

Bromeliaceae



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The Bromeliad Society of Queensland Inc.

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GENERAL MEETINGS OF THE Society are held on the 3rd Thursday of each month except for December, at the Uniting Hall, 52 Merthyr Road, New Farm, Brisbane, commencing 7:30 pm.

ANNUAL GENERAL MEETING is held immediately before the February General Meeting

Front Cover: Alcantarea Flower
Rear Cover: Vriesaa Hybrid

By: John Byth
By: Pam Butler

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CALENDAR OF EVENTS

27th October 2013 – Billbergia Day

5th December 2013 – Christmas Party

16th January 2014 Meeting – Steve Flood

20th February – Annual General Meeting, Dennis Hundschidt

PITCAIRNIA INERMIS

By Derek Butcher July 2012

To those of you who query what is on the label and look into anomalies you often get that warm fuzzy feeling when you find a true anomaly. One such person is Ross Little who flowered a plant from Peter Tristram called *Pitcairnia inermis* var *flava* but the problem was that it had green petals and the petals had appendages. So he contacted me. In South Australia, Keith Bradtberg had already flowered a similar plant from Peter in the 1990's only at that time we had different worries as the following article written by me in 2004 shows; *Pitcairnia inermis* var. *flava* by Butcher 2004.

This plant was imported from the USA as *Pitcairnia vargasiana* by Peter Tristram in the 1980's and an offset found its way to South Australia in 1989. I came into the picture in the mid 1990's and suggested the plant was wrongly named. I even took it to pieces in my search! In 1996 I took a photograph with me to the Orlando Conference and spoke to Harry Luther about my problem. Harry agreed it was not *P.*

vargasiana, but because I spoke to him at the Conference and not when he was home at Selby Gardens he was unable to advise further.

In June 1999 I again saw this plant in flower and was allowed to take it home for "homework". Using the key in Smith and Downs I kept stumbling across *Pitcairnia inermis*, but the sepals were pointed to my mind, but the description said obtuse! That was until I saw the line drawing of the sepal and it was the same shape as mine! Secondly, I was worried about the petals which were yellow not red and there was no appendage at the base. What was a surprise was the fact that these two criteria were how Lyman Smith differentiated between the type species and the variety *flava*. It was a surprise because on the one hand we had Lyman Smith splitting two genera, namely *Tillandsia* and *Vriesea* on petal appendages and here he was not splitting at species level! You are never too old to learn. Everything clicked from then on so I'm quite sure that the plant should have been identified as *P. inermis* var. *flava*. It comes from 2000m altitude in Central Peru and shares a similar habitat to the less-well documented *P. vargasiana*.

In June 2013 we again contacted Peter Tristram and got more information. The plant originally came from Rob Phillips, collected in Peru about 1985 and flowered in quarantine (Peter at that time had his own Quarantine house). Most of the fantastic stuff he collected took exception to the Methyl Bromide treatment and abruptly died. He grew on some seed. Harry named it *P. vargasiana*. Peter is still doubtful as to what it really is, and it may be an undescribed species. He assumed at the time that Rob had collected it near Tarapoto or Moyabamba, but he also went to Tingo Maria and the Machu Picchu area, with Lee Moore, the Adventurer.

Back to the books because these days there is a wealth of information available to use, courtesy of the internet. Big problems! We have conflicting information. In the original description of *P. inermis*, Meyer says "Petala angustissima calyce plus duplo longiora, basi squamis differte," but does not refer to colour. Baker in 1889 in Handbook of Bromeliaceae says petals are white but does not mention petal appendages. Mez in 1935 in Das Pflanzenreich does not mention colour but does mention petals are ligulate. Smith in 1974 Flora Neotropica we read "Petals scarlet, rapidly fading to white." And we

can only assume that Smith got this information from Macbride 4077, 1946. But ligulate! As for leaves, Meyer, originally was of the opinion they were spineless hence the name, but from Mez 1935 onwards we seem to have sheaths that are spiny and as the leaves age, the blade is deciduous at this join.

In 1954 Smith created the variety *flava* and the protologue is as follows; *Pitcairnia inermis* var *flava* var nova L. B. Smith, Phytologia 5: 46. 1954.

A var. *inermis* petalis flavis differt. Flowering plant 8dm high; leaves serrulate below the abscission line; petals yellow, naked.

Type in the Museo de Historia Natural "Javier Prado" Lima. Peru, collected in tropical forest, at Cayumba, near Las Palmas, between Huanuco and Tingo Maria, Province of Huanuco, Department of Huanuco, Peru, altitude 800-900 meters, July 15, 1948, by R. Ferreyra (No. 4228).

