

The Bromeliad Blade

Newsletter of the
San Diego
Bromeliad Society

July 2022

VOLUME LVII

NUMBER 7

President's Message

By Steve Zolezzi

Happy summer to you all!

See you at the July meeting in Balboa Park, where we will enjoy a presentation by an international speaker on bromeliads and orchids living side-by-side in habitat.

Don't forget to bring a couple of good plants for the plant table – this month's offering will be member supplied. Please make sure you are bringing clean, collectible bromeliads to share.

Check out the interesting article from Gems and Minerals magazine on minerals and plant nutrition (pg 8). Sometimes we focus too much on NPK fertilizers and overlook a variety of nutrients that bromeliads may need to flourish.

Hope to see you all at our August summer picnic at Bird Rock Tropicals. All attending will receive a \$25 voucher to purchase BRT plants.



Billbergia color, detail of SDBS Show June 2020 (Photo by Juliana Raposo)

July Meeting

July 9 @ 10am, Casa del Prado
room 104, Balboa Park

Also available on Zoom. See
credentials on invite sent by Steve
Zolezzi.

July Program

“Orchids as companions to
bromeliads and other epiphytes in
nature and in gardens”
Germán Carnevali



Orchids and bromeliads in the summer garden, San Diego (Photos by Juliana Raposo).

In most cases, where bromeliads grow in nature, they are accompanied by orchids. In this talk, I'll present a quick overview of orchid diversity and geography. Then, I will present several features that allow them to grow together in nature and in the gardens. You will see photographs of orchids and

bromeliads, together or separate, in nature and under cultivation.

Germán Carnevali obtained his degree in Biology from the Venezuela Central University, and his Ph.D. from the University of Missouri-St. Louis, in association with the Missouri Botanical Garden. He is a research associate of the Orchid Herbarium of Oakes Ames at Harvard University. Currently, he works at the Centro de Investigación Científica de Yucatán, where he is the curator of Herbarium CICY at Mérida and teaches courses in evolutionary biology, floristics and biogeography. His interests are the floristics, systematics, evolution, biogeography, and phylogeny of various groups of Neotropical Orchidaceae, particularly the genera *Brassavola*, *Catasetum*, *Clowesia*, *Cyrtopodium*, *C.*, *Encyclia*, *Lophiaris*, *Myrmecophila*, *Cryptocentrum*, and *Schomburgkia*, as well as the subtribe *Maxillariinae* in general. At the same time, he is working on floristic projects in Megamexico in general and the Yucatán Peninsula in particular, Central America, the Guianas, Amazonia, and Venezuela. He is also interested in the systematics and evolution of sections of the genus *Tillandsia*, such as the *Tillandsia capitata* and the *Tillandsia paucifolia* complexes. He is author or coauthor on more than 270 scientific publications including books, articles, and book



Sincoraea ophiuroides and Guzmania hybrid flowering alongside Sobralia orchid (left) in a bright, sheltered spot in the garden.

chapters as well as many articles of popular science.

Plant Table

July's raffle table plants will be provided by you, the members of San Diego Bromeliad Society. Please bring in one or two really special plants. The plants can be rooted or offsets, but please make sure they are clean and bug free. Thanks for participating.

Supposed to be high-quality plants, not common.

