do you go to in time of need? Harry Luther of course! Harry did have this plant from Colombia, too from Kent but it was in his too hard basket and he did not know if it was a new species or a hybrid. It has no good origin or history so the chances of it being formally described as a species are remote. So we had a good plant that grew well without a name.

After much discussion Peter decided on 'Penny Wise', not only were we wise after the event but the first three letters linked to 'pennellii'! It flowers to about 60cm high and

Bromeliad Bonanza

5,6 April

**Society's Autumn Show and Sale of
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Saturday (5th) 8am-4pm

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Over 500 species/varieties/hybrids will be on sale. . Admission \$3.00 adults, children under 14 free if accompanied by adult. If you wish to sell plants, please let Nancy Kickbusch know (Telephone 3300 1704) so she can make some space for you.

Peter says it is quite hardy.

I enclose photos of what a *Guzmania pennellii* looks like and what 'Penny Wise' looks like. Please change your labels NOW!

A Letter from a Member

As a old frog from the nursery industry, collector and long time truly obsessed neomaniac, it never ceases to amaze me the dramatic variation one gets in these magnificent plants in varying light and nutritional levels.

Oh yeah, suppose you have heard it all before but it really does sadden me to see these extraordinary plants not grown to their full potential. So often I have seen over green leggy plants with their potential all over colour reduced to a central eye of glowing colour almost begging for attention.

Sadly, often this is seen even in nurseries where perhaps understandably space doesn't allow ideal plant placement. Often, if our dear Neo is really lucky it will wind up in the overly dark fernery at best. Sadly it seems our Neos are seen as just shade plants without further thought of the varying levels of shade.

So often we see in the home garden under a dark shade tree a clump of Neos. the gorgeous glowing centres waiting in hopes to attract attention of their once loving owner. Waiting patiently to be freed to show the world an exotic transformation, the centralized colour just a taste of their grand possibilities.

Once reintroduced back to their ideal world with the correct lighting these plants often can be barely recognized as the same plant! Sometimes, they will need to grow through even an entire generation...but the



result's truly rewarding and often simply stunning. Of course adjusting the plants to higher light levels needs to be done gradually and is best done during the cooler months. In our area [Wide Bay] I have found, many Neos can even be adapted to full sun in winter and placed back into a 50% filtered light prior to summer with stunning results.

An amazing example of some Neos grown in low light and high nutrient is shown here in some photos. Another photo shows the impact of over fertilization. Although the plants were green for much of their life, the plants were re-potted and potash alone added on a regular basis. These plants were also adjusted to full sun in our cooler months and now reside in the protection of a 50% shade house for summer.

Enclosed is also a photo of an interesting plant sold to me as *Aechmea* 'Red spike' but clearly a *Vriesea*. Food for thought, the purple foliage almost Neolike on this plant prior to flowering was even more widespread.

Cheers for now, Green Frog

Australian Virgin Cork

History

Stromio Forest and the area now known as Glenloch Cork Oak Plantation were used for cattle grazing in the early 1800's. The Commonwealth resumed the area on which the cork plantation now stands in 1931 and is listed on the ACT Heritage register and the National Estate register.

Glenloch Cork Oak Plantation was part of Walter Griffin's concept was to make Canberra commercially self-sufficient.

The first acorns came from a tree at Duntroon. A larger consignment was ordered

from Spain, but was lost during WW1 by a torpedo strike, the second consignment from France was successful. By 1920 in excess of 9500 cork oaks had been planted.

Cork Oak (*Quercus suber*)

Cork oaks fruit every two to three years and produce large quantities of acorns. Cork oaks can grow to 20 metres and reach a diameter of one metre. They are very drought tolerant and can live up to 400 years.

Cork comes from the outer bark of the tree. The quality of the cork varies depending on soil type, the poorer soil, the slower the growth, the better the cork quality. Properly harvested cork can be removed without damaging the tree and the new layers regrow every year. The trees can be stripped every nine to ten years.