It would seem that this species can have different coloured petals, with or without appendages so this should not deter us from linking these seedlings of Peter's to *P. inermis* as well as being consistent in our approach. The chance of cross pollination in Peter's quarantine house seems remote. Therefore, I

suggest that this new find be called *P. inermis* 'Green petalled' without it being registered, because we do not know if it is a sole survivor. When more of this clone are available it may be opportune to register it as *P. 'Inermis Green'*.

On a more positive note, we do know that Eric Gouda at the Utrecht University does have some of Peter's seedlings and is now eagerly awaiting their flowering. We may even see a different approach to identity!



Picture above: Pit inermis Green Little.

Picture left: Pit inermis flava DBI

THE BSQ LIBRARY

Your attention is drawn to the Society's library. It is a service to its members. Members are able to borrow books & magazines from the library at any of our monthly meetings.

'Genus Tillandsia' The World's most Unusual Air Plants, by Paul T. Isley III.

This delightful little hand book gives a brief introduction into the Characteristics, Blooms, Reproductions, Care & Mounting Procedures Of Tillandsias.

The Society also sells specialist books relating to Bromeliads – see the website for details.

TILLANDSIA WORKSHOP

By Barbara Murray

A long and educational day was experienced by a large number of attendees. Bromeliad enthusiasts travelled from far and wide. There were even 3 from Singapore, here for the weekend. The program was varied ranging from scientific to practical. Here is a collection of my gleanings from some of the presentations. Other presentations were given on the day so this is just a selection.

The first speaker was Andrew Flower from New Zealand. His topic was on nutrients but he began his talk with a synopsis on the development of seed raising as a process to obtain Tillandsias. Dr Richard Oeser was the first to grow Tillandsias from seed. He developed a method using Cyprus sticks and pine needles which became known as the Oeser method. Andrew began seed growing in 1964.

Andrew gave a very scientific presentation with many photos provided to demonstrate his experiment conditions, his experiments and the information gathered. Andrew produced many

tables showing the breakdown of nutrients given to his plants in controlled situations and the results. He compared the NPK with plants in the wild and with his plants. Andrew then went further to discuss the relationship of trace elements to the growing of bromeliads. The presentation was filmed in its entirety and is available to members.

Plants produce food and animals consume food. Plants need nutrients to produce food. Seeds, given poor nutrition, will remain small plants, and will not respond to nutrients when given as older plants. Seeds when given lots of nutrients will grow twice as fast. Plants that are given adequate nutrition to maintain optimal growth will react over a period of time and find the nutrient delivery toxic. The importance of calcium, magnesium and sulphur was outlined.

Of interest was his discussion of the relationship of boron, copper, iron, manganese and zinc in water. Ammonium nitrate in water is important in small doses. In a high concentration ammonium nitrate is toxic to Tillandsias, diminishing the uptake of Calcium and Boron. *Ascophyllum nodosum* (Seaweed) improves growth when 25ml per litre is delivered fortnightly.

A second talk given by Andrew was on Pollinating Tillandsia.

Pollen needs to be kept dry and cool. Place silica gel in a small jar with the seeds. Then place the smaller jar in a larger jar that also contains silica gel. Pollen can be kept in the fridge at 3°C for six months.

The flower of the billbergia was used to show the long pistil (female) with the stigma at the end and the short stamens (male) that have the pollen. The pollen is brushed over the (sometimes sticky) stigma for fertilisation to occur. A pistil will normally not accept the pollen from its own stamens (probably to assist with strengthening the DNA) but will accept pollen from another plant. But once that happens the pistil will then accept its own pollen. This is a problem for hybridising.

Bob Hudson from Cairns informed the group that light flowering tillandsias pollinate at 5am in Cairns. They are moth pollinated.



50 Shades of Gray in Tillandsias in the Shade House. This talk was given by John Olsen.

John commented that tillandsia shade houses are usually dominated by plants with leaves of various shades of gray, but that can be rectified by scattering tillandsias that have leaves with various shades of red through the collection.

Ephemeral Reds

Tillandsia ionantha – lots of different clones

Tillandsia brachycaulos

Tillandsia brachycaulos abdita (now *Tillandsia bradeana*)

Tillandsia velutina (late summer)

Tillandsia ‘Capetown’ (capitata hybrid)

Tillandsia ‘Eric Knobloch’

Tillandsia ‘Rio Hondo’

Constantly Red

Tillandsia capitata Red (Peter Tristram’s *Tillandsia* ‘Select Red’)

Tillandsia esseriana (red form)

Tillandsia tenuifolia (red form)

Tillandsia neglecta (red form)

Tillandsia richii

Root Systems in Tillandsias

Laurie Dorfer gave this fascinating talk, supporting it with many diagrams and photos.