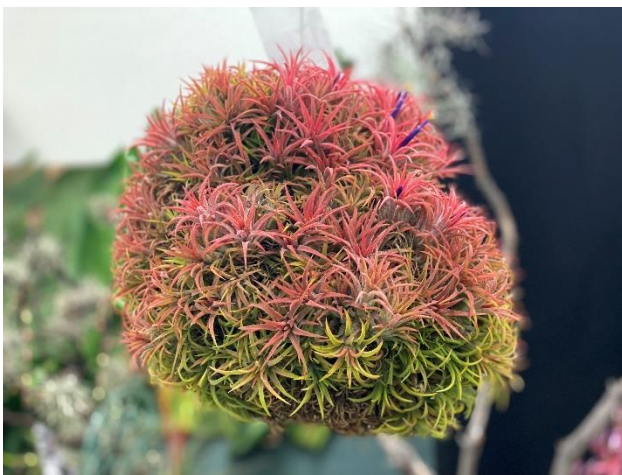
June Recap - SDBS Show & Sale

by Juliana Raposo



Detail of the central display

The 2022 San Diego Bromeliad Society show and sale was a success. Back in the Balboa Park usual spot, the first show and sale since the pandemic attracted a big crowd of plant enthusiasts, curious passersby and lots of shoppers on June 11 and 12.



T. ionantha asteroid? Exhibited by Andrew Wilson

The bromeliad exhibit had sections loosely designated by genus, with a table for each main genus in cultivation. We layered the plants with tropical greenery and Spanish moss in a naturalistic set up. With

the new addition of a wire display that sort of disappeared against the black backdrop, we were able to display many more hanging plants than previously, especially Tillandsia. Thanks to all SDBS members that contributed with their beautiful plants! It was a great show of support in a time

when some key members were away in the world conference in Sarasota. We did a wonderful job at showcasing the variety of color and form in the bromeliad family and enticing the public with all the beautiful bromeliads that can be grown in San Diego without much fuss. All plants had visible tags with the name of the

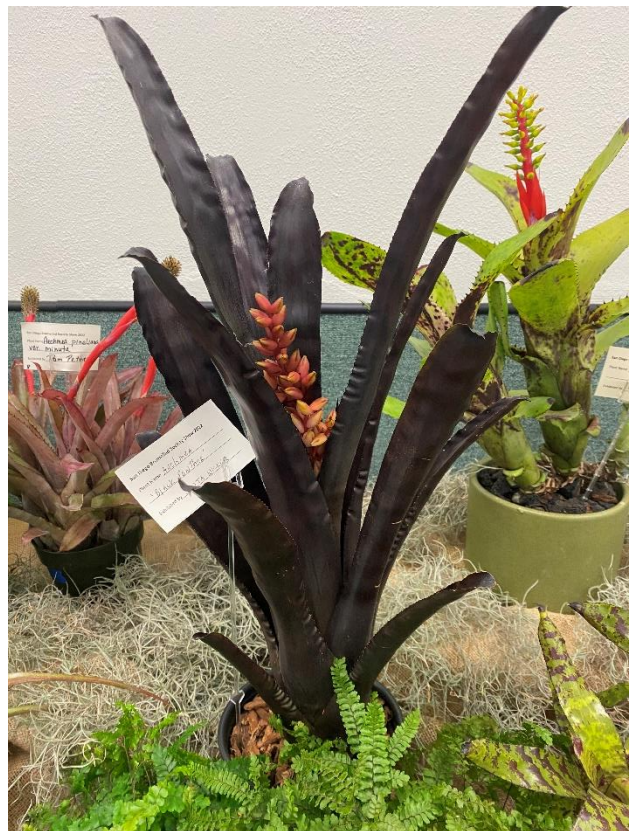
exhibitor and the plant name to keep things educational. Caption - who said you can't be in two places at the same time? Scott Sandel was in Sarasota, but his wonderful vrieseas were front and center in the SDBS show.

On the sale front, we had a record breaker. It was the second highest plant sales of all time. Taking into consideration that we had no commercial growers this time, it was quite a feat. Also in the sale, Nona Churches treasure trove of Bromeliad themed objects and art made quite an impact. The lot reflected a lifetime of collecting by the SDBS charter member. I snatched a never worn Brazilian Bromeliad Society T-shirt that must have spent 30 years in a sealed box. Every year the sale reflects the trends in the public at large. Plants are cool again, no doubt. Young buyers were a strong presence. Shoppers went for color and foliage most of all. Neoregelia and Billbergia were flying off the tables. But sales were good for all plants in general.