Cork harvesting in Stromio Forest commenced in the late 1940's and manufacturing took place in Melbourne by GP Embleton & Co. In 2001 professional cork strippers from Portugal were employed to remove the cork. This was primarily 'virgin cork' used for plant nursery applications.

This bark comes in the form of flat to slightly curved sheets which range in size from 150mm to 800mm long. Some huge slabs are available for those wishing to create specimens.

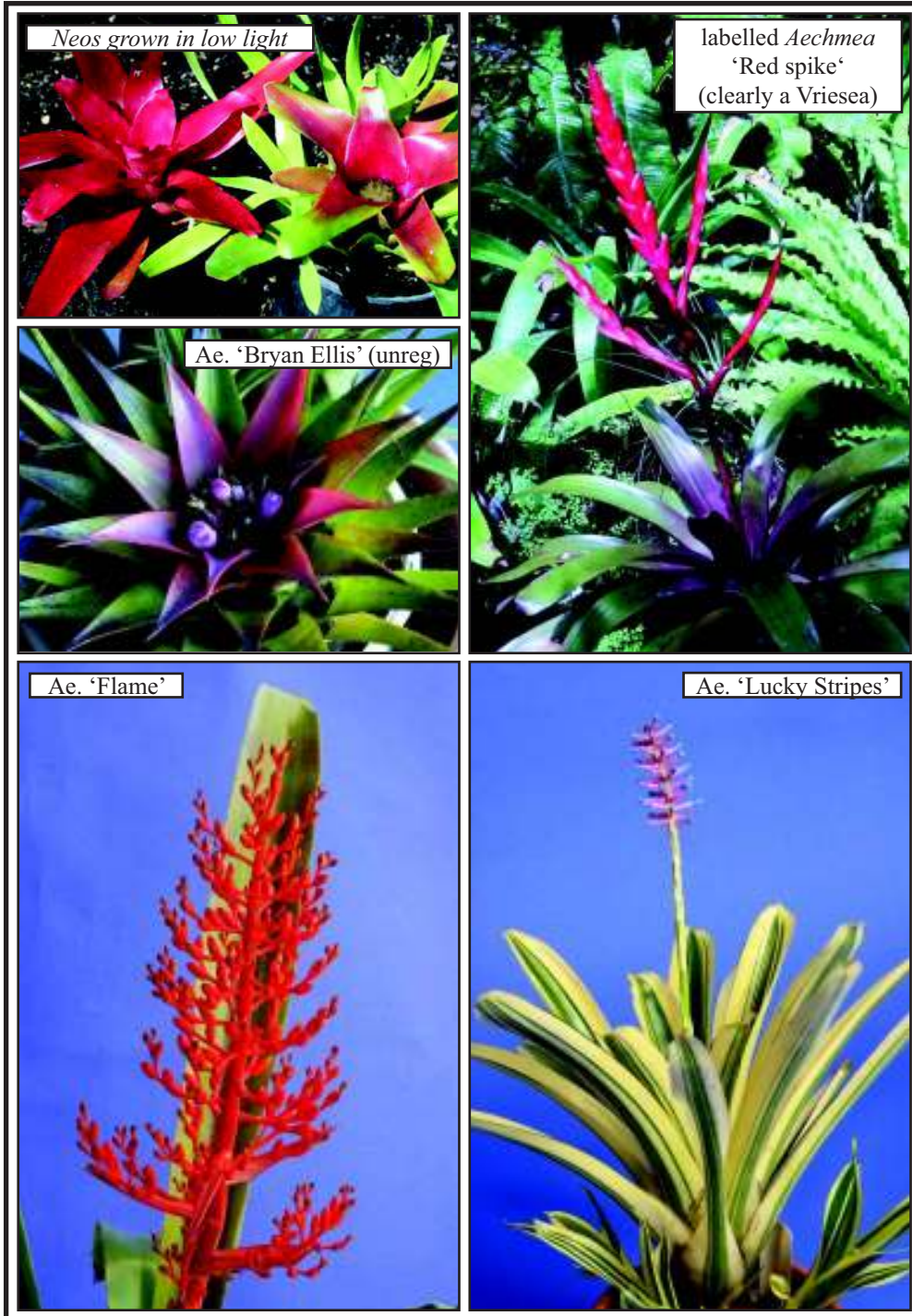
Virgin cork is also an ideal mount for epiphytic orchids and other plants such as *Tillandsias*. It also has many other craft and building applications.

