



Central Spine

NEWSLETTER OF THE
CENTRAL ARIZONA CACTUS AND SUCCULENT SOCIETY

NOVEMBER 2019



You can almost smell the freshness of the early morning desert rain in this beautiful photo by Lelia Shehab.

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Join Greg on November 24, 2 p.m., in Dorrance Hall, at the Desert Botanical Garden for our monthly program.

In 1982, Howard Scott Gentry produced the most comprehensive monograph titled, *Agaves of Continental North America*. Gentry was an intrepid explorer and collector, spending over 30 years studying the genus, in addition to his primary research on the genus *Phaseolus* for the USDA.

Agaves have become quite popular scientifically, and with more exploration of Mexico and the southwestern U.S., there have been many new discoveries. In fact, in the 37 years since the publication of *Agaves of Continental North America*, there has been so much activity surrounding the genus that 52 species have either been newly discovered or reevaluated.



Agave montana

For example, in the “group” *Striatae*, Gentry listed three species, *Agave dasylirioides*, *A. striata* and *A. stricta*. The group number currently stands at 11 species with potentially more on the horizon. Much of this is due to new roads opening areas that were previously nearly impossible to access. Sometimes, a species complex has been reevaluated, and species names previously considered synonymous with another name are now considered valid. For example, Gentry considered *Agave kerchovei* to be a highly variable, polymorphic species and included five other names as synonyms. Further investigation has revealed that two of those names are distinct entities and have been elevated back to species status.

This brand-new presentation will delve into some of the newly described species and some of the reconsidered names. I hope to take the mystery out of some of these new species and address controversy surrounding others. If you like *Agaves*, there are now even more to like. So come on out and find a new favorite.

MORE ABOUT GREG STARR

Greg was born and raised in Tucson and has grown to love the desert and its flora and fauna. He graduated from the University of Arizona in 1979 with a Bachelor of Science in Horticulture degree.

After working in the landscape industry, he went back to the U of A to study botany and further his education in horticulture. Greg worked for Warren Jones (co-author of *Plants for Dry Climates* and *Landscape Plants for Dry Regions*) and Dr. Charles Mason at the U of A herbarium.



Agave ovatifolia

Greg made his first foray into the world of collecting in 1979 when he traveled to Texas with Warren and Bill Kinneson where he saw firsthand, in habitat, the many plants he had only experienced in the nursery or landscapes. He emerged from the U of A in 1985 with a Master of Science in Horticulture degree, with a special emphasis on botany.

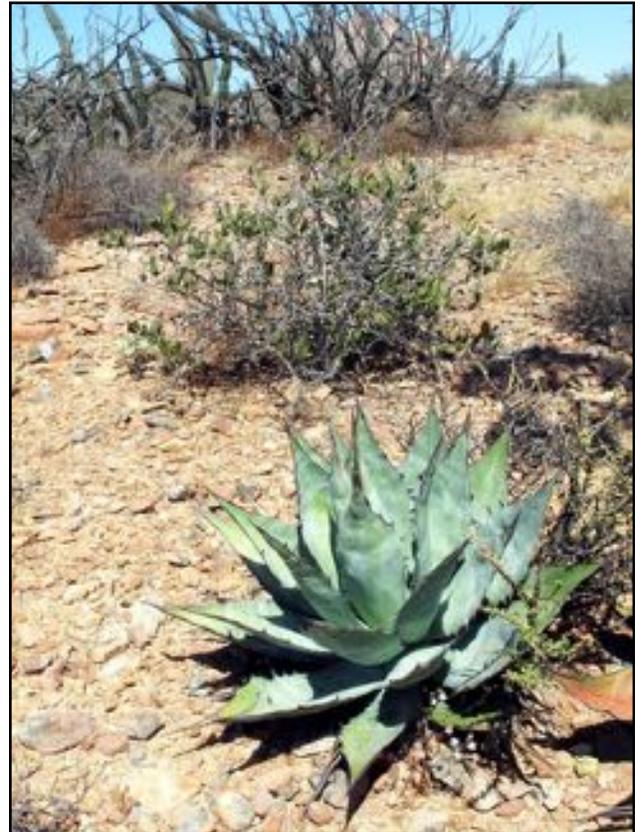
He opened Starr Nursery in the summer of 1985 and has specialized in low water use plants for landscaping in southern Arizona. Greg has traveled extensively in Mexico and the southwestern United States to study the plants for their potential landscape use in desert regions of the world. He has also traveled to South Africa and recently to Madagascar in search of juicy succulents.