Some people brought their dogs to the sale

A round of applause goes to all SDBS volunteers that dragged tables, assembled tricky displays without instructions (I'm looking at you Deb and Bob), brought plants to the show, helped decorate the exhibit, fed the masses (shout out to Charles) worked at pulling tags, security and greeting people, and Kerry and Al who worked every day all the time at the register. Much love to all who helped clean up. In the end, Morlane and I hi-fived and vowed to do it again next year. Well done SDBS!



Scenes from the 2022 SDBS Show & Sale. pages 4 through 6.





SDBS Picnic 2022

By Eloise Lau

Hi all SDBS members,

Hope you are enjoying your summer.

Just a reminder that on August 13th the annual SDBS member picnic is being held at Bird Rock Tropicals in Pam's beautiful private garden behind the green houses.

Parking is available in the lot right below the nursery, to your left as you enter.

Arrangements can be made to have you shuttled up to the picnic area if you have difficulty walking. Please let Eloise know in advance if you will need this service.

Pam is opening the nursery for sales from 10am to noon. Her SALE is the following week but she is giving SDBS members sale prices on the day of the picnic.

When you RSVP for the picnic your name will be placed on a list.

Members whose names are on the RSVP list will receive a \$25 credit (Courtesy of SDBS) toward your purchases. Credit is for members only.

This is a potluck event. Members please bring a dish to share—salads, side dishes or dessert.

The club will provide the main dish, all paper goods, utensils and drinks.

There will be tables and chairs for seating.

Food service starts at noon.

We would love to see you there. Please email to let Eloise know if you are attending. Guests \$10.

Just email eloiselau@mac.com YES if you are coming, if you have a guest or if you have any questions.

SDBS Events 2022

SDBS Monthly Meeting

July 9, 2022 @ 10am

Casa del Prado room 104, Balboa Park, San Diego.

Also available remotely on Zoom.