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Bromeliaceae

Amendments to BSQ Constitution

Author: Greg Aizlewood 20/2/2008
Sub-Committee Chairperson

Reason

Since changes to the Associations Incorporations Act 1981 (the Act) and the Associations Regulations 1999 (the Regs) have been introduced by the statutory body our constitution has been found to be lacking in that it does not always reflect the requirements of the legislation governing incorporated societies. As the society opted to adopt our own set of rules on inception we are obligated to ensure that they comply with the requirements of the Act and Regs.

In addition some items within the present constitution may require change from time to time eg.(Fees and meeting times) which under the legislation would constitute an amendment to the document and subsequent submission to the applicable governing body for approval each time. This could become an inconvenience, be easily overlooked and then become an embarrassment.

Finally the management committee was concerned that some members appeared unaware of roles and responsibilities of the office bearers within the society, member's responsibilities, how and when plant sales take place? or if I have a complaint what do I do?

Decision

The management committee decided to form a sub-committee to review the present registered version of the constitution for;

- (a) compliance with the Act and Regs,
- (b) clarity of phrase; and
- (c) ease of understanding.

Also the sub-committee was tasked

with developing a set of by-laws, to address the issue of avoiding regular change to sections of the constitution and develop procedures that give guide lines to matters such as, roles and responsibilities, everyday functions of the society, complaints etc.

The management committee requested that the format for these documents be designed to facilitate ease of update and traceability

Sub-Committee

The sub committee consists of Greg Aizlewood (chairman) Ross Stenhouse and Glenn Bernoth.

Action

The sub-committee has reviewed the registered constitution and prepared a draft version of the constitution which addresses the requirements of the Act and Regs (as of 12/2/08), clarity and ease of understanding.

In addition the sub-committee has developed a draft set of by-laws.

Consultation

The draft version of the proposed amendment to the constitution will be posted on the society web site. Some of the text within the draft is highlighted, the yellow signifying material which has been included, while the green indicates material which has been replaced because it is superfluous or has been included in the text in a revised format. Any material not highlighted will remain unchanged.

A spread sheet named "Proposed Amendments to BSQ Constitution" and dated 20/02/2008 summarizing the proposed changes has been prepared and also posted on the society web site. Interested members can register their personal opinions and preferences by down loading the spread sheet from the web site, completing the "Agree / Disagree" column, adding comments, completing the signatory segment and, returning the spreadsheet to the sub-committee.

Also a draft version of the proposed by-laws has been prepared and posted on the society web site for comment

Those members who do not have access to the internet and wish to voice an opinion on the proposed amendments may do so by registering a request in writing to the sub-committee for supply of copies of the revised constitution, the accompanying spreadsheet and proposed by-laws. On receipt of the request the sub-committee will forward to the interested party (personally or by the first available mail) registered copies of the draft proposed amendment to the constitution, the accompanying spread sheet and draft by-laws.

Please be advised that these drafts consist of approximately fifty pages in total and the total postage and handling costs associated with a package of this size to a large number of members could be prohibitive. Therefore the sub-committee would like to encourage the use of the electronic media where possible and consequently keep the costs down.

Members reviewing the proposed amendments are reminded that their attention should be drawn to the content of the documents and ignore any grammatical, spelling or structural errors.