Tillandsia roots are used for gaining and maintaining attachment and are imperative to survival in the wild. The root comes from the top point of

the growing tip and emerges out of a bottom leaf node.

Intercauline roots are the roots inside the stem and they strengthen the stem. They are very strong roots.

In saxicolous and lithophytic plants all walls are thicker for strength. Humidity increases cell thickness.

In Tillandsias the roots have a number of properties which enable root systems to support the plants:

- Gravitropism allows the plant to respond to gravity and inhibits cell elongation.
- Thigmotropism enables the plant to respond to touch which results in faster growth of cells on the outside – away from the support.
- Hydrotropism enables the root to search for water.
- Plagiotropism allows the plant to grow at oblique angles.

Once the root has found a place to attach, the root produces a gum like substance that will only appear on touch. The root will absorb moisture as it needs alternate wetting and drying to improve adhesion. The root will penetrate crevices. Roots on contact will stop elongating and begin broadening.

Peter Paroz then spoke on and demonstrated developing feeder

roots in *Tillandsia fasciculata*. Find a Styrofoam box with a lid. Place wet newspaper in the bottom of the box. Make holes in the lid and place the plants in the hole. This suspends the tillandsia above the moisture and encourages the roots to grow towards the moisture.

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Coordinator.

Look him up at the next meeting, he
is always up for a chat.

pjball2000@gmail.com

BROMELIADS FOR ALL AGES
A thought from Co-Editors

Chris and Jennifer Coulthard

Growing bromeliads, and in fact any type of gardening is not usually seen as interesting by today's youth. However, there are exceptions and we would like to share our experience with our grandson Dylan.

Dylan is a typical 11 year old. He loves his sport (league, tennis, swimming) spends controlled hours on his computer, and enjoys playing with his mates.

Dylan lives with his parents on the Sunshine Coast, and most school holidays comes to stay for a couple of days with his Nan and Grumps (aka Jennifer and myself).

On a visit that coincided with the Autumn Show he accompanied me as a helper, and a new world opened up to him. He erected tables, under the direction of Rob Murray, manufactured boxes, and helped out in the plant minding area. More importantly, he spent a lot of time with Rebekah Trevor, Fred Thomson and Peter Ball, who answered a plethora of questions and that fired his interest in bromeliads. As soon

as his Nan arrived at the show he weaved his charm on her and she of course bought him a few plants.

From that day we created a monster. Dylan has devoured most of our literature and what he borrowed from his local library. He has established his own collection, albeit small, but after each visit to our home it grows.

A subsequent visit to The Olive Branch Nursery and a visit with Len Trevor, who arose from his sick bed to speak with Dylan regarding Dyckias and propagation, fired his interest further.

In telling this story, we believe there are two lessons learned from our experience. Firstly, Dylan enjoyed the friendship and generosity of club members who graciously shared their love and knowledge of bromeliad growing. Secondly, it is sometimes easy to forget that we pass to our children, grandchildren and even great grandchildren (yes, we have one) our love of what we treasure in life, like music, arts and yes, for us, they include those funny, beautiful, prickly plants called Bromeliads.

So we suggest you encourage your family to become involved with you and share your passion. Who knows there might be another bromeliad monster lurking in your family too!



Grumps and Dylan after the first day at the show.



Dylan in his front garden – he has also started a collection of Dyckias and Cryptanthus and was asking us he help him erect a small shadehouse.

Len Trevor taking the time to explain how to gather the seed and how to proprate them. Dylan was so very impressed, had his notebook and pen and wrote down what Len told him. I think Len secretly loves teaching the young ones. He not only held Dylan's attention, he answered every question Dylan fired at him. You could not wipe the smile from Dylan's face.

Dylan brought his seeds home and together with Grumps, following Len's instructions, of course, spent the afternoon planting his seeds and discussing how long it would take before his first plants would show.



TOP TEN TILLANDSIA SPECIES

By John Olsen

Think about what you would choose if you were moving and could only have your ten favourite plants. This was the question posed to Tillandsia collectors in our email discussion group. Initially it produced gnashing of teeth, some wrist slitting and general consternation. Members moaned about just how hard it was to leave some favourites off a list of only 10. Others have such an affinity with tillandsias that a list of those they didn't like would surely be less than 10 and so a much easier task.