Greg has written several horticultural articles for the journal *Desert Plants*. Topics have covered various groups of plants as well as botanizing in South Africa. He has also described four new species and a subspecies of *Agave*, three new species of *Hesperaloe*, and revised the genus *Hesperaloe* in a monograph published in the journal *Madroño*.

The first *Agave* species Greg described was *Agave ovatifolia*. He worked with Dr. Jose Angel Villarreal in describing this amazing plant which has been dubbed whale's tongue *Agave*, a reflection of the incredibly wide leaves that sometimes double as water harvesting vessels. He and Dr. Tom Van Devender described *Agave parviflora* ssp. *densiflora*, a new find from the Sierra Madre Occidental in eastern Sonora.

Since 2010, Greg has focused intensively on the *Agaves* of Baja California, and he and Bob Webb described *Agave azurea*, a new species from the Picachos de Santa Clara, and submitted a revision for the genus on the Baja California peninsula to the journal *Haseltonia* in January 2015. His two most recent new species discoveries are *Agave cremnophila*, from southern Oaxaca, with Julia Etter and Martin Kristen and the long overdue *Agave oteroi*, from Puebla/Oaxaca with Tristan Davis.

Greg's first book, *Cool Plants for Hot Gardens*, was released at the end of April 2009, and is currently out of print. His second book, titled *Agaves: Living Sculptures for Landscapes and Containers* (both books are in the CACSS library), was released in May 2012. He was a co-author for the recently released *Field Guide to the Cacti and Other Succulents of Arizona*. He has taught Plant Biology and Plant Materials classes at The Art Center Design College in Tucson for their Landscape Architecture program.



Agave azurea

Greg spends most of his days tapping at the computer, hoping another book will take shape, preparing PowerPoint presentations, and tending to Starr Nursery, specializing in *Agaves* and related plants as well as other succulents and new introductions of perennials, flowering shrubs and small trees from arid and semi-arid regions around the world.

Visit the club website at centralarizonacactus.org, select newsletters and read any and all of the articles that have been in prior CACSS newsletters. Find articles by year and month.

- *Agave* by Tristan Davis, 4/16
- *Agave 'Blue Glow' —A Handsome Hybrid* by Tom Gatz, 4/11
- *Agave Extravaganza* by Tristan Davis, 4/16
- *Agave Fever* by Sean Dundas, 6/04
- *Agave Victoria Reginae: Queen Victoria's Agave* by Jim Elliott, 6/04
- *Agave 'Kichi-Jokan': An Unsolved Mystery* by Tom Gatz, 7/07
- *Agaves That Can be Acclimated to Our Full Sun* by Tom Gatz, 11/11
- *Agaves—The Good, The Bad and The Ugly* by Tom Gatz, 1/07, 2/07
- *Agave victoriae-reginae* by Sue Hakala, 6/18
- *Agave weberi* questions on rot by Greg Starr, 7/18
- *Bud Marking vs. Cross Banding in Agaves* by Jim Elliott, 11/06
- *From Agave Pumila to Atrovirens* by Kent C. Newland, 12/75
- *Growing Agaves from Seeds* by Charles F. Merbs, 12/76
- *In My Garden: Agave attenuata* by Susan Tyrrel, 7/09
- *Pay More for Your Margarita: Will Tequila Costs Sour Drinkers?* by Daryl Bell, 9/00
- *Two Great Succulent Plants to Create Focal Points in Your Landscape (Aloe 'Hercules' dicotoma X barberae and Agave ovatifolia)* by Tom Gatz, 1/10



Left, *Agave shawii* in habitat at Point Loma, California and *Agave potatorum variegata* dwarf.