Presentation

The results of the returned registered spreadsheet submissions relating to the amendments will be made public at the May general meeting dated 15 May 2008

Timing

To ensure the introduction of the proposed amendments is punctual, those wishing to offer an opinion are asked to do so and return the signed spreadsheet and any further comments to the sub-committee before 10 pm on the 17th of April 2008

Proposed Procedure

- Review present constitution for compli-

ance, clarity etc;

- Issue proposed amendments for consultation;
- Collate the responses from the spreadsheet;
- Present the spreadsheet to a general meeting for resolution (responses included)
- When resolved generate a draft incor-

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porating the proposed amendments

- Review by the management committee
- Produce a final edition of constitution and by-laws
- Move a special resolution to incorporate the amendments (June 2008) (Act 1981)
- Submit the amended documents to the chief executive within 3 months of the resolution being passed (Act 1981)
- On approval three controlled copies of the constitution and by-laws will be incorporated into our library while the president, secretary and, treasurer will each receive a controlled copy.
- An uncontrolled copy of the above documents will be available via our web site at www.bromsqueensland.com

References

- Associations Incorporated Act 1981
- Amending rules Part 5 div 2
- Special Resolutions Part 1 div3

The Sub-committee may be contacted via mail at the following address:

The Constitution Sub-Committee
C/- Greg Aizlewood
15 Royal Palm Drive
Woongoolba 4207

Neoregelia uleana

by Derek Butcher 2/2008

When I was investigating *Neoregelia* species in Australia in the early 1990's this species was not a worry because it was said to be not in the USA or Australia. So it was rather a surprise when Mick Romanowski of Melbourne gave Margaret a plant with this name in 2007. In 2008 it flowered but because

we only had one plant Margaret would not let me butcher it!

Although I did not take the flower to pieces, referral to the description in Smith & Downs revealed that our plant was almost half sized which really had me worried. For example the leaves were 20cm long instead of 32cm long and the inflorescence was only 2cm diam compared to 6cm. The plant was originally described from cultivated material found in the National Museum in Rio de Janeiro in 1896, from unknown origin.

