BROMELETTER

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Front Cover

'The best type of Christmas Tree!'

Photos by

Larissa Victoria;

Frog in brom photo

Motorbike Frog or Litoria moorei

By

Stan Olejnik

Happy Christmas and New Year greetings to all BSA members,

As the year draws to a close we need to be grateful that so few people in Australia were infected by COVID and of course those of us with gardens and passions for plants were fortunate to have a worthwhile and engaging pursuit during lockdown.

And as 2021 approaches, we are set to recommence our monthly meetings. Hip Hip Hooray!!!! **BUT** these will be by invitation only. Please read the section on **page 8** carefully, as we have strict COVID 19 guidelines from the council to adhere to, as our meeting are in their building.

This issue we get to know Amal Eid a bit better. Amal is one of the newer committee members and very enthusiastic about her broms. You will note many similarities among bromeliad lovers as you read these member profiles.

The topic of CAM photosynthesis has been a thorn in my side since I took over from Kerry, who told me she was planning to cover this and foolishly I said "what a good idea!" In retrospect I should have kept quiet or convinced Kerry to write it. The difficulty is the depth and detail to which to take this topic, as our society has some very experienced and knowledgeable members, some new to bromeliads and many who do not have a science background. So having explained myself this is a basic introduction to the topic which aims to help you understand how it affects growing your particular bromeliads. There is plenty of detailed information on the chemical pathways for photosynthesis should you be interested, just not in this issue!

As always keep safe and happy brom-gardening!

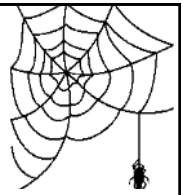
from Larissa (Editor)

Life Members:

Ron Farrugia
Graham McFarlane
Bill Morris
Ian Hook
Allan Beard
David Scott

WEBSITES

Bromeliads in Australia	http://bromeliad.org.au
Encyc of Bromeliads	http://encyclopedia.florapix.nl/
BSI Cultivar Register	http://registry.bsi.org/
Florida Council of Bromeliad Societies	http://fcbs.org/
Bromeliario Imperialis	http://imperialia.com.br/



MEMBER PROFILE - AMAL EID

Source : interview with Amal Eid.

Amal grew up in Liverpool, in a large family that relied on their own home-grown produce, so food on the table was what was in the garden at the time. Farming was also the occupation of the extended family, in Lebanon, who grew olives and grapes. Amal recalls eating strawberries straight from the garden, before her mother was able to pick any for the table and getting into trouble.

Amal was always interested in nature, but it wasn't until her sabbatical year in 2014-15 that she discovered the joys of gardening. In those early days among the many plants gleaned from her mum's garden were 6 to 7 broms. Of course at the time, Amal did not know what these plants were and only much later found their names.

WHAT YOU MIGHT NOT KNOW ABOUT AMAL

Amal has always liked cats and started fostering cats in 2006, many with health or socialisation issues. There were many abandoned cats, some because they were black and so considered unlucky, others that were strays, such as the three kittens she found in a drain. Currently she has just two pampered house cats, who were not forgotten in the renovations. They enjoy their own purpose built enclosure with climbing structures the entire length of the back of the house.

HOW IT ALL STARTED

Neo **'Pinegrove Tiger'**

Amal's mum grew Cymbidium Orchids, and so Amal started growing phalaenopsis orchids and other exotics, but found them too fussy. They kept dying, either from poor airflow (being in an apartment) or over-love.

Sarah Collins, a friend and colleague of Amal's, was a BSA member and a long time collector of bromeliads. Sarah gifted Amal a *Neo.* 'Lamberts Pride' as a housewarming gift in 2015 and soon after invited Amal to BSA meeting. Here, meeting like-minded people, seeing the community and generosity of BSA members was, for Amal, amazing.

Amal's interest was further boosted after visiting her sister in QLD and visiting a brom nursery close to the Olive Branch. She purchased lots and shortly after buying many broms on the Internet. On reflection she feels this was not the best way to buy and now mainly buys from NSW growers or garden grown tough plants rather than QLD hothouses. To improve her understanding Amal undertook a year-long Certificate 3 horticultural course and devoured many books on bromeliads.

