

Far North Coast Bromeliad Study Group N.S.W.

Study Group meets the third Thursday of each month

Next meeting March 15th 2018 at 11 a.m.

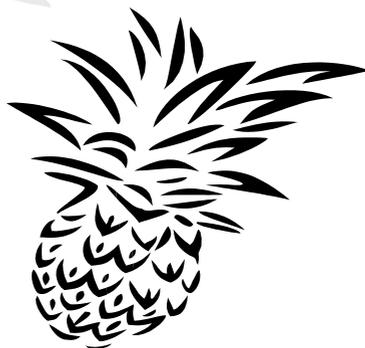
Venue: PineGrove Bromeliad Nursery
114 Pine Street Wardell 2477
Phone (02) 6683 4188

Discussion: February 2018
General Discussion

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Meeting 18th January 2018

The meeting was opened at approximately 11.00 am
The 17 members were welcomed.
A total of two apologies were received.

General Business

Ross welcomed the members to the first meeting for 2018 and told us of the sad passing of Laurie Mountford only a few days before. (Vale p.6, 7)

Mail for the month was Bromeletter from the Australian Bromeliad Society.

A special thank you, to Les Higgins for indexing last years Newsletter, he is also working on previous years. If other members of our Group would like to assist in indexing a couple of years it would be greatly appreciated as “many hands make light work”.

Ross presented John Crawford with his award for winning the Open class in our competition as he was not present at the award ceremony in December.

We reviewed the January edition of the Newsletter, discussing several of the articles, particularly the white woolly egg sacs of the beneficial ‘whirligig mites’ and the “goo” we get in some Bromeliads, mostly on Neoregelia.

Show, Tell and Ask!

There was much discussion again on mosquitoes and our Bromeliads, a subject which seems to come up regularly at this time of year. There are many articles on this subject, an excellent one written by Rob Smythe, MSc. from Townsville, previously published in our FNCBSG Newsletter January 2012, available online at bromeliad.org.au in **Club News**.

There are many scientific papers written, mostly referring to Southern United States of American studies, which relate to different species of mosquito other than those found in Australia. In a reference to the mosquito issue, on line, they reiterate what was said in our discussion about general maintenance of your yard and greenhouses and not leaving water lying around or leaving lots of decaying vegetative matter build up that is likely to hold moisture and encourage mosquitoes and larvae, avoid leaving unused water holding vessels about.

Ross displayed *Edmundoa ambigua* with it's dirty brown inflorescence, which at first glance appears dead and not a plant, other than a collector would be tempted to add to their collection. Given that the others of the genus are so attractive that even at it's prime *Edmundoa ambigua* appears post floral until one looks closer to see the white petals peering through the brown woolly covering.

Another perennial query for this time of the year is the colour bleaching in some plants or complete loss of colour in mainly Neoregelias. For those of us who grow them in strong light, it is all a compromise, we can grow our plants under light shade or 50% shade cloth for winter colour and double the cover come summer. We can begin with 70% shade cloth over our growing areas and move our plants around for winter and summer best light to get the desired results or just take pot luck and grow a few extra shrubs in the garden that will protect our Bromeliads in the really hot weather. I have found tree ferns to be very effective, fast growing and very graceful. Trish

Sue raised the issue of plant labelling or lack there-of and particularly the generic labelling of Bromeliads in our large retail outlets. The comparison being made with shrubs and other nursery plants that are given Genus and Species names, in other words positive correct identification, where as the Bromeliads are generally just labelled as Bromeliad or sometimes Guzmania / Tillandsia etc, with no indication of the species or hybridisation of the plant. After much discussion and all agreeing that this is a common problem it was suggested that one approach these outlets with specific complaints and requests to have the plants correctly labelled. Please also indicate the potential for more sales if the plants are correctly labelled. Pointing out, that many sales are not occurring as you the potential purchaser is not going to buy a plant without knowing what it is, given that they, the buyer, may already have the plant in their collection or they are looking for specific species!

