California golden poppies cover the hillside in Organ Pipe National Monument in southwestern Arizona. *Photo by Sue Hakala.*

I hope that you enjoy this special edition of the *Central Spine* containing three articles about pots and potting soil for cactus and succulent plants. If you would like other topics, just let me know. Editor, Sue Hakala, cacsscentralspine@gmail.com.
WELCOME NEW MEMBERS WHO JOINED IN MARCH

Kay and Arnie Benson | Liz Phinnes | Thaddeus Reycraft | Joe Emery | Nancy Swanson | Donna Mills | Nancy Cahill | Marissa Vidro | Diana Moulds | Kristin Johnsen | Judy Jordan | Julie and Dave Scott

President’s Letter  March 2016

It has been a very warm spring and some of my *Mammillarias* are blooming ahead of their normal schedule and also my claret cup cactus *Echinocereus triglochidiatus*. I have a lovely rosemallow *Hibiscus moscheatos* that is putting on quite a show much earlier than usual. I enjoy all of the beautiful pictures of blooming cactus and succulents that our members post on our CACSS Facebook page. Dan Smith, who moderates our page, does an excellent job of keeping all the information relevant to our purpose. Thanks, Dan.

The day before our meeting last month, Diana Crummey arranged a wonderful day for our speaker Virginia Hayes and my husband and I along with Jeanne Ann and Chuck Brush. We toured Boyce Thomson Arboretum with Cathy Babcock, director of horticulture and Mark Siegwarth, executive director. They showed us some of the Arboretum’s collections. We took a hike up to Picket Post House where we were able to see the staging area for plants coming in from the Wallace Collection. Mark also showed us the area where most of the collection will be planted over the next two years. It is going to be an expansive and wonderful addition to the Arboretum. After lunch at Porter’s restaurant in
Superior, we went to see Monte Crawford’s garden and greenhouse in Apache Junction. His garden is nestled against the Superstition Mountains and contains many interesting and unusual specimens including a wonderful collection of cycads. We met Larry, a very large lizard, who lives in Monte’s greenhouse. Many thanks go to Diana and John Crummey for arranging such a wonderful day, and to Monte, who opened his garden to us on his birthday, and yes, we did have ice cream and cake!

We have two open gardens in our future. Mary Magiver is holding her open garden in north Phoenix on Sunday, March 12 from 10 a.m. to 1 p.m., and Barbara and Rick Rosenberg have scheduled their open garden in Scottsdale on Sunday, May 7 from 10 a.m. to 1 p.m. I always delight in the open gardens and the plants other folks enjoy.

See you in the garden,
Beth

CACSS FACEBOOK

By Thom Young

The CACSS Facebook page grew 11% in the month of February. Our Facebook page now has over 791 members from around the world. The CACSS Facebook page is a great forum for sharing photos, giving and receiving information on cactus, succulents and related flora and fauna, and associated information. February discussions were varied as can be expected. With the unseasonably warm weather in February, members were wondering if it was safe to bring *Adenium* out of hibernation. The conclusion was to wait until your morning lows are consistently at or above 55˚. Each month we will be featuring a photo of a cactus and a succulent which a member shared on our Facebook page. This month the cactus is the *Corynopuntia vilis* in bloom from Chris Ginkel and the succulent is the *Aloe marlothii* from Susie Bayers.
It began innocently enough. It was 1986 and Gard Roper had just purchased a new, 1/3 acre lot in Scottsdale and wanted to landscape it. His friend, George Lombard suggested he visit Jim Elliott’s nursery, Arizona Cactus Sales, where Gard purchased his first agave, an *Agave weberi*. Being a domesticated cultivar, his *Agave weberi* not only tolerated Gard’s beginner’s habit of watering excessively, it thrived, quickly reached seven feet tall, bloomed early and died (he still has clones from that first *Agave*). Gard joined the CACSS. His vision of a lovely landscape quickly gave way to his desire to have one of every *Agave* in the trade. At the height of his collecting, he had 110 different varieties of agaves.