THE SET UP

Amal and James moved to their current home in April 2019, primarily for the large outdoor space. With the house renovated, Amals efforts have turned to the garden. Her latest completed project is a new shade house, which is already full **(photos middle right).** Luckily there is room for 1-3 more. Other plants are under shade cloth **(photo bottom right),** in the cat enclosure, on the pool fence **(photos left)** and under trees.

In 2016 Amal raised some *Neo.* 'Pimento' from seed to see the offspring variation with this technique.

THE SET UP cont… Situated up high, with constant strong winds, meant Amal's broms were always being blown over. So Amal now makes a heavy potting mix using a combination of pine mulch (from ANL), 30 -50 % scoria, coir peat, perlite and dynamic lifter. The scoria makes the pot heavy, improves stability and allows drainage.

Amal has a spacious undercover space for her potting area to do her work rain or shine.

Vr Pink One x Mauve Monarch - an AP Hybrid

AMAL LOVES

Amal loves colours and how the colours of bromeliads change, seeing the pups form and what is flowering in her domain. Also high on the LOVE list are non-fussy plants.

AMAL HATES

- Fussy plants drive Amal nuts "why isn't it working?" is a repetitive question.
- NOIDs - because Amal collected bromeliads so rapidly, she has many NOIDs, since labels were either not supplied or were lost. Now, she is careful to have the correct identification for her new broms.

Vr Tasman Cherry Snow

OTHER PLANTS

Following her parents example, Amal grows vegetables and herbs. Her large backyard has a row of healthy looking fruit trees **(photo top right),** one of the first things she planted when they moved in. She also likes Hoyas **(photo bottom right)** and her latest interest is native plants **(photo grevillea—middle right).**

Alcantarea

FUTURE PLANS

As with all gardeners Amal has a myriad of plans for all sections of her garden. Perhaps another shade house? Or landscaped gardens to incorporate all those NOIDs. Then there is the front yard to landscape, with a native hedge using acacia and grevillea, then filled with Lilly Pillies and other natives species including some Bush Tucker ones. The idea being to encourage native wildlife to this part of her garden.

So many good ideas!

WHAT AMAL WOULD HAVE LIKED TO KNOW FROM THE START

- Understanding that a potting mix mainly provides stability for broms so using a bigger pot is OK, as long as the mix has good drainage.(ie. scoria).
- How big each brom would grow.
- Skewers used to stabilise new pups are important and rot away by the time the plant is stable.
- Which are the fussy broms.
- Which broms grow well in Sydney.

Photo - middle right Neo johannis sp; bottom right *Vr.* Roro

JANUARY MEETING - BY INVITATION ONLY

As the Baulkham Hills Council COVID-19 course has been completed by Ian and the required paperwork submitted, we are on track to recommence our monthly meetings starting on the **9th January 2021 in the Federation Pavilion**.

Please note the rules governing our meetings are different to those of other venues such as pubs, cafes etc. At the time of writing, our numbers are limited to 58 people. Therefore attendance at meetings will be by invitation only, so look out for an email from Ian in early 2021. Those without email will be contacted by phone.

PRE-REGISTRATION A MUST

Make sure to read all the meeting guidelines and RSVP quickly to Ian whether attending or not. It goes without saying that in accepting to attend any 2021 BSA meeting you undertake to adhere to the COVID rules. Ensure you only attend meetings if you have no flu symptoms on the day. Wearing masks and gloves is encouraged and hand sanitisers will be provided.

Please note anyone turning up without being pre-registered to attend, will be turned away. Attendance is strictly by invitation and pre-registration via Ian.

BE AWARE - council inspectors will be checking on adherence to their guidelines and non-compliance can result in a $10,000 fine and closure of future BSA events.

The layout of our seating and selling areas will differ from previous meetings and therefore the number of sellers will be limited. Again, Ian will give the go ahead to those able to sell at our first meeting. Those who miss out in January will be given an opportunity to sell at the February meeting.

