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The Bromeliad Society of Queensland Inc.

P. O. Box 565, Fortitude Valley
Queensland, Australia 4006,
Home Page www.bsq.org.au

OFFICERS		
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VICE PRESIDENT	Vacant	
PAST PRESIDENT	Wayne Lyons	(07) 3202 8454
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Front Cover: *Tillandsia bulbosa x streptophylla* Photo by Ross Stenhouse
Rear Cover : *Tillandsia tectorum* Photo by M Romanoski

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Special Edition

This edition is additional to that normally produced by an editor during his term. The editor normally produces issues 2 to 6 in the year and then issue 1 in the following year. However, it has been decided that I as editor should have the added enjoyment of producing a 'back' edition to cover off what would otherwise have been a 'missing' volume and no doubt puzzled collectors of Bromeliaceae in future years

This edition is a bit of a 'Tillandsia Special' with most of the articles being about that genus. Work has commenced on the Jan/Feb 2006 edition, but its not yet apparent just what the theme will be. Its dependant to a large extent on the contribution of submitting writers.

There has been a small amount of debate about the influence of *Tillandsia bulbosa* in the plant shown on the front cover. There is a registered cultivar by the name of 'Showtime' which is what some would expect with such parents. In view of the article on 'The Influence of Grey-Leaved Tillandsia species in Hybrid Crosses' by Bob Reilly published in the last issue of Bromeliaceae it might be of interest to some join the debate.

All the photographs in this edition with the exception of the read cover are my work.

regards Ross Stenhouse, Editor

BROMELIAD TIPS: SERIES 4

(by Bob Reilly)

1. Grey-leafed tillandsias are often mounted on short lengths of 20 to 40 mm wide branches of callistemon and leptospernum trees. One way to utilise more of the material in these trees, is to cut 50 to 100 mm wide branches into "biscuits" of 15 to 20 mm width. This is achieved by sawing each branch at right angles to its longest axis. Tillandsias can then be glued onto the biscuits, which can be suspended by means of a length of wire fastened to them.

2. Large, spiny bromeliads are often best grown as "background" plants. Not only will they grow well, but people will be protected from them.

3. When tillandsias are grown in pots, the potting mixture used is often comprised of pine bark and charcoal. It can be difficult to hold large pups firmly in position with such a mixture. One way of dealing with this issue is to hold the pup in position with a plastic "hanger". The three "legs" of the hanger hold the pup firmly upright, without damaging it.

4. One method of hanging pots from a weldmesh-covered wall is to secure the pots, with lengths of wire, to the weldmesh. The lengths of galvanised wire are shaped into semi-circles (so as to fit tightly around a pot) with a hook at each end. Medium gauge fencing wire is suitable for this purpose.

5. Bromeliads are often left in their pots when placed in landscaped areas. This makes it easier to move them around so as to obtain the best growing conditions throughout the year. One way to avoid disturbing the landscaped area when the plant is shifted, is to place a pot in the ground, and then put the bromeliad (complete with its pot) into it. When the plant is removed, the pot placed in the ground remains, and is ready for the next bromeliad.

6. Mature plantings of trees and shrubs will usually produce significantly more shade than young plantings. Over time, the best bromeliads to plant under these trees and shrubs will also change. Initially, ones adapted to relatively high light levels, such as neoregelias and aechmeas may do best. Later, those bromeliads which prefer more shade, such as nidulariums and vrieseas, may perform better.

7. Some bromeliads rapidly produce large clumps when planted into the ground. So, unless you are willing to continually remove offsets (pups), allow enough space for a clump in the garden's design.

8. At certain times of the year, some trees shed a large number of their leaves. Others shed many "spent" blossoms. If they are not removed from the "cups" or "vases" of tank-type bromeliads, then some of these plants may rot.

9. Some bromeliads can send out underground "runners" over 50 cm long. Examples include many *Bromelia* species, and some pitcairnias and orthophytums. If such bromeliads are planted in a garden, it may be best to plant them near features, for example concrete pathways, which can help confine their spread.

10. Some bromeliads have long, hanging flowers over a metre long. These plants will often look their best if they are grown in a hanging basket or pot suspended from a shadehouse's roof. Another method is to fix their pups to a tree, above eye-level. When they mature and flower, you and your visitors will then be able to easily see

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Tillandsia 'Enano'

by Derek Butcher

This plant (see photo on the rear cover) was imported by Maurice Kellett in Victoria AU from Werner Krauspe in the 1980's. See advertisement in J. Brom. Soc 34(2): 89. 1984 which shows *Tillandsia tectorum enanum minor.* This plant breeds true from seed and many of us grow it in Australia.

First let us look at the name where 'enanum' in Latin means 'not dwarf' and then there there is 'minor' that means 'small'. It is a confusion of terms. Someone may have been trying to latinise 'Enano' the Spanish for dwarf and Spanish is spoken in Peru where this plant is supposed to originate - according to Werner Krauspe. We know that Werner did import from Karel Knize in Peru but despite many other names being used by Knize in his catalogues in this period this is not mentioned! We know that Knize thought up many latinised names without even wondering if the plants would be properly described. It appears that Werner Krauspe was of a similar frame of mind!