How would you choose? Comments from the members of our group indicated the values treasured in particular plants. My own voting was conditioned by what I see as reward for effort, meaning the enjoyment gained by the appearance of the plant in a non-flowering state, the colour/beauty of the inflorescence and in some cases the perfume from the flowers. Small plants with flowers which are large compared to the plant are great. One philistine wanted 'bang for his buck' i.e. he

didn't want to pay heaps for a tiny grassy plant.

The list of features in the comments included:

Interesting shaped plants which appealed even when not flowering. Twisted shapes of *T caput-medusa*, *T streptophylla* and *T ehlersiana*;

Reliability of flowering. *T stricta*, *ionantha* and *aeranthos* are annual bloomers;

Flower colours different to the majority of Tillandsias which tend to blue/lilac. Red in *T albertiana*, *funckiana*, *andreana*, and *edithae*, yellow in *T crocata*, orange in *T ericii*;

The scurfing of *T tectorum* or sheen on the leaves of *T gardneri*, the velvety leaves of *T velutina*;

The way plants flush with colour at flowering – *T ionantha*, *capitata*, *brachycaulos*, *bradeana*, *velutina*;

Leaf banding of *T hildae* which is rare in Tillandsias;

The likelihood of having at least one clone flowering at any one time is a feature of some species like *T ionantha*, *T stricta*;

Small is beautiful and the diaphoranthema group had several followers (*T virescens*, *minutiflora*, *tricholepis*).

For others it was nostalgia or the memories that a particular plant held. One voter added the plant which first attracted him to collect Tillandsias

although he knew it wasn't fancy and unlikely to feature in other voter's lists. He was right on that score, but this all highlights the personal nature of our love of particular plants.

When you get the "Top Twenty Hits of All Time" on the radio, you know that in 10 years, the list will be different. The Top Ten are familiar plants and widely grown. There are rarer plants which are in a few collections but not widely grown which will surely come into the list in the future. Many of these are among the plants with one or two nominations but rarity equals additional cost to purchase and in most cases reluctance to reproduce readily which interact with each other and mean few have come to treasure these plants yet.

The voting produced some interesting statistics. There were 24 respondents. Over 75 species made it on to one or more lists. Of these about half were only on a single top ten list. The top 2 plants were on 75% of lists so have to be seen as universal favourites and the top 5 were on over 50% of lists. The gender balance was somewhat (highly) skewed to male respondents. The three female respondents both had 3 perfumed species in their top 10.

There was a regional pattern in the voting. Respondents ranged from Cairns in the north to southern coastal NSW, Victoria and SA. Plants which did well in Qld were missing from the southerner's lists and vice versa. *T. capitata* and *T. funkiana* are popular with Queenslanders but are very slow growers in the south. One respondent summed this up with "*it all boils down to what happily grows and flowers each year or so in your backyard without any major input by yourself, they just like the climate and surrounds*".

However as noted above the most popular plants were universally popular. In the top ten following I have added information on plants which form a "complex" in the discussions of the top ten.

Table 1 has the results.

Ranking	Species	Votes	% of people Selecting
1	tectorum	17	77%
2	xerographica	16	73%
3	streptophylla	13	59%
4	duratii	12	55%
5	ionantha	12	55%
6	ehlersiana	8	36%
7	fasciculata	8	36%
8	edithae	7	32%
9	gardneri	8	36%
10	straminea	6	27%

No 1 *T. tectorum* forms a complex which has been written up in a



Above – varieties of *T fasciculata*, at the 2012 Tillandsia Workshop.

Left – *T ionantha*



Above – *T edithae* - By Peter Tristram

Left – *T tectorum*



T xerographica Mex PT



T gardneri RF1 infl PT



Duratii var *saxitilis*



T streptophylla XL infl

booklet produced by the DBG. The booklet “The *Tillandsia tectorum* Complex” was written by Leiselotte Hromadnik and translated into English by Derek Butcher. This complex contains 10 other species but it is *T tectorum* which has the strong appeal. The leaves are long and slender and are very heavily scurfed to the point of appearing furry. The DBG booklet identifies 3 varieties and one named form of *T tectorum*. This is quite a variable species with considerable variation of leaf length, stem length etc and there are different forms in collections.

No 2 *T xerographica* is simply a standout plant. The grey leaves curl under the plant, a flush of pink comes in the leaves in good light and the inflorescence is large and spectacular. *T xerographica* is a slow growing plant and it needs special care. It comes from a warm dry habitat and doesn't easily tolerate cold wet conditions. In SEQ it needs to be protected from winter rains to do well.