No shared food will be available, so bring your own lunch. Tea and coffee will be served, so please bring a cup.

FEBRUARY MEETING

Our February meeting, scheduled for the 6th February is on the **first** Saturday of February (not the second) and will be in the Federation Pavilion. **This will be our AGM meeting.**

CURLING LEAVES and WET FEET

Source: FNCBS March 2019 Show and Tell.

Another unusual brom is *Neoregelia* 'Shelldance', a hybrid from *Neoregelia* 'Fairy Paint' (seed parent x ?? Pollen Parent). This was imported from Shelldance Nursery USA, by Don Woods of Perth. Some people think this is an intergeneric cross between a neoregelia and cryptanthus.

This plant does not conform to a regular shape, but has curving leaves. Similar to *Neo* 'Burnsies Spiral', *Neo*. 'Shelldance' flowers rarely, but continues to put out new leaves and so grows a long stem. The pups are produced along this stem in large numbers. In cases when the stem is long, but the plant does not pup or flower, lying it on its side makes this brom think it is about to die and it will pup profusely. Similarly fertilising this bromeliad, although it loses its red colours and goes green, stimulates prolific pup production eg up to 45 pups on one mother.

Above - numerous pups forming along the trunk of a parent *Neo.* 'Shelldance'. Below - mature plant L. Victoria

Above - a pirouette from *Neo.* 'Shelldance'—Anna Ernst

Report from Treasurer Alan Mathew for November 2020

Opening balance at bank 1.11.20	$12,222.43
Transfer from term deposit	$10,000.00
Income:	$413.00
Less Expenses:	$162.77
Closing balance 30.11.2020	**$22,472.66**

THIS MONTH'S TIPS

Water in Tanks

Source: ELBSSA (South Africa) Sept-Oct 2020.

Should there always be water in the cups of my bromeliads? Some instructions say to always keep water in the bromeliad cups, but when followed to the letter sometimes the centre rots out. The reason is, unless the bromeliad is in active growth it is not able to breath properly, or it may become congested with too much fertiliser/debris. Temperature is the most important factor in determining growth. A drop in temperature or a dry period will tend to induce dormancy or a rest period, and at this time it is beneficial to have the cups go dry. This is a much needed cyclic change that is essential for many bromeliads to initiate the blooming phase. In nature, even at somewhat elevated temperatures, there are times when there is a no-rain condition which allows the cups to dry out completely. Tropical rains come down in torrents so the cups are completely flushed out. The following should be helpful:

- When you water, do a lot of it; be sure to flush all of the water from the previous watering from the cups.
- When temperatures are much below normal, do not water.
- Do not be afraid to let your bromeliads dry out completely between watering.

Growing Conditions Vary

Source - FNCBS Oct 2020 C.G. Hodgson.

A gentleman once remarked to me that he could not understand why some of his plants were thriving, while others were not. He said, "They all get the same treatment." I said, "Yes, that is the trouble. You have plants collected from various parts of the world, from various conditions, all requiring different treatment; here you expect them to thrive under one condition." Of course there are bromeliads which will virtually grow anywhere such as is *Billbergia nutans* (Queens Tears) - **photos L.Victoria**

AIR– LAYERING

Source: taken from A. Devonshire, JBSNZ- Vo 60 No 6.

While most Bromeliads reproduce by pups (offsets) or seeds, the method of air layering is a propagation method you can use on puyas, as simply cutting off a branch and planting it doesn't work with puyas.

Puya is a genius with some very large species, some of which grow branches. NZ member, Andrew Devonshire, found that his Puya venusta which initially had 4 heads, had grown to 27 heads within 7 years. He needed to trim it, but didn't want to simply throw the branches out, so he successfully employed the air-layering method to produce new plants.

Air-layering is a propagation method used for woody plants and allows branches to root while the branch is still attached to the parent plant. It works for puyas. A pot is placed in such a position to insure the part of the branch is in contact with the soil **(photo top right)**. The soil is watered until substantial roots form at that point in the pot **(photo above left)**. This may take 3-12 months. Once a significant root ball is formed the branch is cut away from the main stem and you have a new puya of a significant height. **(photo below right)**

WHAT IS YOUR ANSWER???