We had another October Mega Live and Silent Auction success for the Central Arizona Cactus and Succulent Society. This event could not have happened without the many volunteers who helped, members who donated many landscape and show-worthy plants and the members who came out to purchase them.

A big thank you to the Desert Botanical Garden for providing the time and space for this CACSS annual fundraiser. This year, along with the many seasoned volunteers who normally help, we saw many new members step up to assist. To all of you, on behalf of the CACSS, thank you so much for your effort in making this event a truly an enjoyable and successful one. The value of your volunteer time is a priceless commodity to our club.

The final numbers are: for the live auction we took in \$770, and for the silent auction, \$5,361, for a total of \$6,131. Thank you to everyone who made this event a success.



Raejean Prather had the winning bid at \$105 for the beautiful *Adenium* donated to the live auction by Dan Smith. Raejean says this time last year, she had just a few *Adeniums*, and this year 92. The day after the Mega Live and Silent Auction, she was going to build a greenhouse in her backyard that had been delivered a week before.

Join us for our annual holiday party at:

**1 p.m., on December 8, at the Tumbleweed Recreational Center,
745 E. Germann Road, Chandler**

Please RSVP with your name and item you will bring to pass (main dish, appetizer, salad, vegetable, or dessert). Please include a serving fork/spoon with the item you will be bringing. We will supply the plates, napkins and eating utensils. RSVP to Sue Glenn at 920-327-3137 or ekmglen@outlook.com.

We will have ham and turkey for all to enjoy. I will need one person to volunteer to purchase and cook a turkey (I will be supplying the other turkey). We will need volunteers to help set up at noon and clean up at the end. We will be having a plant exchange for anyone interested. If you bring a plant, you will need to get a ticket from Jo Davis. Jo will conduct the exchange during the meal, so please wait for your number to be called before taking a plant. I'll see you there.

PROPAGATION EDUCATION GROUP: SAVE THE DATE

The next PEG meeting will be January 11, 2020. More details on that meeting will be sent out closer to the date.

Be sure to visit CACSS on the web at:
centralarizonacactus.org, the Society's website
Facebook [centralarizonacactus](#)
CACSS Swap and Shop
Instagram

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My oldest plant's story is more interesting than the plant is beautiful. It is a *Ferocactus wislizeni* that I purchased at the Desert Botanical Garden's spring plant sale in 1976. It was in a small two-inch plastic pot. I transplanted my barrel cactus into a four-inch terra cotta pot soon after my purchase. No special soil though, as I didn't know any better. I placed it in a sunny location outside. Every so often, over the course of time, it was transplanted to a larger pot.



Through the years, this barrel cactus, along with all my other plants, moved with me. Regardless of where I lived, it was always in a sunny or partly sunny location outside.

In 2001, I landed in my current home. The *Ferocactus wislizeni* went into the ground soon after the move. I'd planted in a canyon formed between my home and the neighbor's where it did get some direct sun every day. After a while, I recognized that even though it began growing relatively quickly, because it was now in the ground, it needed more sun. It was reaching for the sunshine. Even though I knew this plant orients itself toward the sun, it was reaching!

Also, as I hiked some of the local trails, I observed there were no *Ferocactus wislizeni* growing in shaded areas.

With the help of my husband, it was moved to a spot with full sun. Soon it was flowering and producing its identifying persistent fruits. The new growth is now a much healthier green color and appears as a bubble atop the older growth.

Best Novice *Aloe* of the 2019 Show. Grown by Cindy Capek.

PURCHASED: I purchased this plant at Southwest Gardens Nursery on one of our annual trips to Denver, Colorado, to visit my son and his family. Cary West is the owner and also a member of the Colorado Cactus and Succulent Society.



POT: I purchased this pot from Sue Tyrrel.

FERTILIZER: I use the club's fertilizer.

EXPOSURE: I have this plant in my shade house in filtered light protected from full sun.

WATERING: Once a week, if needed, by testing the dirt with a chop stick (one of my favorite tools) for moisture.

FROST PROTECTION: I have most of my potted plants in my shade house. When needed, I completely cover my

shade house with frost cloth, but the last couple of years, I haven't needed to. When it does get cold, I use a rotating propane heater in the shade house.