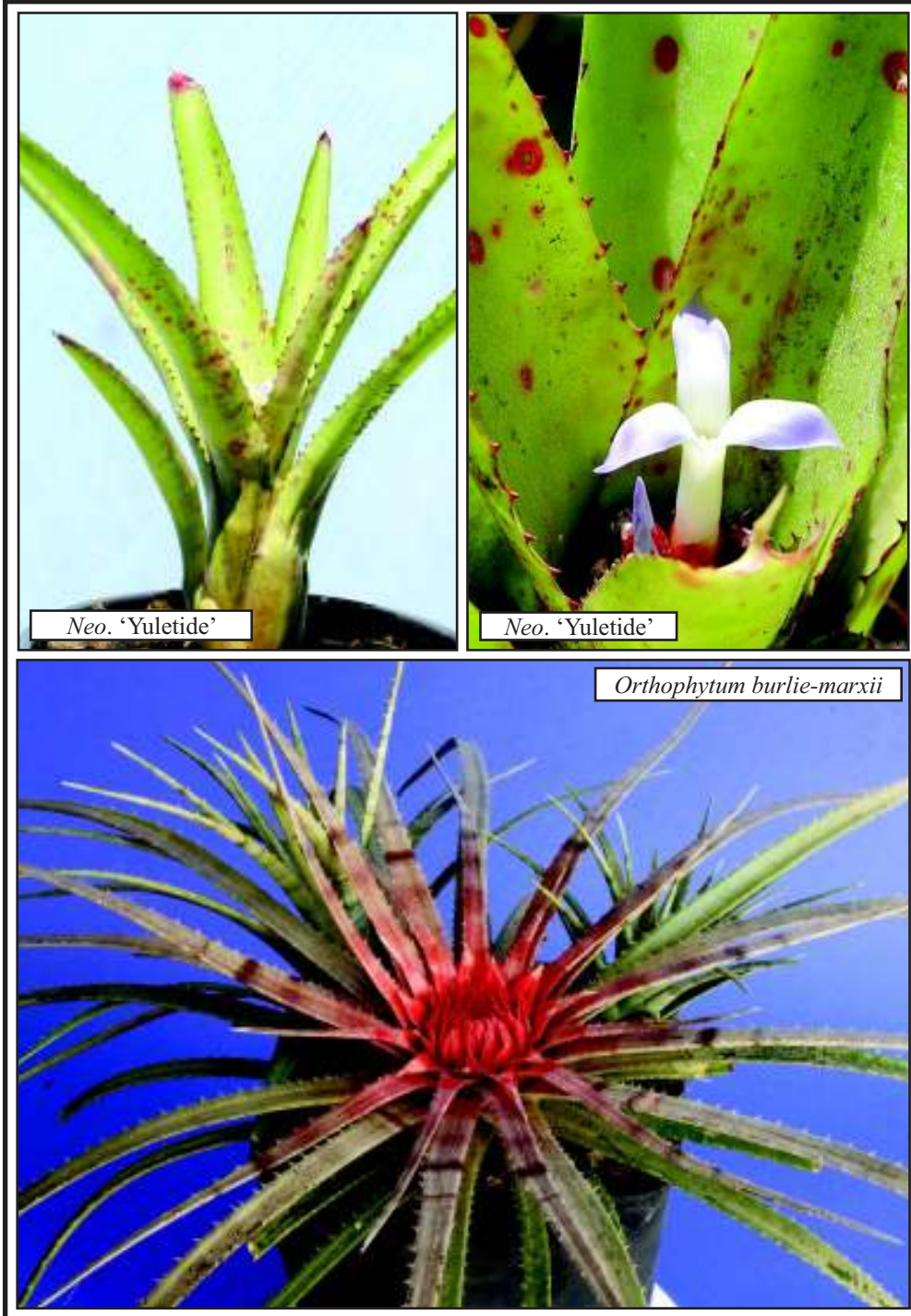
I asked Mick Romanowski where he had got the plant and he said Pinegrove Nursery in NSW. They, no doubt would have got it from the USA.

I contacted Harry Luther about my problem, who, at his laconic best, sent me a copy of the original herbarium specimen. He was aware of the plant called *N. uleana* in the USA but was not venturing an opinion as to its identity. You see, nobody had any idea where it had, or if it had, been collected in Brazil. We do not know who identified it, either. In these cases, Harry sees no benefit in trying to identify from a scientific point of view.

In my view it is not even worth calling it *Neoregelia aff. uleana* but better to give it a cultivar name to emphasise the doubt as to what it might be. It seems the use of a similar sounding name like 'Yuletide' is the way to go and details of this plant will be in the Cultivar Register.

Is this your last copy of Bromeliaceae?

Memberships not renewed before the next issue of the journal will be deemed to have lapsed and the mail-out list adjusted accordingly.



Neo. 'Yuletide'

Neo. 'Yuletide'

Orthophytum burley-marxii

Did You Know?

Contributor: Peter Paroz

Fossil bromeliads have been found in sediments approximately 35 million years old; close to the end of the Cretaceous period

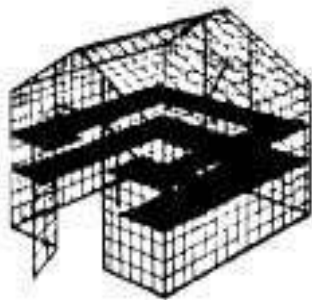
Bromeliads were first introduced into cultivation in Europe; *Guzmania lingulata* in 1776, *Aechmea fasciata* in 1828 and *Vriesea splendens* in 1840.

The fibre from pineapple leaves has been made into shirts in the Phillipines; and in the Americas *Neoglaziovia variegata* fibre has been made into fabric, netting and rope.