SDBS Picnic

August 13, 2022

SDBS Winter Sale

December 17-18, 2022

Preparing for Change



Andrew Wilson



2019 Picnic at Pam's

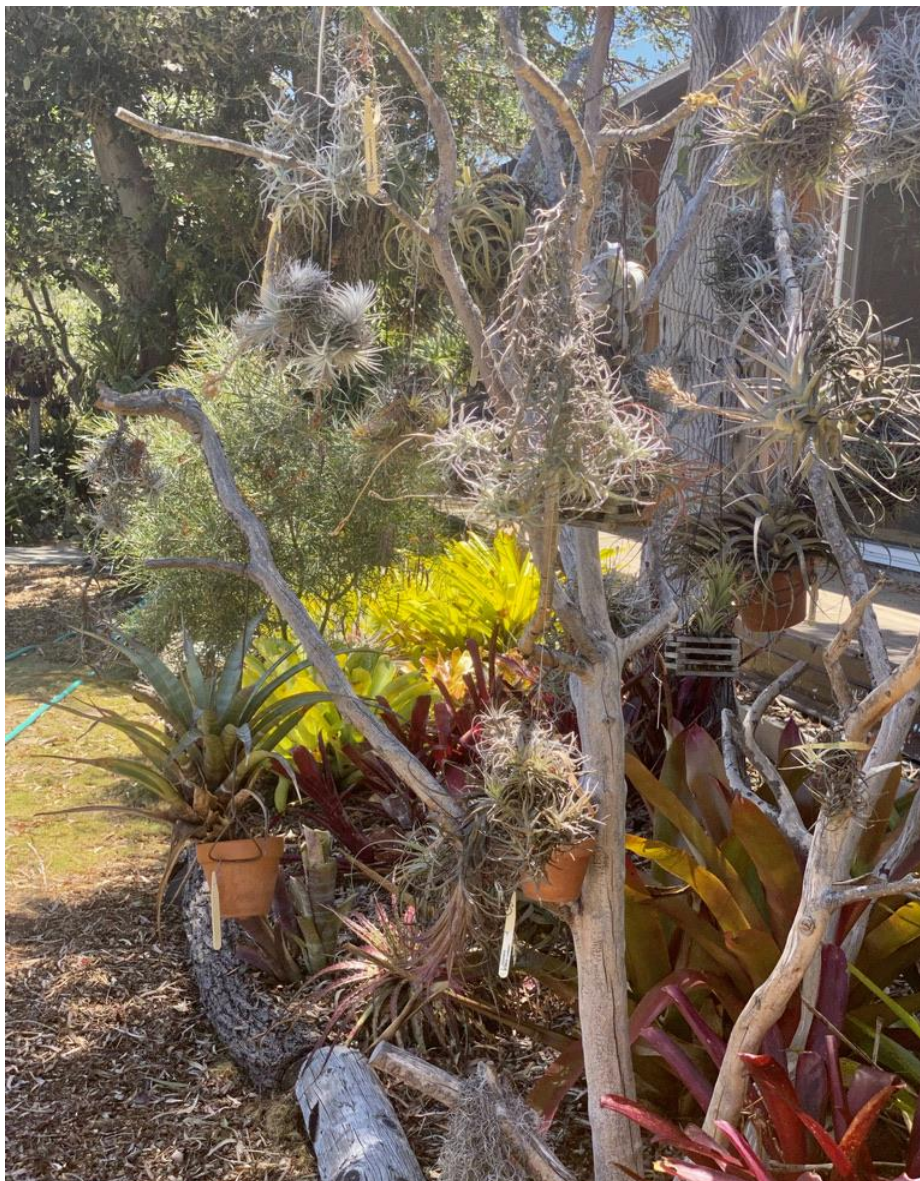
Preparing for Change

by Andrew Wilson

Some may yet disagree, but our climate has changed in the past few decades. That has caused us to change how we grow plants and which ones we grow in our gardens. I used to grow large camellias in full sun. They gradually succumbed to reduced rains in winter and hotter hours in summer. Instead of beautiful blooms and dark evergreen foliage their dead branches now support white-leaved tillandsias. This is no cry of anguish but an acceptance of change. Nature has demanded it; government has made it official.

We have been asked for years to rid ourselves of thirsty lawns, to water only in the early morning and in the late afternoon, to plant trees for shade, to mulch our growing areas, to install rainwater collectors, to grow plants that need less water and to follow many more well-wishing directives within our gardens and inside our homes. This article is not to educate you on the details of the effectiveness of these measures nor to quantify the hydrological benefits they would offer. That's too big a job! It is just a thumbnail sketch of where you can find some of those details and, just as important, see what modifications you might apply using your gardening acumen.

You can start with 'A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California' <https://ocds.ocpublicworks.com/sites/ocpwocds/files/2021-06/Guide%20to%20Estimating%20Irrigation%20Water%20Needs.pdf>. An authoritative publication by the University of California (Water



Tillandsias occupy a dead camellia (photo by Andrew Wilson)

Resources Department), it tells you species by species (1800 of them), area by area, month by month, the amount of watering you need to apply, with corrections to account for plant mixtures, for spacings between plants and how to adjust for shade and wind. Quite a load! However, you still need to use your personal adjustment on some estimations. Isn't that just why we enjoy gardening?

Let's take an example without going through the details of deriving it. In July a lawn grass in San Diego expires

4.7 inches of moisture for the month or, if you prefer, about 3 gallons of water per square foot. For a *Dymondia* groundcover the corresponding water needs are much less, 0.6 inches or 0.37 gallons per square foot. It's clear why the recommendation came about to replace lawns by less water-intensive covers. *Dymondia* or a carpet of river-washed stones with drought tolerant perennials interspersed are now often used.