So for the last 20 years this plant has been happily growing and being reproduced faithfully from seed as well as offset, throughout Australia. Enquiries on the Internet in 2005 suggest that this plant is not alive in the USA.

We knew that Die Bromelie intended to publish in 2005 a Special edition for the *Tillandsia tectorum* complex written by Lieselotte Hromradnik. Here was a chance to find out about OUR plant. It looked like a smallish *T. tectorum* but had totally blue flowers not bicolored blue and white. It rang no bells for Lieselotte and we had no provenance to help her.

Perhaps this plant may be found again in the wild but in the meantime we intend to give it the cultivar name of *Tillandsia tectorum* 'Enano' not to be confused with the *T. latifolia* 'Enano' of Paul Isley.

The plant can be described as being acaulescent, about 20cm diameter with a scape 7.5cm long. The inflorescence is compound, almost capitate, about 3cm long with lepidote primary and floral bracts as well as sepals. The petals are totally blue/violet. It is interesting that Baker in 1889, Mez in 1935 and Smith in 1977 refer to *T. tectorum* as having bicolour petals but Gilmartin in The Bromeliaceae of Ecuador in 1972 refers to petals as being violet (we presume totally)! It is perhaps with tongue in cheek that we continue with the name 'Enano' because the plant is not dwarf! However, it is much smaller and fluffier than the large *T. tectorum* usually associated with Ecuador.

Potting Mixes ... Discovering the 'Secrets'

Editorial Comment: Extract from article of similar name printed in 'Bromeliad' Vol. 45 P18, October 2005, Journal of the Bromeliad Society of New Zealand

Every bromeliad grower has their own idea of the perfect potting mix. Here what some of our prominent (NZ) grower / members had to say.

Peter Waters

I use equal parts of medium bark, medium pumice and peat. This gives a fairly porus mix that retains some moisture. To this I add a small amount of fertilizer to give the pups a kick-start. Equal parts of sulphate of potash, sulphate of ammonia and triple

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BOOK REVIEW: A BROMELIAD GLOSSARY (2ND EDITION)

(by Bob Reilly)

This booklet was compiled by Pamela Koide. It was published by the Bromeliad Society International in 1998, and is available from that organisation. From October 2004, it will also be available from the Bromeliad Society of Queensland.

The book's focus is summed up in its' foreword:

"…This glossary is designed for use by bromeliad growers and readers of the Journal of the Bromeliad Society to aid them in understanding much of the terminology used to describe Bromeliaceae…"

The next 48 pages of this booklet are devoted to achieving this objective. Botanical terms are arranged alphabetically, commencing with "…a-an: (meaning) without…", through to "…zygomorphic: Divisible into similar halves into one plane only; said of an irregular flower in which the parts are not alike…". Over 1,200 terms are clearly defined, although the definitions used for some of them may require reading a couple of times so as to make their meaning clear. (This statement is not a criticism of the book, rather, it recognises that some terms have relatively complex definitions.)

Not only botanical terms are defined. Instead, terms generally relevant to growing bromeliads are covered. Examples include: vermiculite, ubiquitous, tissue culture, tableland, peat, parameter, hapuu, fir bark, and auxin.

The booklet also contains a listing of bromeliad genera, although more current listings are available. The listing is followed by short biographies for over 20 people who have had a significant influence on our understanding of the bromeliad family. The booklet concludes with a listing of floral details and some minor topics.

If you are interested in reading botanical descriptions of bromeliads, then this book is well worth acquiring. Only professional botanists are likely to require a more comprehensive book.

BOOK REVIEW: GROWING BROMELIADS (2ND EDITION)

(by Bob Reilly)

This book was compiled by the Bromeliad Society of Australia. It was edited by Barry Williams, while over 15 people made a contribution to the book's contents in various ways. The book was published by Kangaroo Press in 1990. It can be purchased from the Bromeliad Society of Australia, overseas' distributors, and the Bromeliad Society of Queensland.

Growing Bromeliads has 112 pages, and is an introduction to growing bromeliads in Australia. As such, it is a very useful book for someone who has a few bromeliads and wishes to find out more about how to grow them.

The book commences with a brief introduction to the origin, distribution, and ecology of bromeliads. Their introduction into horticulture, especially in Australia, is then briefly covered. This is followed by a description of the various bromeliad "groupings", namely, sub-families and genera. Comments on the distribution and, in some cases, broad cultural requirements, of various genera are provided.

In chapter 4, a range of situations in which the average grower can grow bromeliads is discussed. They include: garden

settings, balconies and verandas of units and houses, inside the home, shade houses, and glasshouses.

There then follows a number of chapters in which the commonly grown genera are discussed in some detail. For each genus, general growing requirements are described, and a range of available species/ hybrids outlined. Each of these chapters was written by someone who has achieved considerable success in growing bromeliads of that genus. Genera covered are: *Aechmea, Ananas, Billbergia, Cryptanthus, Dyckia and Hechtia, Guzmania, Neoregelia, Nidularium, Tillandsia, and Vriesea.* These chapters are followed by a chapter on the genera relatively rarely encountered in cultivation such as: Bromelia, Canistrum, Catopsis, Hohenbergia, Pitcairnia, Portea, and Quesnelia. In total, over 400 species/ hybrids are discussed.