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Brom Watch Townsville

Published by Rob Smythe

The following short article was published in the March 2008 edition of "Brom Watch Townsville" a magazine published via email. Contact the editor at the following email address if you would like to be put on his distribution list.

rsmythe5@bigpond.com

Scarab Beetle Grubs: These white fat grubs which breed furiously in your mulch and yellow your lawn by eating the roots of your grass will, when hungry, turn against your broms, especially the non woody types like guzmanias and vrieseas. In the past I have mentioned many ways of minimising

Annual Subscriptions

Membership fees (\$15 - Single, \$20 - Family, \$30 Overseas) are due and payable as of 1st January 2008. Prompt payment will greatly assist the treasurer and Membership Secretary.

Post renewal fees to:

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their damage by means other than chemically exterminating them. This year I have grown vulnerable plants in pots and then dug a hole in the ground and placed a pot the same size in the ground first. Then I put the potted plant inside this pot with the holes mismatching. So far it is working and I am assuming it is because the pots can still drain but the grubs are too fat to get in.

The Book!

"Starting with Bromeliads" is 100 pages in length and contains over 200 colour photographs of bromeliads and covers such topics as plant descriptions, caring for bromeliads, and landscaping with bromeliads.



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From the Conference Cauldron – March 2008

Author: Lynn Hudson

At beginning of March we have 335 registered for the WBC in June and they continue to arrive in Dan's mailbox. The \$US165 rate ends on 30th April 2008 and then becomes \$US200, so get those forms in. The seminar room holds 600 and 400 for Banquet, so we still have plenty of room.

Those who have registered have received a six page letter with lots of information and some forms to be completed and returned to me. If your form is not returned, please do so as I need the information for planning.

Our Monster Raffle is now open with 20 prizes, the lowest prize value being \$30. Tickets are available at all societies and from me. Seminars will be on Friday & Saturday with local gardens tour on Sunday, culminating with the Banquet at 6.30pm. There are still some persons who expect a conference

to be too technical for average growers. This certainly is not the case; a bromeliad conference is fun, learning, plants and friendship for every grower. Come join us, you will have fun while you learn.

Each registrant is encouraged to bring at least one plant for the competitive Show and some sale plants. Displays by societies, nurseries and hobbyists will festoon the foyer in a feast for the soul. The sale section will be open to the public on Friday & Saturday afternoons & on Sunday morning.

The Show Schedule and Registration Forms are available online at www.bromeliadsdownunder.com or www.bsi.org or phone me on 07 40 533 913.

I am aware some readers for several reasons cannot attend society meetings but are eager to attend the conference. Feel free to contact me by email, telephone or snail mail for forms or information. If you are on line I will be putting all information on the website and forms are downloadable on the BSI site www.bsi.org

Calendar of Events

5,6 April Society's Autumn Show and Sale of Bromeliads at Mt Cootha Botanic Gardens. Over 500 species/varieties/hybrids will be on sale. Saturday (5th) 8am-4pm Sunday (6th) 9am-3pm. Admission \$3.00 adults, children under 14 free if accompanied by adult. If you wish to sell plants, please let Nancy Kickbusch know (Telephone 3300 1704) so she can make some space for you.

May 18th [Sunday] 2008. Field Day at the home of Anne McBurnie and Philip Beard, 5 Timbertop Court, Capalaba. Ph. 32060807. The garden will also be part of the Open Garden Scheme in late November this year. One and a half acres of landscaped gardens, including beautiful, big bromeliads and fabulous bougainvilleas. Prize winning bromeliads for sale. Please bring a plate to share, a fold up chair and a coffee cup. Sales start 9am. Morning tea ongoing. Welcome and young students performing poetry on the garden stage at 10 am.