(continued on next page)

Using the guide, you can examine what a change of plants (groundcovers, shrubs, perennials, or trees) would make to you water usage. You can examine how removal of several plants and a mulching of the removal areas could reduce your water bill. The guide is written helpfully but it will take you some time to come to grips with it all. It has a few, non-fatal, shortcomings. One is that the effect of the soil type is ignored. With a medium to heavy soil the applied water is taken up by the plants and lost by transpiration. With a light soil some of the applied water drains deeper into the soil without being absorbed by the plants unless they are deep-rooted. Another is that this work developed from agricultural applications in which irrigation is what controls how plants grow. In perennially droughty conditions many species of succulents and bromeliads developed techniques to hold on to water after it fell as rain and then use it over a subsequent dry period. This process is not incorporated in the model. However, you can overcome this oversight by scheduling months when water is applied and when it is held off. A third shortcoming, and one more difficult to overcome, is not accounting for the deeper soil profile. Moisture can be found

perched many feet down or retained in clay layers and accessible only by deep rooted species, usually tree species. Even with these shortcomings it is worth examining what can be grown to reduce water consumption using some of the suggestions for creating areas where water needs are similar for all plants.



Wall frame gray and brown (photo by Andrew Wilson)

Try it!

If you decide to make changes, consider how you 're going do the daily, weekly, or monthly watering. You may want to include timed watering zones with mini-sprays. If so, remember that plants grow while the sprinkler layout does not, and you may find that your system is not irrigating where it is most needed. An

inexpensive alternative is to use the hosepipe with spray control. The new flexible, steel coated pipes are easy to use and let you access deep recesses and around corners without the need for expletives.

One last comment on what's missing from the guide is help on planning the vertical garden.

Simply because you arrange plants to grow on a vertical rather than on a horizontal surface you are reducing the effective area exposed to the sun when it is overhead, and temperatures are high. Climbers can be used but more easily controlled are bromeliads, particularly tillandsias, the smaller aechmeas and neoregelias. Planted in wall frames or attached to open or closed fences they can change the face of your garden. A semi-shaded wall is to be preferred in much of our county. On fences in inland gardens best results are achieved with the silvery tillandsias, especially the Peruvians, *T. palacea*, *T. purpurea* and *T. coerulea*.

Morning or evening waterings are fine but,

on hot days a quick misting is valuable to increase humidity, which is what they really need.

Free Vendor Space at SD Floral Association Event

Birds, Bees, Flowers and Trees Event

Hello SDFA Affiliate,

Again, this year, the San Diego Floral Association will be holding our Birds, Bees, Flowers and Trees festival in Balboa Park...and this year, all of our affiliates can reserve a vendor space AT NO COST. This is our gift to you.!!!

Our event this year will be held in the Casa del Prado and the entire length of El Prado on Oct 22, 2022.

Please let me know ASAP if you would like to participate so I may hold a space for you. I have attached the Vendor Info Sheet. (see Juliana's email blast for attachment).

We are very proud of our affiliates and would love to showcase you at this event. HOPE YOU CAN JOIN US.

Thanks,

Kathy Esty

*Director,
Development/Fundraising/Outreach*

Garden Grant Program

College Scholarship Program

*Birds, Bees Flowers and Trees
Fundraiser*

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**Hey, you!
SDBS Needs a New
Treasurer**

If you would be interested in filling this important SDBS position, please contact Al Evans. He will teach you.

alevans31365@gmail.com

As Seen in Gems and Minerals Magazine

For millions of years before the advent of commercially available synthetic fertilizers, plants derived the nutrients they needed solely from the air, water or soil. Many of those nutrients in the soil came from the mineralization of rocks. To this day, rocks are still the backbone of many commercial formulations of fertilizers.

What do Plants Need?

All plants need some combination of 17 different elements at a minimum to survive, thrive, and complete their

biological processes. Each plant may require additional nutrients, but in general, all plants require these same 17. These nutrients are further broken down into macro-and micro-nutrients depending on the volume typically required by plants. Some classifications further break down the elements plants need into primary, secondary and micro-nutrients. Three of these necessary nutrients plants can obtain from air and water - carbon (C), hydrogen (H) and oxygen (O).

The remaining elements are obtained through rocks.