No 3 *T streptophylla* has an interesting form and attractive pastel pink inflorescence. The bulbous base is surrounded by twisting older leaves. The extent to which the leaves curl can be controlled to some

extent by providing more or less water. This species is a myrmecophyte i.e the plant has a symbiotic relationship with ants. The bulbous base is often home to ants. This species is also ageotropic which means it doesn't bother to orient itself upright and is happy to grow horizontal or what seems to us upside down.

No 4 *T duratii* is the subject of a separate article in the next issue.

No 5 *T ionantha* is a small and variable species from Mexico. The plant flushes with colour at flowering and has relatively large tubular blue petals. Mostly *T ionantha* flushes red but there are variants which flush white, orange, creamy yellow and pink. Some of these have white petals. The plant varies in size from 1-2cm height in varieties referred to as Peanuts or Haselnuss (in Germany) to over 10cm for large forms. Generally *T ionantha* grows in stemless clumps but there is a caulescent form *T ionantha van Hyingii*. A banded form has now been separated as a separate cultivar – *T Zebrina* and a variegated form has now been cultivated.

No 6 *T ehlersiana* is found in some of the same areas as a *T streptophylla*

and there are natural hybrids between the two. *T ehlersiana* is named for the German collectors Renate and Klaus Ehlers. This plant grows in a bulbous form and has a more scurfy appearance and straighter leaves than *T streptophylla*.

No 7 *T fasciculata* comes from Southern USA through Central America. Smith and Downs “Flora Neotropica” lists 13 varieties although taxonomists are busy splitting to name new species. It is a striking medium-large plant with many tapering leaves in a rosette and an impressive tall fasciculate inflorescence. Inflorescences vary from red to green with many shades and mixtures between. Some forms have inflated blades and others flat blades to the inflorescence. This is an easy plant to grow in SEQ.

No 8 *T edithae* is found on cliffs and rock faces around 2700m altitude near La Paz, Bolivia. The red flowers are the special feature of this plant with crimson floral bracts and cherry red petals grouped into a flower head. *T edithae* is a caulescent plant with triangular grey scurfy leaves.

No 9 *T gardneri* comes from coastal areas in Brazil. This plant has silvery grey leaves with a darker edge to the long triangular leaves. The plant

forms a cushion or base of older leaves under the plant. The inflorescence extends from the centre of the plant and droops over under its own weight. The head of the inflorescence is globose and scurfed which gives a pink appearance contrasting against the rosy red petals of 10-12 flowers in the inflorescence. There are several varieties of *T gardneri* which have been discussed in Die Bromelie 2012(1).

No 10 *T straminea* comes from dry areas of coastal Peru and Ecuador. The plant has relatively few leaves which are long and finely covered with trichomes. In common with close relatives, *T purpurea* and *T cacticola*, *T straminea* produces a long stemmed inflorescence with lavender bracts. The flowers have white petals with a purple edge and are strongly perfumed.



LIVING WITH LARGE BLACK ANTS IN BROMELIADS

By Sharon Born

I have quite a number of bromeliads that have nests of large black ants in their tanks. These ants don't seem to harm the bromeliads. They still flower and thrive happily together. I have a large number of these ants living in my yard. They love ginger plants too. The ants do clutter the bromeliads they nest in with a lot of dried leaves at times.

They live in most of my bromeliads in the trees and in some hanging pots. Billbergia, aechmea, vriesea, neoregelia bromeliads are the main ones they occupy. One good thing about them is that they scurry around like crazy if disturbed but don't seem to sting me. Not that I go near them unless I have to.

When I have *Puya ferruginea* and *coelea* flowering, a lot of different smaller ants love the flowers. They don't seem to harm them. I do have horrible grasshoppers that eat them off though. Gosh! Grasshoppers love some of my bromeliads. I think in spring I will plant Amaranth

again. When I was growing it a couple of years ago in my garden the grasshoppers ate it, and not the bromeliads.



FERTILIZER CONFUSION

By Les Higgins

American nutrient recommendations often create confusion in Australia. Fertilizers with values such as 10:32:20 are unavailable. The difference in American and Australian fertilizer calculation relates to the early manufacturing methods of phosphorus and potassium. The traditional American fertilizer formula is the "Oxide Potential". This is a cumbersome system with oxygen "O" included in the calculation. Increasingly Americans use the simpler Imperial/Australian system and thus still further add to confusion from America.

The Australian fertilizer system is known as the "Elemental Value". The nutrient analysis is expressed as the ratio of three major elements:

Nitrogen: Phosphorus: Potassium and this is abbreviated to N:P:K.

American Oxide Potential is the ratio of the available nitrogen, given as N: available phosphorus, given as a percent P_2O_5 (phosphorus pentoxide): available water soluble potassium given as a percentage K_2O (potassium oxide).