You get home from being out and your significant other says:

"Did you buy ANOTHER bromeliad?"

How do you answer?

A. It was an accident.
B. I don't recall.
C. You look **SO NICE** today!
D. No, this one is for a friend!
E. You bet I did!!!!!!

GENUS ALCANTAREA

pronounced Al-kan-tar-ee-uh

Source: by Robert Reilly.

All alcantareas come from Brazil, and are usually found growing on, or near, rocky cliffs called inselbergs.

HISTORY

As a genus Alcantarea has a chequered history being raised and then demoted from genus status, several times. In 1995, Jason Grant resurrected the genus, recognising 10 species. By June 2020, Gouda and Butcher recognised 41 species and 1 naturally occurring hybrid, the Landsendt Blue Grey.

Current alcantarea species found in Australia are; Australiana, burle-marxii, cerosa, delicata, distractila, duarteana, extensa, farneyi, geniculata, glaziouano, heloisae, imperialis, intermedia, longibracteata, nahoumi, nevaresii, odorota, patriae, regina, roberto-kautskyi, trepida, and vinicolor. It is highly likely there are some undescribed alcantarea species circulating in Australia and may could include the cultivars: 'Passion', 'Raymond Red Specks', and 'Visconde de Maui'. The acuminatifolia, galactea, muciloginosa, simplisticha, and turgida species may also be present in Australia.

CHANGE YOUR LABELS

Many species came to Australia as seed, often labelled as Alcantarea imperialis, a label used prior to the 1990s as a generic term covering virtually any alcantarea.

Due to this names have changed some examples being:

Alc. 'Imbe' became *Alc.* Australiana

Alc. brasiliana is now within Alc. Imperialis

Alc. edmundoi is within Alc. regina

Alc. lurida Is now within Alc. Turgida

So correct your labels accordingly.

Photos ; top left *Alc.* extensa growing in the wild in Palo Alto Brazil, by Mark Paul; bottom left *Alc.* 'Raymond Red Specs' photo by Ray Henderson; middle right *Alc.* Imperialis inflorescence

Above: *Alc*. roberto-kautskyi by Ray Henderson

Above: *Alc*. heloisae by Ray Henderson

Above: *Alc*. glaziouana by Ray Henderson

HINTS ON GROWING ALCANTAREAS:

- alcantareas grow well in large pots or in the ground
- some can reach four to five metres in height and two to three metres in width so may be 'top heavy', therefore additional stability maybe required; using heavy pots is best
- they can be grown in rockeries or gardens, but again the soil should be freely draining
- alcantareas grown in the ground will generally be larger than those grown in pots, all other factors being equal
- alcantareas may grow reasonably well in 'heavier' soils, but they will not tolerate waterlogged soils
- potting mixture must be freely draining and can be made up of composted pine bark, and sand-based potting mixtures (e.g. 2 parts cocopeat/peatmoss to 1 part coarse sand)
- when potting an alcantarea add a slow release fertiliser such as Nutricote or Osmocote, use the recommended dose for indoor plants
- alcantareas like strong light, many take full sun during winter and full morning sun in summer, but full afternoon sun in summer will often result in leaf 'burn' on days when the temperature exceeds 35 degrees Celsius, and the humidity is low
- if using shade cloth, they can be grown under 50% shade cloth in winter and 70% in summer
- they do not tolerate frost

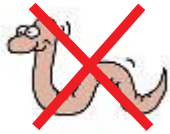
One alcantarea species, named Alc. hatschbachii, was thought to be extinct, was recently rediscovered. on examination, it was found to be botanically distinct from other alcantareas and so was placed in the new genus, Waltillia - as W. hatschbachii. (Leme, E. M. et al, 2017).