He eventually met Howard Scott Gentry, the author of *Agaves of Continental North America* and read his book cover to cover. More experience led Gard to stick with those agave species he liked best and that pupped the least (“avoid *Agave lophantha*” he says). “Fortunately,” as Gard put it, he was “saved by the agaves habit of blooming and dying.”

Fast forward 30 years. Many of Gard’s agaves have come to the end of a full and healthy life. Retiring in 2005 after three demanding decades as a high school psychologist, he is still fascinated by succulents with rosette patterns. However, now he is focusing on developing his aloe collection, plants that have the same mesmerizing rosette growth pattern as *Agaves*, but that don’t die after flowering.

Gard’s soil mix is simple: 50/50 pumice and Black Gold potting soil. He cranks up the percentage of pumice for certain water-sensitive *Aloe* species. His advice to beginners is to visit other collectors near you. He says you can always learn more
on site, where you get to see what works and what doesn’t. He also recommends choosing succulent species that fit your lifestyle. For example, he says Lithops are not for you if you are erratic in your watering habits, while most agaves and many aloes are more forgiving. If he were to start over, he said he would have planted fewer trees with dense canopies and instead, planted trees that provided filtered sun to his succulents.

Gard has traveled deep into Mexico with Doug Dawson, Kelly Griffin, Brian Kimble and Chad Davis on expeditions where eating meals and other amenities were often sacrificed for the chance to see just one more species of agave. Gard points out, however, that several really fascinating species of agave can be found much closer to home near Sedona and in southeastern Arizona, and urges club members to take advantage of our unique geographic location and see these species in habitat.

He may be switching to Aloes, but Gard is still our go-to person in the club when anyone has an Agave question.
Setup for our annual show and sale begins at 7 a.m. on April 6. April 8 is the first day our show and sale opens to the public. I hope you have already volunteered to help with some portion of the event. If you haven’t, please consider doing so. Volunteering is fun and a great opportunity to interact with fellow Society members. There are positions open every day so, hopefully, you can find something that would interest you and help make this, our biggest yearly event, the best ever.

We are hoping that everyone will be exhibiting their plants. If you have not signed up and received entry cards and a number, please see Chuck and Jeanne Ann Brush at the upcoming meeting. We want to fill Dorrance Hall with all kinds of plants. If you are one of those who like to wait until the last minute, you can still sign up when your show plants are brought in. Whether a novice or master, your plants are what make the show. Please be sure to read the rules and have your plants clean and ready to go when you arrive. The rules can be found on our web site at: http://www.centralarizonacactus.org/assets/show/Show_Rules_2016.pdf

You can bring your plants to Dorrance Hall on Wednesday, April 6, from 7 a.m. to 7 p.m.. Remember that you can drive around to the back of Dorrance to unload your plants. It’s important that as soon as you have your things unloaded that you move your vehicle. I’m sure the security people will be there to make sure we do. There is construction in that area, so please drive with caution.

We have a great lineup of judges this year. Judy Pigue, president of the Cactus and Succulent Society of America, and Raul Puente Martinez, curator of Living Collections at the DBG, will judge the cactus entries. The succulent judges are Woody Minnich, owner of Cactus Data Plants and long-time sales vendor and Scott McMahon, Cactaceae Collections Manager at the DBG. Thanks to these great individuals who have donated their time and expertise.

Some entries from last year’s spectacular show.
We also have a great group of vendors for the sale. Thanks to Mike Cone, Steve Plath and Nick Diomede for all their work in this endeavor. As of March 3, we have the following vendors scheduled:

- Botanicals in Clay
- Cactus Data Plants
- CSCC Pottery
- Schoolgirl Antiques
- Signature Botanica LLC
- Sticky Situation
- Jilly Bean Pottery
- Southwest Society of Botanical Illustrators
- Hellmouth Pottery
- Mike Cone Ceramics
- Greg Starr Nursery
- Peapots
- Tentacle Arts
- Arid Adaptations
- Succulentia
- Mike Gallagher and Kelly Depetro
- PW Nursery

I look forward to seeing everyone at this year’s event. Thanks for everyone’s help in planning and volunteering. Without your help, this show and sale would never happen.