Confusingly the Americans often

refer to this ratio of N: P_2O_5 : K_2O as NPK. Most of the rest of the world refers to the ratio NPK as NPK. Confusion increases as P_2O_5 and K_2O are no longer popular ingredients in American fertilizers. Further confusion occurs when phosphorus pentoxide (P_2O_5) is misidentified as phosphate (H_2PO_4) and potassium oxide (K_2O) as potash (potassium carbonate K_2CO_3).

To convert American P (P_2O_5) values to Australian P (P as elemental P) multiply P_2O_5 value by 0.44.

To convert American K (K_2O) values to Australian K (K as elemental K) multiply K_2O values by 0.83.

America's "balanced fertilizer" is a nutrient package which presents all three major elements as the same numerical value. The very popular American "balanced fertilizer" of 20:20:20 is readily available throughout that country. 20:20:20 recalculated N: P_2O_5 : K_2O to NPK becomes 20:8.8:16.6.

In Australia there is no fixation on all the numbers being equal and 20:8.8:16.6 would be a very rare nutrient specification. The problem with the "Balanced" fertilizers is that the amount of phosphorus is much higher in relation to the amount of nitrogen and potassium than bromeliads need. The numbers are balanced but the nutrients required

by the plants are not.

To avoid confusion, before purchasing a fertilizer pack read the information given in the guaranteed minimum analysis. Does it state N:P₂O₅:K₂O or NPK ? Is the presentation three equal value numbers? For bromeliads, using the N.P.K system, K should be the biggest number with N second and P as a small value.

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TILLANDSIA SECUNDA

By Peter Paroz

Tillandsia secunda: Secund; pertaining to the manner in which flowers are directed to one side.

Type description: *T. secunda* var. *secunda*

Plant flowering only 1.2 m high. Leaves numerous, long narrowly triangular, acuminate, to 50 cm long, weakly lepidote. Scape erect, violet-reddish; Inflorescence large in a pyramidal shape, bipinnate, with about twenty, 7-35 cm long, stemmed spikes horizontal spreading from the axis. Scape 7-13 cm long, with bracts. Flowers blue-violet (red-violet) to 4-5 cm long. Petals naked. Stamens included or exserted; pistil exserted or included. There are three recognised varieties of *T. secunda*:

var. *secunda*, the type form (size to about 1.5 m),

var. *major* plant stemless, flowering to 4 m (!) high.

var. *vivipara* size similar to the type but with extensive offset development on the inflorescence.

Notes:

Ex Rauh translated by Derek Butcher "Another representative of Ecuadorian Tillandsias with hanging flowers that are wide spread in central and south Ecuador, growing abundantly in large stands on rocky stones in dry valleys and in semi humid bush land from 2000 to 3400 m, you find *T. secunda*, already described by Humboldt, Bonpland and Knuth 1816 in Nov Spec. et Genera (Vol 1, p. 209), under its collection Nr. 3094 from the area around Guayallabamba North of Quito (Prov. Pichincha). This has been found by many collectors at different other places since then (A. J. Gilmartin, 1972, p. 165) and shows, not needing reminders from literature, an astonishing diversity regarding big, branching and total growth form.

This difference is, however, quite insignificant. They are more remarkable after the outstanding listed differences, which justify the installation of the two new varieties *major* and *vivipara*."

Rauh. "On the way from Cuenca, we collected one plant three times as large as the type;* tri - to quadripinnate inflorescence and to 8 cm long flowers. These were not rare giant specimens and will be

described as var. major Rauh.

In addition, we collected, at the type locality of Guayallabamba, a variety that will be called *vivipara* Rauh nov. var. The size is about the same as the type, with a bipinnate inflorescence, but differs from this by having an extensive, vegetative increase with the help of offsets. These appear on the plant in large numbers, as well as in the axils of the subfoliate scape bracts, as well as in the axils of the sterile bracts of the stem-like section of the spike.

Rauh also describes a giant form (Rauh Coll. Nr. 35 085), and speculates whether it is a stable, normally large form or a polyploid giant form?

Gilmartin indicates the variability alone concerning the position of the flowers: "The degree of disposition of flowers is quite variable. In so many specimens nearly all flowers are secund, in others very few spikes have secund flowers, some are secund in bud, others are not. Specimen AJG 1157 has dimorphic flowers. Some of the flowers have stamens exerted, while upon the seed specimen are flowers with the stigma exerted and the stamens included with the corolla.