Methods for propagating these plants, both from offsets (pups) and through seed, are then discussed. Chapters on bromeliad biology, variegation in bromeliads, and the pests and diseases of these plants, then follow. An out-of-date listing of bromeliad societies, nurseries, and other books on bromeliads, is then presented. The book concludes with a listing of bigeneric hybrids, a short glossary of botanical terms, and an index.

There are about 100 colour photographs of bromeliads on pages 49 to 64 of the book.

As the book was published in 1990, it is not surprising that many of the hybrids grown today are not covered in the book. Some of the other information presented is also not current. From that perspective, *Bromeliads for the Contemporary Garden* is a more useful publication. However, the latter book does not deal as well with the requirements for growing bromeliads under Australian conditions.

Overall, it is well worth considering purchasing this book if you are starting to grow bromeliads.

USING LIQUID FERTILISERS

(by Bob Reilly)

The regular use of liquid fertilisers improves the growth and flowering of many bromeliads. This article may help you achieve these results.

There is a lot of debate as to which bromeliads benefit from liquid fertiliser. While an individual plant's response will depend on many factors, for example whether there is sufficient light and water for it to use the nutrients supplied by the fertiliser, some groups of bromeliads are more likely to respond better than others.

As a general rule, bromeliads in the Tillandsioidea group (sub-family) respond well to liquid fertilisers. These cover genera such as: *Alcantarea, Catopsis, Guzmania, Racinaea, Vriesea, Tillandsia and Werauhia.* While bromeliads from other sub-families may also respond well to liquid fertilisers, problems such as plant "malformation" and loss of leaf colour can arise. So, it is best to proceed with caution in such cases.

The "best" liquid fertiliser to use is the subject of much debate. A lot depends on your growing conditions including water supply.

Probably, the key factors in deciding which liquid fertiliser to use are the amounts of nitrogen, phosphorous and potassium. These are represented by the symbols N, P and K respectively.

As a general rule, aim for those liquid

Tillandsia utrictulata spp pringlei

Tillandsia vicentina

Tillandsia lydiae

Tillandsia roseiflora

fertilisers which have a relatively "low" value for N, and a "high" value for K. The Bromeliad Society of Queensland sells a liquid fertiliser which has been specially formulated for bromeliads. Its N:P:K ratio is 3:8:25. In contrast, a widely available liquid fertiliser, Phostrogen, has an N:P:K ratio of 14:4.4:22.5. However, while the bromeliad – specific liquid fertiliser may give you the very best effect, you can usually obtain very good results with a product such as Phostrogen.

Some people apply liquid fertilisers only when the plant is actively producing new leaves. However, the plant may be using or storing nutrients even when they are not producing new growth. For example, they may be initiating the production of a flower spike, producing seed, or growing roots. Thus, it is usually best to apply liquid fertilisers throughout the year.

Best results are obtained when liquid fertilisers are used on a regular basis. If your fertilising schedule is more akin to a "feast", followed by a long period of "famine", then plants may not respond well.

Initially, apply the fertiliser at the concentration, and time intervals, recommended by the product's manufacturer. However, after some experience, you may achieve better results under your growing conditions by varying this approach.

The residue from liquid fertilisers appears to "burn" some bromeliads if it remains on their foliage when the temperature exceeds 30 degrees Celsius. One way to avoid this situation is to apply the liquid fertiliser in the evening, if day-time temperatures are likely to exceed 30 degrees Celsius, and hose the plants thoroughly early the next morning.

There is a wide variety of ways of applying liquid fertilisers. Some people dip their plants in a container of diluted liquid fertiliser, others use "hose applicators", while others use pressurised sprayers. The fertiliser's manufacturer normally gives useage recommendations for all of the common application methods.

It is usually best to apply liquid fertilisers just after you have completed a normal watering.

WATERING ATMOSPHERIC TILLANDSIAS

(by Bob Reilly)

Growers are sometimes given conflicting advice on the best time of the day to water atmospheric, or grey-leafed, *Tillandsias*. The conflicting advice centres on whether or not to time your watering so the plants are dry at night.

One issue to consider in this debate, is when these *Tillandsias* actively absorb carbon dioxide from the atmosphere. In turn, this enables them to produce the stored energy (mainly in the form of starches) which they need to survive.

Carbon dioxide is absorbed through tiny pores (stomata) in the plants' leaves. However, if the leaves are wet, the stomata are closed and the plants cannot absorb carbon dioxide. Unlike most other bromeliads, the grey-leafed *Tillandsias* absorb carbon dioxide at night. A detailed explanation if this phenomenon is given in Flower (2001).

So what does this mean for watering atmospheric *Tillandsias?*

First, these plants sometimes experience rainfall or misty conditions which last all night in nature. Thus they can periodically be wet all night without suffering any

adverse effects.