THE CACTUS EXPLORERS CLUB JOURNAL

cactusexplorersclubjournal.org.uk

This free on-line journal is published by Charles Graham, a well-known plant explorer and writer based in England. Each issue is filled with informative articles, history, exploration, convention announcements, book reviews, information about seed and plant sellers, club news from all over the world, news about other free on-line journals, and so much more. Subscribe for free and receive an email when each new issue is available, usually three times per year.

Now, in it’s sixteenth issue, you’ll find it packed with information about all the plants we love. It might take a minute to load on your computer, but that’s due to all the great information found in the journal. Consult the on-line index to locate what you want in back issues.
In 1997, Gay and her husband started to transform their backyard into a water-wise oasis. A nearby nurseryman told them about cacti and succulents and how drought tolerant they were. That information started an addiction that escalated into a collection of over 500 potted plants and over 120 species of Aloe.

To expand her knowledge, Gay volunteered at the Boyce Thompson Arboretum. Shortly after, she and her husband joined the Central Arizona Cactus and Succulent Society opening a door to a wealth of information from its members. Currently Gay is an instructor at the Desert Botanical Garden, teaching classes for the past three years.

Gay will discuss the many strange succulents suited for our Arizona landscape, such as Ariocarpus, Astrophytum, Euphorbia, Haworthia, Gasteria, and Stapelia. She will also discuss plant placement, frost protection and watering requirements.
Growing cacti and other succulents in containers requires, of course, a plant, a pot and a potting soil. Various percentages of organic and inorganic components can be combined to create a rapid draining mix that the majority of succulents require and prefer. For every hobbyist grower of container cacti there are many mixtures of potting soil, evolved over time, to work well with the grower’s specific conditions and watering habits. Likewise, commercial growers each have their favorite mixes which combine material availability and affordability along with how the nursery conducts watering and fertilizing. Needless to say all potting soils are not created equal.

There are always many factors in growing the assortment of plants many cactophiles do. Most of us have a combination of summer and winter growing plants. We all have assorted sizes of containers from very small to very large, deep vs. shallow, plastic or ceramic vs. clay. Some are grown in shadier spots while some are situated in sunny, hot locations. All these variables can make for some tricky moisture management when it comes to watering plants.

One of these variables you can make more uniform is the potting media. A good habit to get into is to repot newly purchased plants into your own potting mix. Even local or regional nurseries can have a vastly different mix than you do, let alone nurseries from out-of-state. For instance, if a newly acquired plant is in a peat and perlite based mix and it dries out thoroughly (particularly in our arid climate), trying to re-wet it in can be extremely difficult. If another nursery uses native soils or other sandy fines in their mix and you like to water frequently the odds of over-watering are likely. So there are distinct benefits to having your plants in a uniform soil that you like and works with your growing conditions and cultivation habits. Disciplining ourselves to repot newly purchased plants can be hard, even for old-timers like myself, but can be the difference between having a new plant for many years or having a rotted glob several weeks after purchase.

Repotting plants can also reveal problems before they happen if you catch them early enough. If a plant just doesn’t seem vigorous during it’s growing season, pop it out of the pot and look at the roots. If all the fine root hairs have rotted away but the main root system is intact you can clean all the old soil away, leave the roots to dry out in the open air for a few days, and then repot the plant in fresh soil.

In recent years there has been discussion in the cactus world about acidifying the water you put on your plants to increase their vitality. For those of us who’ve grown succulents for many years this seems a curious phenomenon since so many of our plants have grown fine for many years with simple tap water. Anyone who has managed water chemistry for specialized aquariums can attest that adjusting water pH, hardness, salinity, etc. to any significant degree is tough at best. Most municipal water supplies are chemically buffered to

Central Spine 9 of 20 March 2016
resist significant modifications. My personal opinion is that if you have to become a junior chemist to maintain your cactus collection, then it's time to repot your plants!

A final note: potting soils don't last forever. No matter what components you use to make your soil mix they break down in a pot over time. If there are organic elements in it, bacteria and fungi gradually consume them. As a result, the composition, texture and moisture holding capacity of the soil can change dramatically. Any nutrients in the soil are either taken up by the plants within a few weeks to months or, more often than not, leached out of the soil with the frequency of watering we have to do during warm weather. Plants do give off waste products which can contribute to chemical changes in the soil and there are minerals left behind from evaporation. Lucky for us that succulents are so adaptable, but only to a point. So when in doubt repot your plants, they'll be glad you did!