SPECIAL NEEDS: None except to watch for sun exposure. I also talk to my plants and play music for them, which they seem to like, on some outside speakers.

Best *Gasteria* of the 2019 show: *Gasteria brachyphylla*. Grown by Janet Karasz.

PURCHASED: The plant was purchased in 2008 at a Desert Botanical Garden plant sale and was from Plants for the Southwest.

POT: It's in a ceramic pot.

FERTILIZER: It's fertilized once a month during the growing season. I use the fertilizer that the club sells.

POTTING MEDIUM: It grows in 1/2 cactus mix and 1/2 pumice.

SUN EXPOSURE: It's grown in a screened in porch with limited morning sun.

WATERING: I water it once a week year round.

FROST PROTECTION: No frost protection is necessary on the patio.

SPECIAL NEEDS: It just needs benign neglect.



Best Arizona native plant of the 2019 Show: *Escobaria robbinsorum*. Grown by Cliff Fielding.



PURCHASED: I got it from Mesa Garden in 2016.

POT: It's in a beautiful Mark Muradian pot.

FERTILIZER: I use half strength fertilizer when I water.

POTTING MEDIUM: I use a well-draining mixture of sand, pumice and a little desert dirt. I put limestone gravel on top because it grows in habitat on limestone.

SUN EXPOSURE: Full sun mid-November to mid-February. Then 30% shade the rest of the year. It gets no late afternoon sun.

WATERING: This is one of the smallest cacti in Arizona (usually less than an inch). It is found in the southeastern corner of Arizona. I water regularly in the winter and monsoon seasons as it would receive rain in its habitat. I water only lightly outside of these times.

FROST PROTECTION: They grow at an elevation of 4,000 feet, so one can imagine they would be subject to an occasional frost in the winter.

I earned a B.S in horticulture, with a focus on greenhouse production, from Purdue University in 1977. I spent my career as a wholesale nursery grower; the last 30 as founder and operator of Blue Mountain Nursery in Pennsylvania. The company specialized in wholesale production of herbaceous perennials and ground covers until closing in 2016, allowing my wife Terri and I to retire to Arizona.

It is commonly understood that addition of fertilizer is often required to optimize plant growth and flowering. How does one decide what kind, how much, how often, and the best method to apply fertilizer to cacti and succulents? Plant growth involves many factors:

plant species, age, light levels, soil or potting media, watering practices, temperature, humidity, day length, insects, and diseases. The subject of this article is fertility management.



Part of Eric's patio collection.

Each grower employs unique practices and growth environments. Adopting only one practice from another person is no guarantee of success, as you may be doing something different with another critical plant growth factor. To delve into detail about all the aspects and interrelations of plant growing conditions would result in a book! I will briefly share some of the basics of my methods so you can consider how your practices are different than mine, and adjust accordingly.

The primary focus of this article is toward growing cacti and succulents in pots, although I am using the same fertility program on my landscape plants. My basic potting media is 50% large pumice, 25% coconut coir and 25% Miracle-Gro potting mix. It is likely using any prepared potting mix would work much like the Miracle-Gro component. I use small pumice with tiny plants in pots smaller than two inches. I sometimes add extra pumice or Miracle-Gro while potting to

adjust to the specific needs of an individual species. I top dress my plants with half to one inch of 1/4" diameter light colored stone, mainly to keep the pumice from floating to the top. The stone mulch also helps support the plant, thus avoiding the undesirable need to over-tamp the media.

I prefer terra cotta pots and plant on the high side. Often with seedling-originated plants, I can see just a bit of the upper coarse roots before the stone mulch is added.

When it can be done without excessive root damage, I remove most of the old media when re-potting. Old media is often broken down into a low porosity muck that can lead to diseases. Commercial growers produce their plants with the goal of getting them up to size and looking good for sale. There is a good chance that by the time you purchase a plant, the media in the pot is near the end of its useful life. Therefore, I repot most plants shortly after I purchase them.