Second, as long as the plants' leaves are dry for most of the night, they can absorb the carbon dioxide they need. Based on my experience, a night time temperature likely to exceed 15 degrees Celsius combined with a humidity of less than 70%, will enable the plants to dry out from a late afternoon watering, by mid evening.

If these weather conditions are unlikely to exist, it may be best to avoid late afternoon waterings. (This will also minimise the chance of rot occurring).

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Flower, A (2001), *Vampires, Tillandsias... Things That Go Suck In The Night*, Bromeliad Society International Website.

A WORD OF WARNING FOR NEW MEMBERS

(by Chet Blackburn)

Editorial comment (Bob Reilly) Reprinted, with permission of the Bromeliad Society International, from the Journal of The Bromeliad Society, 1998, volume 48 (1), pp. 14-15. In this article, Chet Blackburn, then editor of the Journal, outlines, in a light-hearted manner, the various stages of bromeliad "addiction". To help give some more context to the article, Mr Blackburn lives in California.

It all starts out so innocently! You go to a nursery or chain store to pick up a few seedling tomato plants for your garden. Then you see "It".

More often than not, "It" is an *Aechmea fasciata* … that strange being that is both bizarre and beautiful at the same time. Its silvery banded foliage and huge bright rose-pink inflorescence peppered with baby blue flowers is quite unlike any other plant you'd ever seen before. You stop in your tracks. You cannot help but stare at it for a moment. That moment can become one of those defining moments of a lifetime. The less curious, but nonetheless wiser among us simply stare briefly and then move on, never aware of how closely they had come.

Those with more curiosity than common sense however, pause long enough to ask the person behind the counter about "It". That worthy informs us that "It" is "a bromel-iad". When pressed further, he advises us that a bromel-iad is some kind of cactus or orchid, and that you're only supposed to put water in the center of the plant … never in the soil, or maybe you're supposed to "mist it".

Unfortunately, since the Federal Drug Administration does not yet require a warning label on bromeliads advising of their addictive nature, you are blissfully unaware of the potential hazards to your financial health. You buy "It", and so begins your headlong plunge into the murky world of the bromeliad counterculture.

You will soon find out that, like the potato chip that advertises, "Bet you can't just eat one!", *Aechmea fasciata* usually proves to be just the first in a long string of bromeliads encountered over the ensuing months that simply can't be resisted. The addiction takes hold rapidly and somewhere around the third or fourth bromeliad, you are beyond rehabilitation. You not only have to more and more bromeliads; you have to have more and more frequently!

Then, you move on to the harder stuff … the stuff that isn't sold over the counter at nurseries and discount stores … the rare stuff found only through the mail from plant pushers in Florida and Southern California. At first, you have no idea what you are ordering; the description in the cata-

Tillandsia ionantha

Tillandsia bradeana
(was T. abdita)

Tillandsia bulbosa

logue just sounds interesting! You start winding up with plants with strange sounding names like *Canistrum* and *Quesnelia*. However, as you become more sophisticated you actually know what you want … and what you want is inevitably more expensive.

Your collection will continue to grow in direct proportion to your decline in social skills. You will no longer care about how your favourite sports teams are doing, what Madonna is up to, or which criminal was recently let off by a lame-brained jury. The scales of justice become less significant to you than the presence of scales on your *Vriesea hieroglyphica*. You can now recognize the difference between several varieties of A*echmea disticantha*, but you can no longer remember the name of your youngest child.

Up until now, you have been alone in your epiphytic affliction. Until now, your family and friends have regarded you as becoming increasingly weird, but essentially harmless. At some point though, you will eventually encounter another bromephile, and you will learn there is a group in your town that meet clandestinely once a month to talk about nothing but bromeliads. That's when the real trouble begins. Up to that point, bromeliads had found their way into your home one or two at a time. You have been limited in your ability to acquire them by their relative availability coupled with your financial constraints. Now, however, you become exposed to the world of free offsets and inexpensive plant tables. You carry them home by the armload!

Your family begins to realize – too late – that now you have become part of an organization, you are no longer harmless, The windowsills and every nook and cranny of the house are saturated with bromeliads and the word "greenhouse" begins to crop up more and more frequently in conversations with your spouse, (as does the word "divorce").

By now also, your spouse has noticed another strange phenomenon of the bromeliad counterculture. That is … while only a tiny percentage of the world's population even knows what a bromeliad is, there are more books about them than there are on world history, politics, and human behavior combined … and you have now embarked upon the path to own every one of them.

You are beyond redemption and you can bet your spouse will never send you out to buy another tomato plant again.

I thought it only fair to warn you.

Auburn, California

THE GREAT BROMELIAD HOAX

(by Lyman B. Smith)

Editorial comment (Bob Reilly) Reprinted, with permission of the Bromeliad Society Iinternational, from the Bromeliad Society Bulletin, 1966, volume 16 (1), pp.4-5. In this article, Dr Lyman B. Smith discusses several botanical hoaxes involving bromeliads. Dr Smith was one of the most prominent bromeliad taxonomists of his generation.