SONORAN XI PROGRAM SCHEDULE

The Tucson Cactus & Succulent Society (TCSS) will hold its Sonoran XI Biennial Plant Conference, southern Arizona’s largest plant show, April 16 — 17 at the InnSuites, 475 N. Granada Avenue, Tucson. In addition to the approximately 4,000 plants in 400 varieties of cacti and succulents from North America, Argentina and Madagascar, there will be five speaker programs including Chihuahuan Desert, arid and semi-arid South African succulents, and the Monte Desert of Argentina. Entry is free and open to the public to view the plants, books and pottery which will be on sale from 6:30 p.m. – 8 p.m., April 15. There is a 15% discount to buy plants for members and registrants. In addition to the workshops, there will be a dinner speaker, silent auction, pottery and art sale. Cost of the event ranges from $120 for TCSS members, $140 for other clubs and $150 for the public. Registration on Friday, April 16 is from 6:30 p.m. – 8 p.m., Saturday, April 16  8 a.m. – 5 p.m., and Sunday, from 8 a.m. – noon. Registration includes lunches and Saturday night dinner. The plant show ends at 5 p.m., Saturday. The Silent Auction is from 8 a.m. – 5:45 p.m., April 16. All activities end at 3:30 p.m. Sunday. There are also single individual workshop tickets for $15. For more information, check www.tucsoncactus.org or tcss@tucsoncactus.org, (520) 256-2447.
Dirt is what you sweep from under furniture. Soil is what plants grow in.

Land-dwelling plants need a place for their roots. Soil serves as an anchor, food source, water source and sometimes as protection, in those plants that shrink beneath the ground during dry periods.

Looking around the world, we see different plants growing in different soils. At any given level of light, heat and water, members of genus *Begonia* grow better in soil high in organic components rather than sand. *Lithops* usually die quickly in such rich soils. Most container gardeners use potting mixes with little, if any, natural soil. Paying attention to what's in the pot makes a big difference to your plants.

Some people try to grow plants in soils duplicating the natural environment. This is rarely necessary, for pot growth is already unnatural, and almost all plants are quite adaptable. Despite differences in soils in nature, most plants can be grown in almost any potting mix if attention is given to their requirements.

Desert plants are adapted to living in poor soils that often are dry for long periods. Many grow better with more water and nutrients than they receive in nature. Few like being wet for very long. Most desert plants require soils with a fairly high air content as well. Roots need oxygen. For almost all succulents, we want a potting mix that provides plenty of air to the roots, has good drainage, retains some water but not too much, and is composed of inexpensive, readily available materials that do not break down too fast. Another consideration is weight: We move our plants around, and a five gallon pot full of desert soil weighs a lot. There are no magic potting mixes.

The ideal for most of our desert plants in cultivation is to have an owner who chooses a pot size and potting mix that will stay moist for 5-7 days after a watering during periods of active growth.

Soil aeration is promoted by relative uniformity of particles in the soil mix, but the particles should not be too small. Smaller soil particles trap more water between the particles and exclude air, while larger particles stay moist, but have air spaces around them. A mixture of large and small particles in a pot retains water the way
only small particles would, because the small particles fill the spaces between the larger particles. When you water a pot of silt, the water stays pooled on the surface for minutes to hours, and the silt stays moist a long time, at least days to a week. A pot of fine sand drains much faster and stays moist quite a while, but not as long as the silt. Coarse sand drains and dries even faster. A pot of large gravel retains almost no water and is dry within minutes to hours. If you mix all these components together, they will drain and dry as though the pot were full of silt.

The type of pot used makes a difference as well. Clay pots dry out faster than do plastic, glazed or high-fired pots of the same size, because water can evaporate through the unglazed clay but not through the other finishes. Large pots stay moist longer than small pots. Large plants in active growth use more water than small and dormant plants.