HINTS FOR A STRUGGLING BROMELIAD

Complied from previous BSA publications by L.Victoria

1. Check for brown or black scale – a. if found treat with systemic products (see Issue 10) as its too late to save with gentler eco-friendly products. If you are not prepared to use chemicals, then throw into bin (in plastic). This way you save your other broms from infection. b. Ensure you always, always isolate any infected or newly purchased bromeliad until you see no insect infestation and healthy growth. Still repot - step 4. c. Clean all tools and gloves you have used with the infected bromeliads.

2. Stability - check that your brom is stable, (doesn't wobble) in its pot, then check if it is in windy position (if yes, then move). To fix stability, repot- step 4, then stabilise with skewer sticks or rocks.
3. Lift brom out of pot to see if there are grubs or earth worms in potting mix - if grubs discard the potting mix straight into bin, wash roots and go to step 4. If earthworms discard mix into general garden and go to step 6.



4. Re-pot into free draining mix (see step 5 first) and new pot. Discard old pot in case of fungus or other infection.
5. Before repotting/potting up, work out what potting mix works for your particular site conditions. The past 6 issues have included member profiles that have highlighted the diversity of site conditions within the Sydney metropolitan area and how members have varied their potting mix accordingly.
6. Keep the brom base free from water logged material and dead outer leaves (cut off dead leaves gently, so not to damage the meristem).
7. Look up your brom species (BSA and BSI websites) for its native growing conditions, and work out if your brom is a sun loving or shade variety. Then move to its preferred spot. Do this in stages if moving from shade to a full sun position. This may take two generations.

https://registry.bsi.org/?
http://www.bromeliad.org.au

8. Water - an essential element of your brom growing well. Look at the watering pattern this bromeliad has received. Is it overwatered, underwatered or not regularly watered? Some broms need misting in the morning, some light water every other day, others watering just once a week and drying out in between. Not sure what it needs, then ask a BSA member. **(cartoon by Cody Bond)**

9. If you purchased your bromeliad on the Internet (particularly from QLD), assume it has been raised in ideal/hothouse conditions so it will need 12 months to acclimatise to Sydney conditions which fluctuate. In future ask sellers how they have raised their broms. This is the advantage of buying from BSA members at meetings and shows, as you have the advantage of speaking to sellers about the conditions your brom was grown in.

IDENTIFICATION TIPS

Source: Dr Dale Dixon

Tillandsia hitchcockiana

Tillandsia hitchcockiana (subg. Pseudovriesea) is from Ecuador and Peru and naturally occurs in open forest on trees and cacti between 1200-1900 m elevation.

Some confusion exists between this species and its close relative, *Tillandsia cereicola*. According to Gouda (2019, Die Bromelie) *Tillandsia hitchockiana* is overall a much larger plant, with the main difference being in the shorter floral bracts of 21-28 mm versus 30-35 mm in *Tillandsia cereicola* and the divergent flowers.

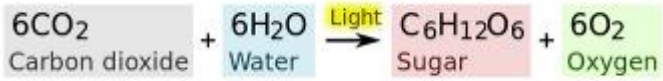
CAM PHOTOSYNTHESIS

Sources: www.bromeliad.org.au/news/Photosynthesis.htm; Source: D. Bending, Journal of Bromeliad Society Vol 66 2016; B. Bassick FWCBS May 2014; www.khanacademy.org; www.bromeliad.org.au; www.u.osu.edu; plantsandpipettes.com; freepik.com

Bromeliads are perhaps the most adaptable of plants, occupying a wide variety of habitats, including temperate to tropical zones, full shade to full sun, deserts, wetlands, rainforests, sandy, dry beaches and low and high-altitude ones.

PHOTOSYNTHESIS

All plants create sugars by photosynthesis, these sugars are the building blocks for their growth life, whereas humans use digestion to create the building blocks which sustain life. Plants capture CO_2 and water and in the presence of light convert these to sugars and oxygen. As oxygen isn't required by the plant, it is released into the air making human life possible.



So **why bother with understanding these processes**? The answer - to be able to grow a variety of bromeliad species, especially the more unusual ones and the more difficult ones successfully, by doing the right things, avoiding the wrong things and understanding photosynthesis is just one step.

The **four things** bromeliads need to survive are air, water, light, and nutrients. The first three, air, water and light are necessary for photosynthesis.