The question was raised “what constitutes a variegated plant”?

Does having one variegated leaf make it a variegated plant?

One answer was no!! all the leaves must show variegation.

Another answer was “it's not actually a ‘novar’ (no variegation) as it is still showing signs of variegation however poorly that is”.

Place the single variegated leaf facing toward the light and hopefully the plant will produce a good variegated pup from the nearest node to the variegated leaf. It is for this reason we note the term ‘novar’ on the label of a plant that has lost variegation which then indicates what the plant was if in the future it gives a variegated pup.

Crown / heart / centre rot possibly caused by Phytophthora (what is it ? p.13) was another topic raised and it was again suggested that a dose of bleach or several teaspoons of powdered cinnamon are effective in treating the problem. Hose the centre of the plant out with clean water removing decaying material and apply either the cinnamon or bleach, leave the cinnamon in situ, however hose out the bleach after half an hour and allow to dry out. Check before adding more water that the infection has cleared.

Ted asked to have the gassing of Bromeliads explained, “why and with what do they use?” Ross went into a lengthy explanation but mostly expressed the need to be patient as “all good things come to those who wait”. Why is it carried out ? mainly to induce simultaneous flowering ahead of normal timing for commercial plant nurseries release to retail outlets. It is an economic decision, the shorter the time one holds a plant in stock the more economically efficient it is. Several plant growth regulators are used to induce flowering e.g. Florel and Ethrel. It is also done for hybridising purposes for simultaneous flowering - pollen exchange.

How to Make Your Bromeliad Bloom by Melanie Dearing

Taken from the internet.

Why force a Bromeliad to Bloom ?

Bromeliads are forced to bloom for various reasons. Growers force blooms so that the plants will be colourful for sale during certain seasons. Pineapples are forced by growers to bloom so that they produce fruit at the same time making harvesting easy. Horticulturists force blooms so that they can create crosses between varieties that would normally bloom at different times. Many hybrids would be impossible without forced blooming. Hobbyists force blooms to keep their Bromeliads colourful and beautiful as often as possible. Whatever your reason forcing Bromeliads to bloom is a simple and easy process.

Forcing Bromeliad blooms requires only an apple and a little patience. With a few short steps you can have your Bromeliad blooming in 3 months instead of 3 years.

An Apple in a Bag

An easy way to try to force your Bromeliad to bloom is the ‘apple in a bag’ approach. First you need to find a clear plastic bag with no holes in it. It should be large enough to fit the entire plant container and Bromeliad inside. Garden centres or even aquatic pet stores should have bags like these available.

Remove any water that may be sitting on the plant. The central tank and leaf axils must be empty. Then place the whole pot in the bag with a ripe apple. Tie the bag shut at the top and make sure there are no openings. Let the plant sit in the bag with the apple for 7-10 days. Make sure the pot is kept in a shaded area as too much direct sunlight could damage the plant. Finally remove the pot from the bag. Six to fourteen weeks from when you remove the pot the bromeliad should begin to show signs of blooming e.g. colourful bracts or inflorescence.

Ethylene

It is the ethylene gas that is produced when the apple ripens that stimulates the Bromeliads to bloom. There are also chemical versions of ethylene available.

They can come in gas, liquid or a crystal form. Unless you are a commercial grower you will most likely want to use the liquid form. Commercial growers often use the gas, but it is much more difficult to work with. Some Bromeliad growers, producer / sellers recommend *Florel*, but anything with the active ingredient *Ethefon* will work. There are several different products on the market.

The products have varying concentrations of *Ethefon* so be sure to follow the manufacturer’s instructions for handling and dilution closely. Only mix what you will need and throw away any extra after treating the plants. The active ingredient becomes inactive very quickly once diluted with water. You should not use the product more than four hours after it has been mixed. Spray the top surface of the plants with the mixture so they are just covered, but not dripping. Alternatively, you can add about an ounce (30ml) of the mixture to the central tank.