Practically every branch of science or art has had a hoax perpetrated on it by some practical joker trying to confound the critics or by some charlatan avid of unearned reputation or profit. A skilful Dutch artist discovered lost masterpieces for Hitler's benefit, but after the war had to placate his vengeful colleagues by disclosing them as forgeries. In his early years, Fritz Kreisler embarrassed hostile critics by much the

same stratagem with supposed manuscripts of famous musicians.

In science, we have tales which are impossible to verify, like the schoolboy's "humbug" composed of parts of several insects, down to clear cut modern cases like the Piltdown Man of the anthropologists. One of the early American ornithologists is said to have confounded a cocky student by mounting the head of one bird on the body of another, and in great grandfather's day the geographers uncovered a fake discovery of the North Pole.

In botany also there have been hoaxes, though the majority of them are geographical where it is difficult to draw the line between an honest error from mixed or lost labels and intentional deceit. I ran into one such case of chicanery in my early curating at the Grey Herbarium, when I was told to remove every specimen of a certain collection from southern Brazil.

A dealer in scientific books had had a sideline in plant specimens, and one set had sold out quickly with a demand for still more. Ingeniously, if not too ethically, the dealer had taken specimens not so popular and relabelled them as coming from southern Brazil. They sold and were mounted and filed in a number of herbaria, but when botanists came to study them, suspicions grew rapidly into conviction. Of two tillandsias in this lot, one grew no nearer than the West Indies and the other was limited to Mexico.

However, the bromels have had one hoax that was based on fantasy instead of geography. In his first great treatment of the Bromeliaceae in the "Flora Brasiliensis" in 1892, Mez described and illustrated *Quesnelia tillandsioides*. In herbarium specimens deposited in the Kew and Berlin herbaria, the scape and inflorescence are indistinguishable from *Quesnelia liboniana*, while the leaves are like those of a *Tillandsia* or some Brazilian species of *Vriesea*. Mez cited *Quesnelia tillandsioides* again in his first complete monograph of the Bromeliaceae in 1896, but in 1906 Tietze came out with the startling news that *Quesnelia tillandsioides* consisted of a flowering shoot of *Quesnelia liboniana* pushed into a rosette of a *Tillandsia* or *Vriesea*. My guess would be *Vriesea poenulata*, which is illustrated in the "Flora Brasiliensis" and collected by Glaziou, the same man who produced *Quesnelia tillandsioides.*

Thus the means of this hoax are fairly easy to explain, but the motive is more difficult. At first it might seem to be an accident in assembling broken specimens, but while it might be possible for one specimen, two are hardly likely. Besides, Glaziou must have been much too familiar with living bromeliads to have made such a mistake. Then why should he have risked a reputation as the greatest discoverer of ornamental bromeliads of his day for one curious but rather ugly species? Maybe Glaziou started it as a joke and then dared not reveal it after its appearance in the "Flora Brasiliensis". As it is, he left no explanation and the motive for the great bromeliad hoax must remain a mystery.

Smithsonian Institution, Washington, D.C., U.S.A.

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The address for the web site is:
http://www.bromsqueensland.com

Above: Vriesea 'Pinkert' RS
Below: Tillandsia bulbosa RS

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the display.

11. Bromeliads whose centres colour a deep red or orange at flowering, (with the balance of the plant staying green), can look very effective when planted in clumps, in a shady part of the garden.

12. Some bromeliads will produce few, if any, pups if they are allowed to produce seed. (The plant's energy goes into seed, rather than pup, production). So, unless you want seed, it is often a good idea to remove a bromeliad's inflorescence once flowering has finished.

13. Some bromeliad species may not grow well at your location. In such cases, it may be worthwhile attempting to grow the plant from seed, as the seedlings (assuming some survive!), will often be well adapted to your growing conditions.

14. Thick, plain wire can be stretched over the top of a shadehouse-frame (but under the shadecloth) made from galvanised pipe or timber to provide additional "supports" for hanging pots. However, pots suspended in this manner can slide together under their own weight. On way to prevent this outcome is to place 40 cm lengths of old garden hose on the wire, and hang the pots where the individual lengths "butt up" against each other. (The garden hose is sufficiently rigid to stop the pots from sliding together).

You may wish to raise some potted bromeliads 20 to 40 cm above surrounding plants, so as to improve air circulation around them, allow access to more sunlight, or to enable the plant to develop a more "balanced" shape (conformation). One way to achieve this outcome is to place the bromeliad on top of an inverted 300 to 450 mm pot. The inverted pot needs to be sufficiently wide to provide a stable "platform" for the potted bromeliad.

A TRUE STORY

(by Lynne Fieber, *Miami, Florida*)

Editorial comment (Bob Reilly) Reprinted, with permission of the Bromeliad Society International, from the Journal of The Bromeliad Society, 2001, volume 51(1), p. 35. At the March 2005 meeting of the Society, Len Trevor told us how a bromeliad, whose owner had to be persuaded to enter it into the competition, rather than the display, at the annual Combined Show, won a major prize. Here is a similar story from Florida.