LIGHT - Like all plants, bromeliads use photosynthesis to convert light into chemical energy. Chlorophyll (green) pigments, in the leaf, capture the light energy and store it into cells called chloroplasts.

AIR - CO_2 from the air/atmosphere enters through the stoma (leaf openings). However when the stoma are open, water is lost if the air temperature is high.

WATER - Maintaining the water supply needed for photosynthesis depends on two factors, the uptake from the environment and how it is used. A small proportion of water a plant takes up is built into its structure such as leaves, stems, flowers etc, whereas the majority of the water a plant takes in escapes back into the environment as vapour through the 'stoma'. CO_2 and water move consistently between the air and plant by a process called **transpiration**.

Over time some bromeliads have evolved several adaptive mechanisms which allow them to thrive in less than ideal conditions or places. Two of these adaptations are **trichomes** and **CAM photosynthesis**.

Photosynthesis from the Greek phōs (φῶς), "light", and sunthesis (σύνθεσις), "putting together".

TRICHOMES. Epiphytic bromeliads do not have well-developed root systems and rely on trichomes (scurf) in the form of scales or hairs on the leaves, to obtain moisture and nutrients from air, rain and debris that accumulates in their leaves.

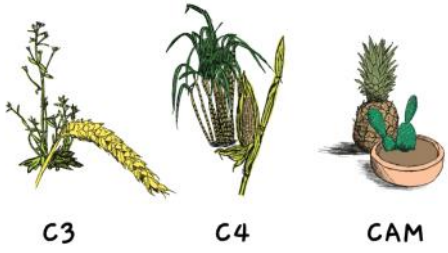
Made up of long strands, trichomes comb moisture out of the air and pump it into the leaves through leaf pores (stoma). To reduce moisture loss when the air is dry and to provide sun and heat protection, these trichomes close their pores. All bromeliads have trichomes including those that have 'tanks' or cups formed by tightly bound leaves in the center top of the plant where water accumulates. Trichomes on tank–type bromeliads, like Neoregelias, are located on the base of the leaves, while trichomes on non-tank type bromeliads, like Tillandsias, are more elaborate and cover more or all of the leaves.

TYPES of PHOTOSYNTHESIS

C3 PHOTOSYNTHESIS Approximately 85% plants on earth are C3 plants, and include food crops like rice, wheat, soybeans and all trees. C3 is so called as this photosynthesis process produces a three-carbon compound (3-PGA). The carbon dioxide from air is fixed by an enzyme called **rubisco** into 3-PGA, which is made into sugars by a process called the **Calvin cycle**. All this occurs in the one place in the plant, the **mesophyll cells.** C3 plants do not have any adaptations to reduce photorespiration (water loss during photosynthesis) and rely on a significant and consistent supply of water for their photosynthesis.

C4 PHOTOSYNTHESIS C4 is so named as in this process the atmospheric C02 is fixed into simple, 4-carbon organic acid (oxaloacetate) in the mesophyll cells to form a simple carbon organic acid, which is then converted to malate, and then transported to a different part of the plant, called 'the bundle sheath' where the malate breaks down, releasing a molecule of CO_2.

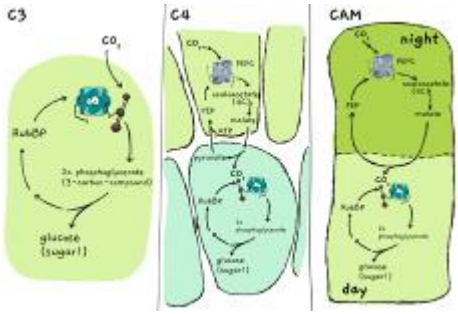
The CO_2 is then fixed by rubisco and made into sugars via the Calvin cycle, exactly as in C3 photosynthesis. The advantage of the C4 process is less water is used; the disadvantage is that it takes more energy to do this process. C4 photosynthesis is only used by 3% of all vascular plants;
some examples are crabgrass, sugarcane and corn.