The advantage to the chemical method is that it is slightly faster than the apple method. It will still be 6-14 weeks from the application of the product to the bloom, but you do not have to wait the extra 10-14 days that the apple must sit in the bag.

Precautions

A few other conditions must be in place before you force your Bromeliad to bloom. You should not fertilize your Bromeliad two weeks before you force the bloom until two weeks after the bloom begins. Temperatures at night should remain consistently above 65 degrees during the time you are forcing the bloom.

Be aware that different Bromeliad species will respond differently to forcing. Some may take longer than others to flower. It may take some trial and error to determine exactly how long it will take a certain Bromeliad to bloom.

In general, *Guzmania*, some *Aechmea* and *Vriesea* genera respond very well when forced to bloom.

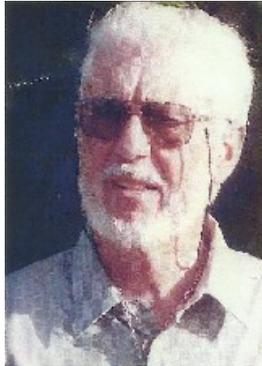
Fertilisers

If you have been patiently waiting for your Bromeliads to bloom, there maybe a reason your Bromeliad has not produced any inflorescence. Too much or too little sunlight may prohibit a Bromeliad to bloom.

Sunshine Coast Bromeliad Society warns that bromeliads are often reluctant to bloom when fertilized with too much nitrogen. The nitrogen will keep the Bromeliad growing and producing pups, but it will delay flowering. They recommend using a fertilizer with Nitrogen 3.0, Phosphorus 8.0, and Potassium 25.0 plus trace elements. This combination will put enough stress on the plant to produce colour and a bloom quickly.

Vale: Laurie Mountford 5th January 1934 — 13th January 2018

Laurie was a foundation member of the Far North Coast Bromeliad Study Group NSW (FNCBSG) when it began ten years ago and it is with much sadness that we farewell our well respected friend. He will be missed from our meetings with his carer and his beloved Tillandsias, a passion he shared with many of our members especially Gary who dedicated two tiny mounted Tillandsias to Laurie's memory. Laurie won our inaugural Popular Vote Competition which made him our 2010 Champion, in 2016 he won the Decorative section. His plants graced our event tables every month. Thank You Laurie.



Tillandsia 'Laurie' by Derek Butcher DD 0506

In May 2002 Laurie Mountford of Ballina, northern NSW, sent me a *Tillandsia* he was growing that he had obtained without a name. Ken Woods of Sydney was also in the plot but was unable to give any clues either. Clearly the plant had *T. schiedeana* in its make-up because it had yellow petals and blue at the base. This species seems to love hybridising with any blue petalled Mexicans but which one? Ken and I decided to call the plant 'Laurie' because he had brought this unnamed hybrid to our notice.

April 2006 I was checking Tillandsias to photograph and noted two plants that were coming into flower and looking very similar. They were 'Laurie' and one with *brachycaulos x schiedeana* on the label. I had always assumed that the formula plant was a natural hybrid because I had got my plant from Len Colgan who thought it originated with Pam Koide of BirdRock Tropicals in California. Chris Larson also tells me that the plant with this formula has been in Melbourne for many years originating possibly in Europe. Nobody has reported doing this hybrid in Australia. Whatever the situation, this plant has been in Australia for many years but depending on where it was being grown had various plant shapes, and sometimes the leaves turn red as in *T. brachycaulos*, although the inflorescence seemed comparable. Here we had 'Laurie' and *brachycaulos x schiedeana* growing under similar conditions so even I could not be confused. Little has been written about this natural hybrid and even Meilleur in J. Brom. Soc.29: 217. 1979 just said he had found it in Mexico. Renate Ehlers tells me she has not found it on her innumerable exploration trips to Mexico. As far as I am aware, no other reportings have been made but if you are aware of a location please advise.