I would describe myself as stingy with water frequency. However, when watering, I always “water through” so that water runs out the drainage holes. Except for the more heavy-drinking plants, I generally water weekly in the heat of the summer, less in spring and fall, and much less in winter. I water at sunrise whenever possible, mostly to avoid temperature shock, with the added benefit of knowing that the rising sun will dry up the excess water as fast as possible, reducing disease opportunities. I try to avoid unnecessary wetting of the plant tops. I place the plants where they get as much light as possible without causing sun damage.



Part of Eric's greenhouse collection,.

Applying fertilizer dissolved in irrigation water, often called “fertigation,” is the most popular fertilization method for cactus and succulent growers. It is essential to know about the chemicals in complete fertilizers. The labels of blended fertilizers provide three numbers separated by hyphens, such as 5-10-5. The first number represents nitrogen (N), the second phosphorous (P) and finally potassium (K). These are called macronutrients because they are needed in relatively large amounts. Macronutrients calcium (Ca) and magnesium (Mg) are often provided by adding dolomitic lime to the soil. Sulfur (S) is another macronutrient needed in the soil. Micronutrients are just as essential as the macronutrients but are needed in very small amounts, much like vitamins are needed by animals.

If I could accomplish just one goal in this article, it would be to change how many talk about concentrations of fertilizer solutions. I often encounter the term “strength” being used to discuss mixing liquid fertilizer. “Strength” is not a unit of measurement and is meaningless for accurately mixing a proper concentration of fertilizer. When using blended materials, professional growers always determine the rate in parts per million (ppm) of nitrogen. To give a feel of what levels of fertility are generally applied to horticultural crops such as flowering bedding plants, 200 ppm N would be a pretty standard rate, ranging up to 400 ppm for aggressive growing or heavy feeders. I would never consider applying more than 100 ppm to cacti or succulents. I apply Peter’s General Purpose 20-20-20 with micros at a low rate of 50 ppm with nearly every watering during the active growing season, tapering off in September by skipping

fertigating every other time or by reducing to 25 ppm. By November, fertilizing is done until the plants crank up again in the spring.

The amounts of the other components are determined by the blend ratio. If you desire to apply more P in relation to the N and K, you would use a fertilizer with a ratio like 10-20-10. It is a generally accepted practice among commercial growers in non-desert areas that when using slow release fertilizers with soil less media, a low phosphorous blend is best. P is much less soluble than N and K, so it builds up in the soil. P is also known to reduce the ability of the media to hold micronutrients, especially iron and manganese, causing deficiency of these essential elements.



Years of industry research and production experience has led to the shared belief that when using soilless medias, an N:P:K ratio of 3:1:2 results in the most well-nourished plant. Following that protocol, I used many tons of Osmocote 18-6-12 in my herbaceous perennial nursery with much success. (I do not recommend using slow-release fertilizers with cacti and succulents. The conditions are too dry to allow reliable release of nutrients.) The goal of cactus and succulent growers is to have sturdy, healthy plant body growth, and of course, many large beautiful flowers! It is agreed that extra P will result in better flowering. I have found that 20-20-20 (1:1:1) ratio is in effect supplying three times the amount of phosphorous as would the standard 18-6-12

(3:1:2) ratio plus a little extra K. By applying this at the very low rate of 50 ppm, I believe I am supplying a safe yet sufficient amount of N, and in effect due to the soil chemistry of soilless mixes, quite ample flower-promoting P as well.

Just as people cannot do well with a huge meal once per week, neither do plants thrive with a large meal once per month. Rich soils can store nutrients, but the fast-draining, low fertility soils, best for cacti, store nutrients poorly. If you were to fertigate at 50 ppm with every watering, you would see better results than fertigating at 200 ppm every fourth watering. Frequent application of liquid feeding at low rates will keep your plants healthy, growing and flowering. I use this method on my entire collection of around 500 different cacti and 200 different succulents. I have used 50 ppm on tiny one-month old cactus seedlings with no burn. Never fertilize a plant that is stressed for reasons other than low fertility, not growing or shutting down for the season. They cannot make use of the fertilizer, and it could lead to other problems. I discontinue the fertilizer about six weeks before natural dormancy. This applies to summer-dormant as well as winter-dormant plants. If you do a little dormancy watering to prevent total drying out, do not add fertilizer. Many water soluble products provide charts to assist in calculating the parts per million of the final solution. If the product you are using does not provide

information to calculate parts per million, look online. The Pro-Sol website has a superb chart and other information helpful in calculating dilutions. Pro-Sol is the fertilizer that the club sells.