A few years ago, before the native bromeliads' display became a regular part of our annual Bromeliad Society of Southern Florida show, a member would reliably bring in a clump of *Tillandsia usneoides* for educational purposes. It would lie there on one of the tables during the show and lay people would learn that Spanish Moss was also a bromeliad. One year, I noticed during my trip to the classification session that there was as yet no *T. usneoides* among the plants. Wishing to avoid a second round trip from Key Biscayne to Fairchild, I seized my directory upon arriving home and started calling local people. Eventually, I reached Clara Kouchalakos who agreed to grab an armful of *T. usneoides* out of her backyard tree on the way to the show with her entry plants. "We must have that plant at our show", she declared.

T. usneoides was there in its usual educational role that year, but that's not all. Whether due to confusion or the lateness of the hour when Clara arrived at classification that night, the words "Exhibit Only" were accidentally omitted from the plant's label.

It won a blue ribbon.

Quilling

by Jerry Raak, Gahana, Ohio

Editorial comment (Bob Reilly): Reprinted, with permission of the Bromeliad Society of New Zealand, from Bromeliad, August 2004, v.44(8) pp12-13. Quilling, see photograph opposite, periodically affects plants from most bromeliad genera. In this article, causes and cures for this condition are discussed.

What's that, your bromeliad is growing up looking like a soda straw? It is probably the victim of what is commonly known as 'quilling'.

Quilling is the cementing together of the leaves, causing the plant to be very tubular in shape. It is generally caused by lack of good moisture while the plant is in an active growing period.

I have found through my years of growing that certain genera are more susceptible to quilling than others. These genera are vriesea and guzmania. Rarely do aechmeas quill, although I have *Aechtnea racinae var tubuliformis* and *Aechmea* 'Foster's Favorite' quill. Within the genus vriesea, certain hybrids and species are notoriously consistent in quilling. Among these are *V. x morreniana, V. ensiformis,* and unfortunately, *Vriesea* 'Viminalis Rex' x *V. hieroglyphica,* which is a superb hybrid with nicely banded foliage and a fantastic, long lasting, branched, blood-red inflorescence with, of course, yellow flowers.

Within the genus guzmania the most likely to quill are G. 'Feurn' G. 'Fantasia', and occasionally G. 'Exodus' In addition, other species of guzmania and vriesea will quill if grown very dry.

Besides dry conditions, some plants, both species and hybrids, are more susceptible because the leaves secrete a very sugary, and sticky substance known as 'Honey dew' which, if not washed off regularly and thoroughly, causes the leaves to cement together. Cold night temperatures with very low humidity will help the 'Honey dew' to thicken and speed up the process, and in particular young seedlings are extremely susceptible to quilling during this time.

Prevention

To prevent quilling, one must maintain high humidity, or, quite regularly flush the plants out with water to thoroughly wash away the 'Honey dew'. There is no better way to do this than to expose the plants to a long hard rain, be it Spring, Summer, Winter or Autumn. Taking the plants to the shower with you may sound silly, but an equivalent bath procedure is very beneficial. Bathing a bromeliad? Maybe it sounds crazy but it works not only to prevent quilling, but also to cure it. If you have a plant that is quilling, take a mild liquid detergent, and put several drops into the tight centre cup and fill it with water to overflowing. This procedure should produce lots of suds. The soapy water will dissolve the hardened sticky substance and then with the gentle use of a flat but blunt object, such as a plant marker, the leaves may be loosened from the outer-most to the innermost of the leaves around the quill. Make sure after loosening the leaves that all traces of the soapy water are flushed off the leaves with lots of water.

A soapy water 'recipe' to prevent Quilling:

Our life member, Len Trotman, has put together this tried and true 'recipe.' Note that although it will cause foaming to the centre of the plant it can be left in without any harmful effects. It's also effective against mosquitoes, slugs, snails and other

Aechmea 'Purple Gem' - On the left is an example of the plant as it should be, on the right is an example of extreme quilling, both plants are about the same age and height. RS

Tillandsia funckiana, this species originates in Venezuela ***RS***

insects.

500mls., of Sunlight Liquid (dish washing liquid)

200mls., of household cloudy ammonia

100mls.. of citronella *or* Pine-o-Cleen disinfectant

Mix all above into container with 5 litres of cold water

As this mixture is very concentrated use only at 2 to 4 tablespoons per litre of water in the spray solution and or 1 litre in main 200 litre holding tanks with liquid insecticides, fertilizers or fungicides.

Note: The mixture is compatible with, and can be used in conjunction with, 'ORTHENE' ... 'ATTACK' ...and 'BRAVO.'

GETTING OFF-SETS TO ROOT QUICKLY

Author: Gerry Stansfield

Editorial comment; Reprinted, with permission of the Bromeliad Society of New Zealand, from Bromeliad, August, 2004, v.44(8), p14

On a number of occasions I have advised members not to remove bromeliad pups during the winter months, especially vriesea, tillandsia and guzmania pups because of their susceptibilty to rot. Unless you have access to a glass, plastic or shadecloth house that advice still stands.