The plant is about 30cm in diameter with a slender scape from 7cm long. The inflorescence is almost capitate, 3cm long by 2cm wide, polystichously compound with about 5 branches each with two flowers. Primary bracts had a sheath 2cm x 6mm with a 4cm long filiform blade. Certainly in the specimen I examined these branches were somewhat odd because there was a short rhachis where the bottom flower was at anthesis but the next flower up was not even thinking about it! Petals were 4cm long, mainly yellow but with a blue tinge next to the red sepals. Pollen was hard to find!



Tillandsia 'Laurie'
photo by Laurie Mountford

So if you want a quick way to write *brachycaulos x schiedeana* on the label I suggest you use 'Laurie' instead!

By the way I have seen this plant erroneously called *schiedeana x xerographica*.

Edmundoa ambigua
grown by Ross Little

Showing the lanate (woolly) covering with a flower of white petals peering through.



Vriesea fosteriana
grown by Steve Davidson



Guzmania unknown
1st Open and Judges Choice
Marie Essery



Vriesea 'Gulz'
1st Novice Sue Mackay-Davidson



Billbergia 'Kolan Snowflake'
grown by Dave Boudier



Wallfussia 'Creation'
grown by John Crawford



'It's in a Teacup'
1st Decorative Ross Little



Neoregelia 'Criss Cross'
grown by Keryn Simpson



Vriesea 'Galaxy'
grown by Kay Daniels



Open Champion 2017
John Crawford



Neoregelia 'Franca'
grown by Coral McAteer



'A Tribute to Feathered Friends'
by Keryn Simpson



'Happy Australia Day'
by Dave Boudier

Xylella fastidiosa

Or the reason we can no longer Import Bromeliads into Australia

Compiled from various sources:

Many thanks to Chris Larson upon whose research this article is based; DAFF website; BBC GCSe Bitesize – Xylem and Phloem

Xylella is an invasive bacterial plant pathogen that causes significant environmental and economic impacts. It presents as scorched leaves, browning and loss of leaves, stunted shoots, reduced fruit size, dieback and/or death of the plant. It is spread by sucking insects moving from infected plants to other species. It is NOT yet present in Australia, it is, however, a major concern for Australia's plant industry as many commercial and ornamental plant species can be killed by this bacterial pathogen.

Depending on the host plant species, the disease is known by a range of common names, including:

- Anaheim disease in: grapevine
- California vine disease in: grapevine
- dwarf in: lucerne
- leaf scald in: plum
- leaf scorch in: coffee, almond, blueberry, oleander, elm, oak, plane, mulberry, maple
- phony disease in: peach
- Pierce's disease in: grapevine
- variegated chlorosis in: citrus

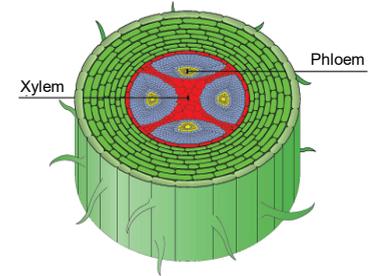


The Department of Agriculture, Forestry and Fisheries (DAFF) now manages Australia's Bio security. It collects information from inter-government agencies regarding threats. There are four other recognised *Xylella* sp or sub-species of *Xy. fastidiosa* and DAFF also anticipate another undescribed species/variety. These are all considered to be of concern. It then puts in place varied restrictions based upon:

- Countries with a record of *Xylella fastidiosa*
- Plant families with known associations with *Xylella fastidiosa*.
- Possibly other things.

What is it ?

Xylella is a bacterium that lives in the water and nutrient conducting vessels (xylem) of plants. It is transmitted by xylem feeding insects such as leafhoppers and spittlebugs. Resulting in the stoppage of water flow by blocking the vessels causing sections of the plant to die.