There are many ways to add fertilizer to irrigation water. It is worthwhile to invest in as easy to use and accurate system as you can afford. If it is a huge hassle to fertigate, you will be less likely to want to spend the time to do it with every watering, resorting to fertilizing not often enough or worse, just not fertilizing. My system uses a water-driven injector located where the irrigation pipe branches from the house supply pipe. Because the water pressure from the street is extremely high, I added a high-quality pressure reducing device ahead of the injector. Use the type that has an adjusting screw on top like the one installed near where the water enters the home. The inexpensive cylindrical plastic ones reduce pressure only when water is flowing. They do not maintain a low static water pressure. The water passing through causes a piston to move up and down, drawing the concentrate out of a 35 gallon concentrate tank and injecting it into the water.



Injector system

I have a Dosmatic Mini-Dos 12-1% unit that can handle around 12 gallons per minute yet capable of injecting at extremely low flow. The rate of injection can be adjusted over a wide range of ratios. Mine is set to add one gallon of concentrate to every 500 gallons of irrigation water. This works out nicely, as mixing one 25 pound bag of 20-20-20 with a full tank of water results in 50 ppm.

Because of how I inject the fertilizer, in addition to my hand-watered potted plants, all my landscape plants, trees, shrubs, cacti, and succulents receive the 50 ppm fertigation via slow drippers. In 2019, I fertigated everything I have planted on my one acre property with three 25 pound bags of fertilizer.

Another method is to use a fertilizer cart, easily found on Google. This is an injector mounted on a cart or dolly along with a fertilizer concentrate tank. Connect a supply hose from the spigot to the cart, then water with a hose out of the cart. Yet another quite inexpensive method for injecting concentrate is a venturi device, such as a Hozon. They are attached between the hose and spigot. A small rubber tube draws the concentrate from a bucket. Venturi injectors have the downside of reducing flow. Using a small hose breaker can help with this problem. For those with not very many plants, simply mixing up a watering can is the best approach. However, because it takes so little fertilizer to end up with a gallon or two of solution at the correct concentration, hitting that mark is difficult. A workaround is to get a five gallon bucket for mixing a concentrated solution so you can use a measuring cup to dip out of that into the watering can. This is much safer for the plants, more accurate, and easy once you have it set up. Mix 4.3 ounces of 20-20-20 with 4 gallons of water.

Adding ½ cup of this concentrate to a gallon of water will result in 50 ppm. If you are using a 10-x-x product, you would need 8.6 ounces per 4 gallons of concentrate. Most water-soluble fertilizers are a mixture of different components that may segregate in the bag much like the crumbs in the bottom of a cereal box. If you are using a portion of the bag, be sure to stir the entire batch thoroughly so the scoop you take is a fully blended one.

The CACSS club sells bags of Pro-Sol soluble fertilizer with a 9-45-15 blend (used to encourage flowers). The full-strength dose of 4 teaspoons per gallon of water results in a 600 ppm mix, which would be very risky on a cactus or succulent. The lowest suggestion of ½ teaspoon, which one could call 1/8 strength, results in 75 ppm N solution. Somewhere in the area of 3/8 teaspoon would provide 50 ppm. I would recommend using this product just ahead of anticipated blooming, but would not use it for year-round fertility management, because the excess P would, as explained earlier, lead to undesirable conditions in the soil chemistry.



Adenium arabicum
cv. 'Dynamo' after
two growing seasons
of low N light feeding.



There are many brands and places to purchase soluble fertilizers. I am partial to Peters brands for sentimental reasons. The company was the originator of the blended soluble technology, founded in Allentown, PA, near where I spent most of my life. I purchase mine online from AM Leonard in Piqua, Ohio, waiting for their free shipping promotions to save on freight. Jack's and Pro-Sol are fine products as well. Usually the higher the N-P-K numbers, the cheaper it ends up to be.