[Pinnate: Resembling a feather; having parts arranged on each side of a common axis, a *pinnate* branch; * tri - to quadripinnate, extended

development of the pinnate form to tertiary or quarterternary branching.]

The plant in the photograph was for many years in my collection as an orphan; unnamed and grown in a staghorn fern in a melaleuca tree. When the tree had to be removed, the plant was removed and potted in diatomite granules in a large terracotta pot. It was grown in full sun with regular fertilising with a liquid 14:5:26 mixture with added calcium and magnesium. When the plant flowered in autumn 2011, I was able to confirm its identity; but not sure of the variety. Probably a very good type form -and good culture- as indicated by the inflorescence size and absence of tertiary branching of the spike.

The inflorescence was an impressive 1.6 metre tall with 33 primary and 130 secondary branches and an estimated 1500+ flowers. Apart from the size, the flowering habit was unusual in that there were only a few flowers open each day and the flowering period extended over about five months. This clone was self fertile and self pollinating with some 200+ seed capsules developing to maturity. As would be expected, these capsules matured over an extended period. This may be an evolutionary development to assist in the preservation of the species in a

harsh environment.

At the time of writing the main copy (April 2012), there was no indication of any viviparous offsets and only one small basal offset. Subsequently, the plant died without producing normal offsets!! A second plant is now in flower (April 2013); the size as per the type description. This time, I will not make the mistake of allowing so many seed capsules to mature.

**AECHMEA RECURVATA
'AZTEC GOLD'**

Believe It or Not

By John Catlan

Reprinted with permission Karen
Andreas FCBS.org
Bromlink, Jul/Aug 1997



'Aztec Gold' is really the story of trying to produce a desirable plant by swinging the odds in the grower's favour by manipulation of growing conditions.

One day in 1981, a friend of mine found a plant in a group of my *Aechmea recurvata* plants with a good clear yellow stripe on one of its leaves. The variegated leaf appeared on a fully mature plant that had failed to flower that year. It was the unanimous lament that plants of friends as well as our own had shown partial variegation that had not been passed onto the pups. The low averages to almost non-existent were definitely against success, but with this plant we hoped it was possible as the variegated leaf was low down on the butt of the plant where the pups originate.

After researching the material available, looking for a magic wand I found that there was none, or more precisely, none that I could find. Now was the time to put into action three lessons learnt while observing our plants.

One day while sitting on an old stump, with a shovel in one hand and a cup of coffee in the other, trying to get inspiration to clean up and level off our rubbish dump, I noted just how hardy bromeliads really were. There were dozens of discarded plants lying on their sides with their pups happily sitting up ready to grow into new clumps.

Lesson 1: If a plant falls over and then a pup forms, nine times out of ten the pup will start on the top side of the plant.

Like most bromeliad growers with more plants than room, I would take pups off and sit them in a pot of very open mix to keep them upright until potting up time. If you were too long, you would wind up with a solid ball of roots. This resulted in tearing them apart and damaging the roots when potting. Gradually it dawned on me that the root system initiated from one side of the pup, the opposite side from the heel piece that was attached to the mother plant. The rule became: face the round side to the center of the pot. The roots all grow to the outside of the pot and are easier to separate. This explained to me why in a clump of bromeliads the pups are generally grown on the mother plant furthest from the grandmother. I reasoned that the roots on that side absorbed the nourishment and gave slightly more food to that side of the plant. I foliar fed the plants on one side only and this resulted in a very high percentage of pups from that side.

Lesson 2: If you liquid feed a plant by foliar feeding it on one side, you increase your chances of getting a pup from that side.

I remembered one year, there being not enough bench space for all the plants, that some were placed under a bench. Being winter, the sun was low in the sky and light penetrated very well in under the bench as it faced north. Spring arrived and busy-busy-busy then well into summer. Lo and behold! There were the bromeliads with all their pups, like soldiers, facing the path. At that time I thought it was rather convenient for the removal of the pups. Remember light is a source of food for plants and in a clump of bromeliads the outer-side of a plant should be receiving more light than the side facing the clump.

Lesson 3: If the plant is denied light on one side, it will throw its pups on the side facing the light source.

The time had come to bite the bullet. We laid the plant at an angle of 45 degrees facing away from the sun with the leaf with the yellow stripe being on top facing the sun. A few weeks later at an angle of 90 degrees to the yellow stripe appeared a green pup. This pup was removed with a sharpened screwdriver. Our theory was that the pup had started its growth cycle prior to our meddling with nature. Be patient and wait. Success immediately followed by disaster. The pup was there but it was pure yellow. We had only one

variegated leaf and the pup was right under it. So all we could do was leave it as an interesting experiment.