It was discovered in 1892 in California. Recent outbreaks have occurred in Italy in 2013 severely infecting olive plantations. In 2015 it was found to effect oleander and acacias in Europe, leading to DAFF having concerns. The basis for DAFF's Tillandsia alert and resultant bromeliad import restrictions stemmed from *Xylella* DNA being found **ON** *T.usneoides* imported into Europe from Costa Rica, **NOT** in the xylem. Also a study of *Xylella* (2003 & 2005) in infected citrus orchards in Texas found *Xylella* DNA on the outside of *T.usneoides* (on the foliar trichomes), it is thought, after decaying matter had dropped on the tillandsia leaves, but none were found to be infected. These studies show no evidence that *T.usneoides* has been infected growing/hanging in these orchards.

The disease cannot live outside of the Xylem.

No Xylella has been found in any Bromeliad genus.

DAFFs Import Requirements

- All parent stock must be tested in country of origin.
- Then those plants must be quarantined for at least 12 months.
- Pups or cuttings taken from the tested plants must all be tested again for *Xylella fastidiosa* prior to export.

Note: No Bromeliad has ever tested positive to infection by *Xylella fastidiosa* by these tests to which they will be subjected.

Bromeliads are the only family where the only association is the DNA found on the external parts i.e. where no member of the family has been found to be infected. Therefore Bromeliads are the only family that has been subjected to these onerous measures, where there is no scientific evidence that they are susceptible to such an infection.

We certainly do not want this insidious disease in our country, and if Bromeliads were proven to be 'carriers' of the bacteria we should have no problem with these restrictions. However, DAFF use "the use as a consumable product" to exclude citrus products from their harsh restrictions, to allow imports from the Americas, where many of the nurseries that we would like to import from are located! This is also very baffling as there has been no public information about dealing with bio waste from citrus imports, which regularly go on the compost heap. Even if the specified use is termed "a consumable product" the practical effect is otherwise.

Where To From Here With Bromeliads

- Depends if DAFF accepts that the science behind their actions is inconclusive at best.
- Or if DAFF realize that their protocols go far beyond those in place in any other country — including N.Z.
- If the relevant Xylella species are found in either Bromeliads or in previously Xylella free countries, the situation may get worse.



Where do I Find the Dates ?

www.bromeliad.org.au then click "Diary".

Check this site for regular updates of times, dates and addresses of meetings and shows in your area and around the country.

A Question Asked this Month

Q: When it rains heavy does anyone empty their Bromeliads so the base leaves aren't full of water or do you leave them ?

A: Some growers are concerned about rot problems so their answer was **yes**.

A: If in pots with a good quality, free draining potting mix they should be fine.

A: Good house keeping: keep plants clean, remove dead basal leaves regularly and they'll be fine.

A: Maintaining good air circulation by not over crowding they should be ok.

A: It is not the rain that creates rot, poor drainage in the pot rots the roots, if your mix has gone quite muddy then that often harbours pathogens that will create rot on bottom leaves. Centre rot is not caused by water, the rot is caused in general by one of two things, either in very hot weather the water in the centre gets too hot and then the tissue collapses and rots, so to prevent that you have to water plants enough to cool the plants water in the centre, or it is caused by the fungal rot 'Phytophthora cinnamomi' which is a very virulent rot, it is an air borne, water borne and soil borne rot. Rain on the plants, even in big amounts is cleaning and beneficial, especially on Vrieseas.

What is Phytophthora cinnamomi?

Phytophthora cinnamomi (*phytophthora* root rot) is an introduced plant pathogen (disease causing organism) that can cause disease and plant death in native vegetation.