Which plants use which type of photosynthesis

CAM PHOTOSYNTHESIS

While 85 % of the earths plants use the C3 pathway for photosynthesis, many bromeliads use **CAM** or **'crassulacean acid metabolism'** photosynthesis to create sugars. CAM is a carbon fixation pathway that evolved as an adaptation to arid conditions and allows bromeliads in hot or dry climates to open their stoma (pores) at night when humidity might be higher, rather than during the day when water loss is greater. The CAM process separates the photosynthesis reactions in time - between day and night. When water is scarce, this is a life saving adaptation for the plant.



Comparing the different photosynthesis processes

More facts to help you understand your more finicky broms.....

- Two-thirds of bromeliads use CAM photosynthesis (allowing CO_2 fixation at night, so greatly reducing water loss but at the cost of reduced photosynthetic capacity); most of these are epiphytes and rock-dwellers.
- The bromeliads which use CAM photosynthesis tend to be slow growing and can become dormant in very hot, dry conditions.
- The less water your bromeliad has, the less it can synthesize it's food. Hence when broms are poorly watered for a long period they lose their strength against pests or sudden adverse conditions.

- The less chlorophyll pigment a bromeliad has to capture the light, (as in albo-marginata) the slower the growth and more delicate it is. This is why albino pups do not survive when removed from the parent plant, because without chlorophyll they cannot synthesize their own food, so unless attached to parent which provides all their food, they die. Also the albino pup drains the food resources from the parent, which explains the advice to cut off the albino pup.

- Many bromeliads can switch between CAM and other photosynthetic pathways when there is abundant water. This explains why some broms survive if they don't get watered when you're away, while others just die.
- Rubisco is the name of the enzyme (protein) that **'grabs'** the CO_2 molecule and puts it into the assembly line that will create the carbohydrates. It is known as the most abundant protein in the world.
- Comparing the processes; C4 is 40% more water efficient compared to C3, and CAM is 83% more efficient compared to the C3 photosynthetic process.
- Virtually all tillandsias use only the CAM photosynthesis process. When temperatures drop (late afternoon to evening), the CAM process begins and the stomata open to take in CO_2. So, watering these CAM bromeliads later in the day, blocks the stoma with water droplets because the low temperatures prevent the plant 'drying off'. This stops the plant from taking in CO2, hence preventing food manufacture. The plant will eventually wilt and die with prolonged watering late in the day. CAM broms with fine trichomes are best watered in the morning with a fine mist, so not to waterlog the stoma.

We would like to welcome our most recent bromeliad enthusiasts:

Colin and Melissa Coveny

who we hope to meet at meetings shortly.

and from QLD, we welcome new member **Andrew Fuller**

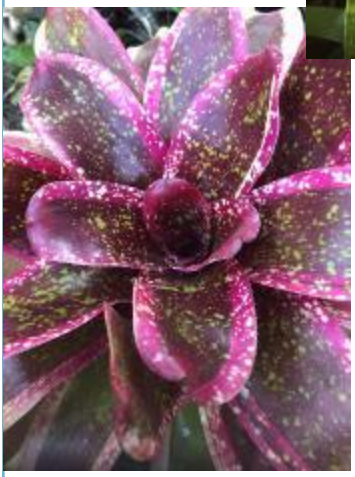
Stuck on Christmas gift ideas?

Consider a gift of a BSA membership for someone special for Christmas.

SHOW and TELL

Selection of Vrieseas from Kerry McNicol.

Below: *Vr. carinata* - K. McNicol



Right: *Neo.* 'Furnace' J. Kuan

Left: *Neo* 'Zodiac' - A. Beard

Below: *Aechmea Distichanta* var glaziovii - L. Victoria

Left Top: Moby Dick - A. Beard
Left Middle: *Neo.* 'Donger' - K. McNicol

Right Top: *Till. deppeana* - K. McNicol

Right: *Tillandsia bergeri* - L. Victoria

Left: *Neo.* 'Waratah Red' - K. McNicol

Below: *Neo.* 'Gold Medal' J.Kuan

Above: *Vr.* Gigantea Seideliana Mount Townsend - A. Beard

IN THE WILD

Photos taken by Alan Mathew during his 2003 trip through Costa Rica.