It is wise to check the compatibility with alkaline water prevalent in the Valley of the Sun. Foliar-feeding products should be avoided. Most cacti and succulents do not absorb nutrients in this manner. Even if applied to the soil, these blends often offer all their N in nitrate and ammoniacal forms. Products intended for soil application typically provide about half their N as urea, which is less caustic and gentler to roots. I recommend

investing in an accurate scale. Electronic platform scales, used for weighing postage or food, perform very well. Measuring by volume, especially in small amounts, can be tricky and unreliable.

Just as good nutrition is essential to human health, keeping your plants properly “fed” is essential for obtaining the best possible results. This article should be taken as a starting point, not the complete manual. Use the down time of the upcoming dormant season to dig in deeper. Research and develop a fertility strategy for 2020. I for one will be researching how to reduce pH of the irrigation water and how to add calcium and sulfur to my soil mix. There is always room for improvement! You will never regret spending time, money and effort in better understanding and utilizing liquid fertilizers.

DESERT BOTANICAL GARDEN CLASSES

Register for these classes online at learn.dbg.org or call 480-481-8123.

- *Agave* by Moonlight Mosaic, December 9 and 16, members \$200/public \$250
- Cactus Embroidery Sampler, December 11, \$60/70
- Ecology of the Boojum Tree, December 12, \$27/34
- Front Yard Makeover, January 6, \$30/38
- Flora of Baja California, January 13, with Scott McMahon, \$30/38
- and so much more

TUCSON CACTUS AND SUCCULENT SOCIETY

The TCSS has announced the successful rescue of their 100,000th cactus. Congratulations to all! Visit their website to read the newsletter for this month. They announced that Bach's Cactus Nursery, in Tucson, is displaying 50 differently named *Ferocactus* in a temporary exhibit. (The exhibit will be up for several months.)

PROJECT JUMP START

By Rita Gosnell

November 2 was a picture perfect fall morning, and thanks to the very gracious hospitality of Gard Roper and Loran Rodewald, the Project Jump Start event was enjoyed by an enthusiastic group of new members. There were several wait-listed members who are at the top of the list for our next event which will take place in March 2020.

The big news this month is the new name for our club Facebook page. We are now known as CentralArizonaCactus. The change was made so all of our club's social media accounts have the same name. This includes our club website, Facebook, Instagram, and YouTube accounts.

I hope you were able to attend the Annual Mega and Silent Auction held October 27, in Dorrance Hall, at the Desert Botanical Garden. If you couldn't, be sure and check out pictures posted by attendees on our FB page featuring plants they won at the Auction. Members generously donated their time and plants to make this year's club fundraiser a fabulous success!

Each month a photo of a cactus and succulent posted by Facebook CentralArizonaCactus members is selected for recognition. You can join the CentralArizonaCactus FB page at: <https://www.facebook.com/group/cacss2/>



On left, Cactus of the Month and Most Likes: Opuntia basilaris monstrose posted by Linda Branum Hoefner on October 28 received 245 likes. Succulent of the Month: a hybrid Stapelia flower posted by Patricia Forbes on October 17.

- saxicolous—plants that grow on rocky outcrops, rock crevices or cliffs
- obligate saxicolous—plants that grow exclusively in a rocky environment



Adromischus sp. surrounds a large rock in South Africa, benefiting from some shelter from the fierce winds that blow here, some shade and water runoff from the rock. The soil couldn't have been 1/2" deep. Right, same plant, just a wider view of this bald rocky outcrop with the saxicolous plants in the middle depression.

WEBSITES TO TAKE A LOOK AT

- exoticplantbooks.com Great selection of books on cactus and succulents.
- opuntiads.com All things *Opuntia* with good close-up photos to help you identify your plants.
- cactusexplorers.org.uk/journal no. 25 Editor Graham Charles and team has put out another 75 page great edition. See the largest *Arrojadoa marylandae* you're likely to see anywhere and read a very thorough article about the *Aeonium* found on the Canary Islands, in addition to so much more.