Phytophthora cinnamomi belongs to a group of micro-organisms known as water moulds. Water moulds were once included in the fungi kingdom and, as a result, *Phytophthora* root rot has been called a fungus in earlier interpretation literature. Water moulds have a motile or animal-like stage which fungi do not. As the name water mould suggests, it requires moist conditions to thrive. Its food source is the root and basal stem tissue of living plants. *Phytophthora* root rot grows as microscopic sized filaments (mycelium) within susceptible host plants. It consumes the host plant causing lesions (areas that appear rotten). This weakens or kills the plants by reducing or stopping the movement of water and nutrients within the plant.

Caution: remove all rotted areas of the plant back to clean tissue, treat with a fungicide or food grade cinnamon powder and allow to dry. Sterilise any implements used to trim infected plants with boiling water to avoid contaminating other plants.

Fungi - part 1

by Les Higgins 2018

Fungi are diverse in appearance and classification. They were once considered to be a low form of plant life with an affinity to bacteria. However, fungi are sufficiently different to plants to warrant giving them a separate Kingdom; Mycota. Fungi that are most likely to come to the attention of Bromeliad Growers are: True fungi in the Subdivision Eumycotina and the slime moulds within the class Myxomycetes.

Both fungi and bacteria are usually present in an infection. True fungus has a mushroom like smell. The cell walls of most true fungi species are considered to be made of chitin, the same substance that makes an insect exoskeleton. The vegetative (somatic) phase of slime moulds is usually a green coloured plasmodium that has a creeping and flowing movement. Bacteria may have a 'furry' appearance and an unpleasant odour.

Fungi reproduction can be by spores or fragmentation, fission or budding. Fungal spores are continuously floating in the atmosphere and are always present in a collection. Unless the environment is in their favour spores don't germinate. Conditions allowing spore germination are infrequent and usually brief.

All fungi are heterotrophic (depend on other organisms to supply their nutritional needs). Lacking the photosynthetic ability of plants fungi can be saprophytic, parasitic or obligate (needs a living host). The various algae, blights, damping-off, fungi, mildews, moulds and wilts grow only in very specific conditions.

Moulds include *Penicillium* that can smother seedlings but has no effect on plant bacteria. Mould is usually fatal in tissue culture flasks. One source of infection in tissue culture is Pigmy-phorid mites. They are so minute they can walk between the threads of a flask. Their footprints down the inside of a tissue culture flask become visible as a fungus trail. On either side of their body are pouches to hold fungal spores. They plant their gardens and wait for the harvest. Sealing the flask's cap with sticky tape and using a micropore™ as the ventilation source can prevent their entry.

Soil saprophytic fungi (class Ascomycetes) spores are splashed into the air by rain and being weightless they float long distances. The "earthy fragrance" following rain is the germinating of these soil fungi spores. Whenever saprophytic spores land on leaves and germinate their presence causes concern. The leaf is simply an anchor. The environment will eventually go against the fungus and all that remains is leaf discoloration.

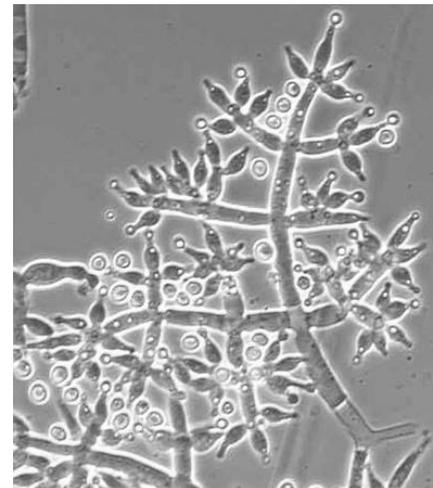
Healthy soil is rich in fungi and bacteria. Both organisms are essential for the survival of our environment. By breaking down organic waste they maintain the humus of soil and the carbon dioxide content of the atmosphere. Fungus in association with algae will form lichen, often the primary coloniser of a rock surface. Toadstools, puff-balls and mushrooms are the fruiting bodies of saprophyte fungi feeding on decaying organic substances to the benefit of higher plant life. There are fungi that protect living plants from attack by bacteria. There are fungi that destroy insects. Green Mould™ kills grasshoppers/Locusts. (To prolong Green Mould efficiency home gardeners are deterred from its use. 2kg packs are the minimum size and only available in Plague Locust territory).