Generally de-pupping should finish around March or April and start again around September or October although many of you, like myself, take off pups all year round. But I do wonder just how many pups are lost in the process. I have to admit that I have lost a few!

Sometimes it is impossible to avoid taking off pups in winter because the mother plant decides that the first batch of pups will be the only batch and they have to be removed in order to force her to produce more.

Aechmeas, billbergias, and neoregelias are perhaps not a problem with their hard stolon heels and generally these new plants have already started growing some roots. I don't bother to harden them off and I just dip the ends in Flowers of Sulphur and pot them up. So far I have not lost a pup. However, vriesea, tillandsia, guzmania and nidularium pups do need special care at this time.

I have found that Aqua PalmPeat is extremely good for rooting these difficult pups. It is sold in a compressed brick form and will make up to 10 litres when soaked in warm water. However a word of caution. Ten litres is a lot of PalmPeat so I tend to cut off small blocks as I need them. I cut off about a quarter of the block and then cut that in half again. The block is very hard so you will have to use a saw or hacksaw. The two small blocks can be put in a bucket of warm water. Use your own judgement over the quantity of water but you might be surprised at how much they absorb.

All vriesea, tillandsia, guzmania and nidularium pups should be allowed to heal for about a week before potting up. Dip them in the Flowers of Sulphur, Captan or any good powdered fungicide because this prevents root rot and helps the healing process of the cut.

Remember to keep water in the cups at all times. After a week, pot the pups in the PalmPeat. You do not have to water them as the PalmPeat is already wet from the absorbed water. Within two weeks the pup will have produced some roots.

WARNING: TREATED PINE AND BROMS DO NOT MIX!

by Gerry Stansfield

Editorial comment: Reprinted, with permission of the Bromeliad Society of New Zealand, From Bromeliad March 2005 v.45(3) pp8-9

After speaking recently with a friend who was heartbroken by the damage done to her bromeliads after placing them in a newly built shadehouse made of treated pine. I wondered if there might also be others out there who needed to know about the problems associated with treated pine,

The following is a story by Elaine Jones of New South Wales, which appeared in the September/October 1992 issue of BROMELETTER. Vol. 30 No. 5, and although it was written over 10 years ago, the problem still persists...

'In June 1988 after several years living in rented houses in Sydney, we purchased a home in the suburb of Dundas. It was an old house needing renovation and after several months we started on the garden.

One of the requirements was a shadehouse for my bromeliads. As we were using treated pine in the landscaping we decided to use the same for a pergola-shadehouse. Knowing that bromeliads are copper sensitive, 1 checked with the supplier as to whether there was any risk of the salts leaching from the timber. I was assured that problem only occurred if the wood was burned

Everything went well for a few months until I noticed brown marks about the size of a one-cent coin at the base of some of my bromeliads. The affected spots gradually became "mushy" and sometimes could be removed by scraping out, each leaving a hole in the outer leaf. Removing the leaf entirely only made the next leaf more susceptible to the problem. If not removed, the mark spread across the leaf causing it to break off, revealing another spot on the leaf inside. Draining plants and flushing with fresh water seemed to delay the emergence of the marks but nothing stopped them appearing.

To add to the confusion not all plants were affected. Tillandsias which were growing to one side and not directly under the frame were quite healthy. Nidulariums didn't seem to show as much damage as neoregelias. Other pot plants were unaffected and a tub of parsley needed a lawn mower over it every week to keep it under control The vase-shaped bromeliads seemed to suffer most and the tough-leafed genera most of all, particularly neoregelias and billbergias. Tillandsia usneoides hanging on pots was not affected but where it was in direct contact with the timber it desiccated and died. Eventually I felt I should again contact the timber suppliers to see if they could shed any light on the problem. They assured me that nothing in their timber would be the cause.

They explained that many vegetable growers used their product without adverse effects to plants or consumers. Finally I took some of the affected plants to them and they analyzed water samples. Their findings were that the levels of salts in the water were not above the accepted levels and could not help me any further. Meanwhile, plants were still dying. Pups would appear; grow quite normally until they reached a reasonable size, and then begin to develop the same trouble as their parents. Even newly purchased plants would show signs of damage within a few weeks.

We decided to move to the Central Coast so we gathered all our plants and put them in shadehouses on the property. These were built of hardwood and the survivors and bromeliads purchased since then are now doing fine. Admittedly, some of the leaves have grown with holes in them where I was able to remove damaged parts, but after 18 months the problem has not re-occurred.

There may have been several reasons for the damage. The shadehouse was a new structure and any excess salts on the surface of the timber had not washed away. We had extremely wet weather during this time which may have caused abnormal leaching of the salts. However, my advice is - DO NOT USE TREATED PINE NEAR BROMELIADS.'

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Another article written by John Moreland was published in our Journal in March 2003 and told a similar story. At the time it was footnoted by Gerry Stansfield, who wrote: 'There are a number of other materials one can use for construction and these will vary depending on just how much you are prepared to spend They all come with their own advantages and disadvantages and, of course, the cost factor is an issue. However; do not entirely rule out treated timber construction. It will be the cheapest by far; and the easiest to work with and it will almost last forever; but the downside is the treating.