Lake Arenal at the base of the Arenal Volcano in the northern highlands of Costa Rica is the country's largest landlocked body of water.

Arenal Volcano is an active andesitic stratovolcano in north-western Costa Rica around 90 km northwest of San José.

A **stratovolcano**, also known as a composite volcano, is a conical volcano built up by many layers (strata) of hardened lava, tephra, pumice and ash.

Andesite is an extrusive volcanic rock of intermediate composition ie between basalt and rhyolite.

ALL ABOUT WHITE

Source: Compiled by John Catlan 2012 Taken from Lindley (1832).

Continuing on the topic of patterns and colours found in bromeliads, this time showing the variety of 'white' shades. Being familiar with these terms will help you with identification and understanding your broms naming better.

Neoregelia laevis - T. Davis

Colourless and White

1) Snow-white - niveus - as purest white

2) Pure white - candidus - very pure, but not as clear as snow-white.

3) Ivory white - eburneus, eborinus - cream coloured, white verging to yellow with a little lustre.

4) Milk-white - lacteus - dull white verging to blue.

5) Chalk-white - cretaceous, calcereus, gypseus - very dull white, with a little touch of grey.

6) Silvery - argenteus - a little changing to bluish grey, with something of a metallic lustre.

7) Whitish - albidus - any kind of white a little soiled.

8) Turning white - albescens - changing to a whitish cast from some other colour.

9) Whitened - dealbatus - slightly covered with white upon a darker ground.

Photos: from feft -Till. xiphioides var xiphioides - Dr D.Dixon; Till. xiphioides var lutea - Dr D.Dixon; Tillandsia xiphioides - A. Flower; Lemeltonia acostasolisii - T. Davis

Below is the list of seeds in our Seed Bank

Alcantarea extensa	27.11.19	Terry Davis
Tillandsia. gardneri	25.09.20	Terry Davis
Tillandsia utriculata 'Black Stem'	18.9.20	Steve Molnar
Tillandsia juncea	27.9.20	Steve Molnar
Tillandsia seleriana (ex. Alan Phythian)	25.9.20	Steve Molnar
Tillandsia loliacea	11.10.20	Greg Aizlewood
Alcantarea 'Silver Plum'	11.10.20	Greg Aizlewood
Tillandsia tricholepsis	11.10.20	Greg Aizlewood
Tillandsia seleriana Giant form ex. Chris Larson	12.10.20	Steve Molnar
Tillandsia novakii	30.10.20	Greg Aizlewood
Tillandsia schiedeana yellow	30.10.20	Greg Aizlewood
Tillandsia ionantha' Fuego'	02.11.20	Greg Aizlewood
Tillandsia ionantha (Mexico)	02.11.20	Greg Aizlewood
Tillandsia ionantha Orange	04.11.20	Greg Aizlewood

Seeds cost 50¢ per packet (plus postage) for Members and Seed Bank supporters
or $1 per packet (plus postage) for all other enquiries:

Contact ***Terry Davis (02) 9636 6114 or 0439 343 809***

For a full list please go to **bromeliad.org.au**

If you have seed to donate please contact Terry.

REMINDER If you have been a financial BSA member during 2020, there is no need to renew your membership. You will received your 2021 BSA membership for free.

MAIL ORDER PAYMENTS BY MASTERCARD/VISA.
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LITERATURE for Sale

http://www.bromeliad.org.au/Contacts/BSALibrarian.htm

TITLE	*AUTHOR*	*PRICE*
Bromeliads for the Contemporary Garden	Andrew Steens	$20.00
Bromeliads: A Cultural Manual (Rev. ed. 2007)	BSI	$ 6.00
Bromeliad Hybrids 1: Neoregelias	Margaret Paterson	$25.00
Bromeliads Under the Mango Tree	John Catlan	$10.00
Bromeliad Cultivation Notes	Lyn Hudson	$10.00
Growing Bromeliads – 3rd Ed. by BSA IS BACK!.		$20.00 (member price)

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