PRIMARY NUTRIENTS

- Nitrogen (N) -This is important for the production of chlorophyll in plant leaves. It also aids in the healthy growth of leaves, stems and branches.
- Phosphorus (P) -Phosphorus aids in all energy transfers in the plants, this includes but is not limited to root growth, flower development and fruit set.

- Potassium (K) -This aids in the absorption of CO₂ and feeds developing plants.

SECONDARY NUTRIENTS

- Calcium (Ca) -Calcium helps transport nutrients from the roots throughout the plant and helps to build strong cell walls.
- Magnesium (Mg)-This helps to activate different life cycles and stages of plant growth and aids in photosynthesis.
- Sulfur (S) -Sulfur is a major component of essential oils in plants and helps nitrogen to create chlorophyll.

Sulfur Specimen at the Smithsonian Museum of Natural History Tim Evanson is licensed under CC BY 2.0

MICRO-NUTRIENTS

- Boron (B) -Boron helps plants to absorb Ca and to form cellular walls.
- Chlorine (Cl) -Chlorine helps to regulate water loss through plant leaves and also helps with the transport of nutrients through the plant.
- Copper (Cu) -Copper helps with the production of flowers, fruit and seeds.
- Iron (Fe) -Iron carries oxygen to the cells and helps to produce chlorophyll.
- Manganese (Mo) -Manganese helps plants to use iron and to help trigger new growth.
- Molybdenum (Mb) -This element is critical for pollen formation and to process both nitrogen and phosphorus.
- Nickel (Ni) -Nickel helps plants to metabolize nitrogen.

- Zinc (Zn) -Zinc helps metabolize the carbohydrates that produce growth hormones in the plant.

Where are Minerals for Plants Found?

Minerals needed by plants are found all over the surface of the earth. Sedimentary rock covers up to 80 percent of the Earth's crust and is the primary component of soil. The type of rock and its components varies widely, but fortunately, many different types of rocks are comprised of many of the same minerals.

Feldspars, for instance, provide potassium, calcium, copper and manganese. Micas provide all of the same minerals as feldspars but additionally provide magnesium, iron, zinc, nickel, and copper. Clay can provide additional potassium, magnesium, iron, and calcium. In many soils around the world, up to 90 percent of the potassium is found within the structure of these minerals. Carbonates not only provide a source for calcium and magnesium, but they also trap and store those elements, acting as a sink for them.

How do Minerals Get Into the Soil?

Biological processes and physical weathering release minerals over time and produce healthy soil. As parental rock material decomposes and interacts with microbial activity and the decomposition of other organic materials, minerals are released and available in usable forms for plants.

The amount of time this takes varies and the type of rock and climate play a role in how long it takes to start to weather and release minerals. For example, one micrometer (?m) of granite will take 1,000 years to weather in a cold climate, but 100

years in a warm or humid climate. Marble will take 50 years for one micrometer (?m) to weather, but only five years in a hot or humid climate.

This is not a one-way exchange though. Rocks are not simply breaking down and not being replaced. They are part of a larger geological cycle. New minerals are being formed all of the time, especially in the aqueous phase of many environments. As old minerals are being released by rocks into soils, those that are not utilized by plants are available to be reformed into new rocks through many geologic eras. Volcanoes also release new minerals from deep inside the earth. Some of the world's most fertile soils are located in proximity to active volcanoes. It explains why some civilizations choose to risk their lives living so close to danger.

Rock Minerals as Plant Fertilizer

All minerals are not evenly distributed. Humankind is also constantly introducing new species of plants into environments where they did not evolve, for better or worse. These introduced species may have higher nutrient needs than their new soils have. Other times, intensive farming practices cause existing mineral stores, that may have been present in sufficient amounts for native plants, to be depleted and additional nutrients to be reintroduced to the soil. When this need arises, many plant producers and farmers add minerals, directly derived from rock back into their soil.

Responsible growers perform soil analyses to learn what is present in their soils. Soils can then be amended, usually in the form of rock dust, and recreate a natural environment for that species.