Because the copper cyanide treatment is *DEATH TO ALL BROMELIADS* it is imperative that the timber is properly sealed. There are a number of proprietary lines available and your local Hardware/ Paint DIY can advise. Fence stain is no good. After sealing, two good topcoats of enamel paint should be applied; making sure the ends of the timber are also coated to stop the timber from bleeding. Don't be fooled into thinking that old treated timber will not leach out. This is not true, and it could even be worse, as much stronger brews were used in days gone by!

Regard all treated timber, both new and old, as requiring special treatment before putting your precious bromeliads under it.

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superphosphate.

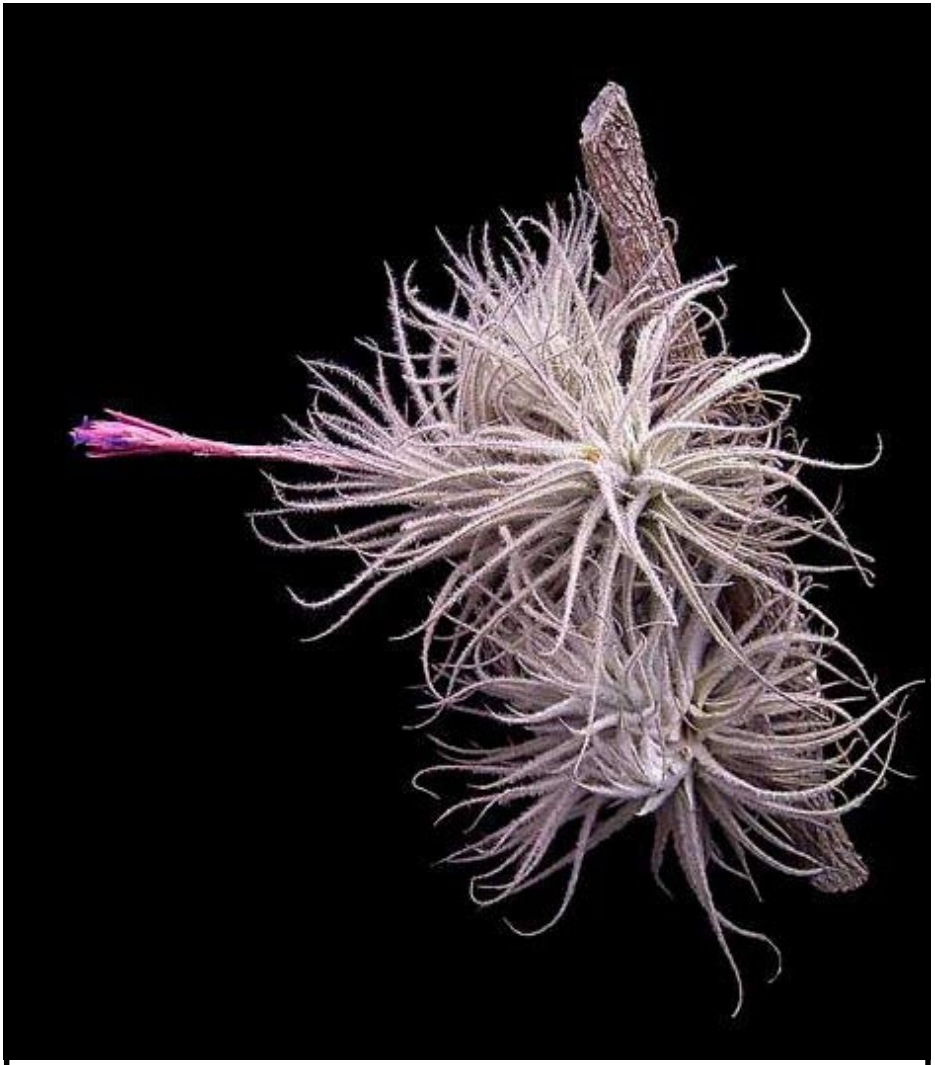
Andrew Steans

At Exotica, we mainly use potting mixes containing 50/50 mix of composted bark fines and a 5-7 mm composted bark chips. To this we add 2kg /m3 each of dolomite and gypsum to provide calcium and raise the pH to about 5.5 - 6.5. After planting we add approx. 1 teaspoon of slow release fertiliser, such as Plantacote, to provide the other nutrients. A simple mix but quite effective.

Andrew Maloy

To be successful, a potting mix must be capable of holding some water, air and nutrients, in varying amounts depending on the plant to be grown. Bromeliads need a mix with plenty of air and relatively low levels of nutrients. I settled on a pine bark mix containing slow release fertilizer (Osmocote) as best for our conditions. The main think is not to over water, especially during cold weather.

Maybe a few of BSQ members might like to write in and give their suggested potting mixes. The mixes above being those used in New Zealand might favour cold climates. The use of pumice in the mix is new to me, I haven't heard members suggesting its use in Australian mixes. Ed



Tillandsia tectorum **Photo by M Romanoski**