The vegetative cell structure of a fungus is the hyphae incorrectly described as fungal roots. Mycorrhiza fungus lives within the plant rootlets. Hyphae densely cluster within the plants root zone becoming attached to and extending root hairs. Mycorrhiza is for many plants a beneficial nutrient exchange system. The more infertile the soil the more essential is the mycorrhiza association to improve mineral intake. Mutual survival includes the fungus robbing the plant of its products of photosynthesis. In better quality soil mycorrhiza is rejected by the very plants that need it to survive in infertile soils.

Trichoderma, a filamentous fungus, is a very desirable inhabitant of the substrate. It is most generally seen in decaying pine bark. *Trichoderma* has nematode trapping snares. It takes nutrient from decaying organics. Most astonishingly *Trichoderma* destroys a wide range of soil inhabiting disease causing fungi including: *Botrytis*, *Fusium*, *Phytophthora*, *Pithium*, *Rizoctinia*, *Verticellium* and *Xanthomas*. Acidic exudates of *Trichoderma* break the bond between locked up calcium and phosphate. A plant's efficiency in utilising nitrogen improves in

association with *Trichoderma*. A hazard for *Trichoderma* is that its spreading fine white hyphae could be mistaken for the filaments of Root Mealy Bug.

Consider fungus as a friend. To use a fungicide can have damaging long lasting and far reaching consequences. Next month's Newsletter has a companion article describing Pathogen Fungus.



◀ Trichoderma fungus

Novice Popular Vote

1st	Sue Mackay-Davidson	<i>Vriesea</i> 'Gulz'
2nd	Coral McAteer	<i>Neoregelia</i> 'Franca'
3rd	Steve Davidson	<i>Vriesea fosteriana</i>

Open Popular Vote

1st	Marie Essery	<i>Guzmania</i> unknown
2nd	John Crawford	<i>Wallfusia</i> 'Creation'
3rd	Kay Daniels	<i>Vriesea</i> 'Galaxy'

Judges Choice

1st	Marie Essery	<i>Guzmania</i> hybrid
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Decorative

1st	Ross Little	'It's in a Teacup'
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Comments from the Growers:

John Crawford displayed two plants, the first being x*Wallfussia* 'Creation', John described how this beautiful 'Creation' was developed by crossing *Tillandsia platyrhachis* and *Wallisia cyanea*. Originally both parents were in *Tillandsia* and registered in 1985 by Corn Bak as *Tillandsia* 'Creation'. Apparently it was not popular commercially because of the ease of leaf damage. John found it does not flower well for him if kept on his shade house floor, however if hung close to the shade cloth roof it performs much better.

The second of John's discussion plants was a paradox or fraud for many years, however it is now known as x*Niduregelia* 'Ruby Ryde'. This was a plant grown by Ruby from seed she had received from Seidel's. Much confusion was had for many years as to the true identity of the plant as it looked like a *Neoregelia* but with an inflorescence like a *Nidularium*. In 1987 Eltom Leme had described a similar plant as *Nidularium fraudulentum* to later decide it had characteristics which best fitted those of a bigeneric between *Neoregelia* and *Nidularium* and changed the name to x*Niduregelia fraudulenta*. It was considered Ruby's plant was still not a match to these newly published bigenerics and therefore given the cultivar name of x*Niduregelia* 'Ruby Ryde'.

John briefly discussed an article he found on the history and development of the nursery Rainforest Flora Inc. in California USA owned by Paul T. Isley III and Jerrold A. Robinson which was recently struck down by fire. Paul's introduction to *Tillandsias* began in the 1960s, hopefully his "fascination with these incredibly unique looking plants with no soil" can reach beyond the fires and continue.