Getting Minerals from Rock

The availability of minerals and a particular type of rock's ability to be reduced to its constituent components varies greatly. For example, both granite and basalt have extremely high mineral content. Basalt, however, is much easier to work with and provides a slow-release of necessary nutrients over time, making it a preferred source of plant minerals compared to other rock types.

Growing Directly in Gravel

Some growers take this a step further. They grow plants from seed, straight through to harvest in gravel made of sedimentary rock - this is called geological agriculture, gravel gardening or even geo-agriculture. This form of soilless plant growing relies at least partially on the release of needed plant nutrients from the gravel. The constant presence of moisture aids in the quicker release of the stored nutrients in the stones, making them available to the plants.

Nutrients from rocks is nothing new. For millennia, it was likely the primary, if not the only source of minerals for plants. Somewhere along the line though, with the advent of industrial agriculture, farmers started removing rocks from the soil since they would do damage to plows and other farming implements when struck. Since the advent of organic gardening, growers have begun adding rocks back into the soil to gain nutrients, even if only in the form of rock dust. Like with so many things, everything old is new again.

What Happens When Plants Don't Get the Required Amounts of Minerals?

Not all mineral deficiencies in plants are obvious. Some are difficult to

determine or differentiate from other deficiencies. Here are some of the more common symptoms and implications of plants not getting needed minerals in sufficient quantities.

PRIMARY NUTRIENTS

- Nitrogen (N) -The oldest leaves, generally at the bottom of the plant turn yellow.
- Phosphorus (P) -Tips of new leaves appear burnt. Older leaves turn red or purple.
- Potassium (K) -Older leaves look wilted and burned on the margins

SECONDARY NUTRIENTS

- Calcium (Ca) -Newest leaves, generally at the top of the plant, look misshapen or distorted.
- Magnesium (Mg) -Edges of older leaves turn yellow.
- Sulfur (S) -All leaves turn yellow, starting at the youngest leaves and working their way through the oldest in succession.

MICRO-NUTRIENTS

- Boron (B) -Youngest leaves are splotchy yellow and new growth is misshapen and brittle.
- Chlorine (Cl) -Leaves start to wilt and die at the margins, then the entire leaf curls and dies.
- Copper (Cu) -Leaves are stunted and abnormally dark green.
- Iron (Fe) -Veins of young leaves turn yellow (chlorosis).
- Manganese (Mo) -Yellowing between the veins of the youngest leaves, but not as pronounced as an Iron deficiency.

- Molybdenum (Mb) -Oldest leaves turn yellow while the rest of the plant turns light green.

- Nickel (Ni) -Leaf tips die, newer leaves are undersized and veins are yellow.

- Zinc (Zn) -Outer leaves at the end of each stem are misshapen and turn yellow between the leaf veins.

SDBS 2022

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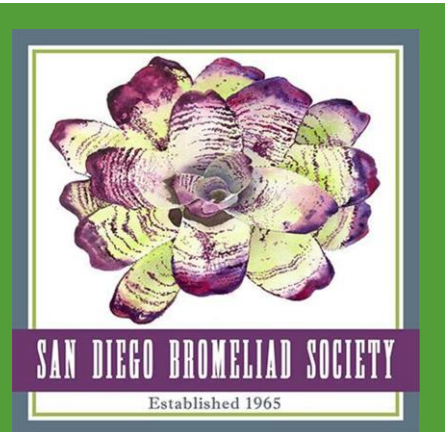
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THE BROMELIAD BLADE



Newsletter of the San Diego
 Bromeliad Society

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Make sure to submit your
 contribution before the 20th of
 the month for inclusion in the
 next newsletter.

SDBS MEETING

The club meets on the second
 Saturday of the month at 10am in
 Balboa Park, Casa del Prado,
 room 104.

SDBS WEBPAGE

www.sandiegobromeliadsociety.org

DK ORNAMENTALS

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