24-30 June 2008 - World Bromeliad Conference No. 18 - Cairns, Australia. For further details visit the event web site www.bromeliadsdownunder.com or contact the organizer Lynn Hudson at lynnhudson@bromeliadsdownunder.com or contact Greg Aizlewood on (07) 55461161 or if you prefer contact Lynn Hudson on phone (07) 40 533 913

GENERAL MEETINGS of the Society are held on the 3rd Thursday of each month except for December, at the Uniting Hall, 52 Merthyr Rd., New Farm, Brisbane, commencing 7.30 pm. Classes for beginners commence at 7.00 pm.

Plant of the Month Programme for 2008

FEBRUARY:	Ananus, Intergeneric Plants, Tillandsias and Full-sun Neoregelias.
MARCH:	Cryptanthus, Tillandsias, Full-sun Aechmeas and Canistrums
APRIL:	Cryptanthus, Tillandsias and Succulents
MAY:	Spotted Neoregelias, Orthophytums, Tillandsias and Variegated Bromeliads
JUNE:	Alcantareas, Foliage Vrieseas, Dyckias, Hechtias and Asterias
JULY:	Billbergias, Pitcairnia, Cerepegias, Hoyas, Nidulariums and Agaves.
AUGUST:	Billbergias, Foliage Vrieseas, Catopsis and Miniature Neoregelias.
SEPTEMBER:	Billbergias and Guzmanias.
OCTOBER:	Vrieseas, Neoregelias, Nidulariums, Guzmanias and Crassulaceae.
NOVEMBER:	Not often seen Bromeliads and Succulents

Competition Schedule for 2008

Novice, Intermediate and Advanced in each Class of the Mini-Shows and in the Popular Vote.

January: MINI-SHOW

Class 1: Aechmea - species and hybrids

Class 2: Vriesea - species and hybrids

Class 3: Dyckia - species and hybrids

Class 4: Any Other Mature (flowering) Bromeliad - species and hybrids.

February : **POPULAR VOTE:** Any Genus – species or hybrid, Novelty Bromeliad Display

March: **POPULAR VOTE:** Any Genus – species or hybrid, Novelty Bromeliad Display

April: MINI-SHOW

Class 1: Bromelioideae not listed elsewhere in the schedule – species and hybrids.

Class 2: Guzmania - species and hybrids

Class 3: Pitcairnia and Pepinia - species and hybrids

Class 4: Any Other Mature (flowering) Bromeliad - species and hybrids.

May: **POPULAR VOTE:** Any Genus – species or hybrid, Novelty Bromeliad Display

June: POPULAR VOTE: Any Genus – species or hybrid, Novelty Bromeliad Display

July: MINI-SHOW

Class 1: Billbergia - species and hybrids

Class 2: Tillandsioideae not listed elsewhere in the schedule – species and hybrids.

Class 3: Neoregelia - species and hybrids – up to 200mm diameter when mature.

Class 4: Any Other Mature (flowering) Bromeliad - species and hybrids.

August: **POPULAR VOTE:** Any Genus – species or hybrid, Novelty Bromeliad Display

September: **POPULAR VOTE:** Any Genus – species or hybrid, Novelty Bromeliad Display

October: MINI-SHOW

Class 1: Neoregelia - species and hybrids – over 200mm diameter when mature.

Class 2: Tillandsia - species and hybrids.

Class 3: Pitcairnioideae not listed elsewhere in the schedule – species and hybrids.

Class 4: Any Other Mature (flowering) Bromeliad - species and hybrids.

November: **POPULAR VOTE:** Any Genus – species or hybrid, Novelty Bromeliad Display

Note 1: Class 4 in each Mini Show schedule provides for any flowering bromeliad that would not be in its prime for the appropriate Mini Show.

Note 2: Class 1 (April), Class 2 (July) and Class 3 (October) provide for plants from these subfamilies not elsewhere included in the Mini Show schedule.

Ae. phanerophlebia



Bromeliaceae

48

Jan/Feb 2008