A few months later when the pup had grown we looked and wondered, for there on the upper side of the leaves was a solid green stripe. A phenomenon of this plant is: all pups appear as plain yellow, but as the plant develops the green stripe improves and it turns into a sturdy, vigorous grower for a variegate.

To promote the growth of 'Aztec Gold' we left it attached to its parent. This promoted vigorous growth resulting in a mature plant that produced 10 pups over three years. Any pups appearing on the green parent were cut off so that 'Aztec Gold' received all the energy.

We were aware that with some variegated bromeliads that too much fertiliser had the ability to cause a plant to lose its variegation, for just prior to 'Aztec Gold' we had over-fertilised some variegated *Neoregelia* seedlings and the variegation disappeared for ever! So this time we took fertilising very cautiously with our original plant. Some variegated plants can take fertiliser and some can't and there are variegated plants that only seem to flourish when they are fertilised well and on a regular basis.

'Aztec Gold' was grown in 170mm hanging baskets potted in a very open mix and hung 18cm from the roof. They had plenty of light and nine-month Osmocote as fertiliser. They were watered regularly, but they were very well drained and had plenty of air movement. The growers who have had trouble growing 'Aztec Gold' are probably giving it too much water and not enough light and air movement to keep up with the watering.

When the pups were taken off the original 'Aztec Gold' they were given the code A, B, C, D, E, F, etc. When plant A threw its pups they were numbered A1, A2, A3, etc. When plant A1 threw its pups they were numbered A1A, A1B, A1C, etc. When plant A1A threw its pups they were numbered A1A1, A1A2, A1A3, etc. All this information was written up into a book so you had a complete family tree of the descendants of 'Aztec Gold'. By looking up the family tree you knew what to code the pup and you entered it into the family tree. The plants were kept all mixed up in one area and all watered and fertilised the same.

'Aztec Gold' E2 bred like a rabbit. Its descendants dominated the whole breeding program. For months we looked at "E2" and its descendants but they all looked the same to me

and everyone else who was asked. I then separated "E2" descendants and put them on the one bench. It was immediately obvious the central green stripe although it was the same width was a slightly deeper green and the yellow a touch more golden and this made the difference, more food faster and more pups. Pure white is the only colour in a bromeliad leaf that does not manufacture food - from sunlight. Yellow is in fact able to manufacture food as it has chlorophyll in its cells, which to us appears yellow.

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Plant of the Month Programme 2013

Neoregelia & Nidularium are the main features for November

Competition Schedule for 2014

January - MINI SHOW

Class 1 – Aechmea species & hybrids

Class 2 – Vriesea species & hybrids

Class 3 – any other flowering bromeliad species & hybrids

February - POPULAR VOTE – any genus species & hybrids + novelty bromeliad display

March - POPULAR VOTE

April - MINI SHOW

Class 1 – Bromelioideae not listed elsewhere in Schedule, species & Hybrids
(*Acanthostachys*, *Ananas*, *Andropelis*, *Araeococcus*, *Bromelia*, *Canistropsis*, *Canistrum*,
Edmundoa, *Fascicularia*, *Hohenbergia*, *Hohenbergiopsis*, *Neoglaziovia*, *Nidularium*,
Ochagavia, *Orthophytum*, *Portea*, *Quesnelia*, *Ursulaea*, *Wittrockia*)

Class 2 – Guzmania species & hybrids

Class 3 – Pitcairnia & Pipinia species & hybrids

Class 4 – any other flowering bromeliad species & hybrids

May - POPULAR VOTE

June - POPULAR VOTE

July - MINI SHOW

Class 1 – Billbergia

Class 2 – Tillandsioideae not listed elsewhere in Schedule, species & hybrids
(*Alcantarea*, *Catopsis*, *Mezobromelia*, *Racinaea*, *Werauhia*)

Class 3 – Neoregelia up to 200mm diameter when mature, species & hybrids

Class 4 – any other flowering bromeliad species & hybrids

August - POPULAR VOTE

September - POPULAR VOTE

October - MINI SHOW

Class 1 – Neoregelia over 200mm diameter when mature, species & hybrids

Class 2 – Tillandsia species & hybrids

Class 3 – Pitairnioideae not listed elsewhere in Schedule, species & hybrids
(Brocchinioideae, Lindmanioideae, Hechtioideae (= *Hechtia*), Puyoideae (= *Puya*),
Navioideae, Pitcairnioideae (= *Deuterocohnia*, *Encholirium*, *Fosterella*)

Class 4 – any other flowering bromeliad species & hybrids

November - POPULAR VOTE