Evaporation depends on the surface area exposed, and a deeper pot will take longer to dry out than a shallower pot of the same diameter. A hole in the bottom is imperative unless you are growing water lilies.

When people talk about soils with good drainage, they refer to soils through which water drains rapidly, leaving the soil moist, yet full of air between soil particles. One can be fooled. When one waters a pot of completely dry peat moss, the water pours around the dry ball of moss and runs out the drainage holes immediately. Because fully-dry peat moss won’t take up water without prolonged soaking, the water will not reach any roots growing in the peat moss. If peat moss stays too wet, it turns into a black mushy culture medium for fungus. These are some reasons why I don’t use peat moss in my soil mixes. Many people do so very successfully; I think it requires more attention to your plants and more time spent watering.

Commercial bagged cactus mixes are mostly peat moss, and I think these are just about the worst soils for beginners to use. Once dry, and they dry fast in our climate, this potting medium will never get wet again without many hours’ soaking in a bucket. The plant will dry up and die, even though the owner is watering regularly, because the soil will not be wet. I would guess 99% of succulent growers use such mixes though.

Commercial growers have to operate under agricultural laws. Few states permit easy transport of plants grown in soil, for fear of spreading nematodes or other soil-borne pests. Because of this, commercial growers
use soilless potting mixes, composed of materials that are not as attractive to soil pests, and their plants must be grown on benches, not touching the ground. Their potting mixes must still be well-drained, providing air to the roots and retaining some moisture.

Density of the potting mix is important to growers. Consider how many trays of pots, and larger individual posts, need to be moved around. Cost of components is important. Many growers buy truck fulls of premixed potting mix, but others mix their own from components.

Common components used in commercial growers’ potting mixes include peat moss, sawdust, coir, perlite, pumice, high-fired clay chunks, vermiculite, and sand. It is becoming ever-harder to find high quality components, and some growers have dropped some components for which they can no longer find good sources. An example is vermiculite. The large chunks formerly available worked well in mixes to provide aeration, but it is now hard to find vermiculite with other than small chunks and without lots of fine silt that blocks air passage and water drainage.

Mixes of primarily peat moss, and perlite or pumice, are extremely common. Pumice and perlite are volcanic products, and much of the country is not close to volcanoes. High-fired clay (LECA) is used sometimes as a substitute for these components. Most of these components are readily available, of low density so pots don’t weigh much, and they provide good aeration to the roots for 2-3 years. After this time peat moss breaks down into sludge, and both perlite and vermiculite degenerate into fine silty dust that blocks air passages. Almost all plants in such mixtures must be repotted every 2-3 years or, roots suffocate, rot and die. In a commercial nursery, this will be the time to move plants up in pot size. Often large, husky and perhaps somewhat overgrown plants that you buy at a nursery are in dire need of repotting, because the mix is 2-3 years old. Your own plants are also subject to this issue; if you use such potting mixes, you must repot every plant every 2-3 years or plants will suffer.

There are next to no nutrients in soilless mixes, so plants need fertilizing at almost every watering during the growing season. Many succulent nurseries water their plants about once a week in season. Three weeks out of each month many use typical 20-20-20 fertilizers at about a tablespoon per gallon of water. The fourth week they use tap water, to wash salts out of the pots. Plants will not grow well in peat-perlite or pumice.
or potting soil-perlite or pumice mixes without regular and substantial fertilizing. This is a lot more than almost any hobbyist fertilizes.

Hobbyists often substitute bagged "potting soil" for peat moss in such mixes. Read the label on your "potting soil." It is primarily "forest products," which means sawdust from a wood mill. This not only has next to no nutrition, but the microorganisms that break down sawdust take nitrogen from your soil, requiring more fertilizing of such mixes than is needed with peat moss mixes. Adding sand to soilless mixes does not make them drain faster; it does make them stay moist longer, and perhaps rewet easier, so it does make sense to add sand to soilless mixes if the hobbyist regularly lets plants dry completely.

Commercial growers have staff to care for their plants, and they often don't let their plants dry completely. If they allowed their peat-based mixes to dry completely, they too would have the problem of never-rewetting potting mix. Many commercial producers water everything lightly every day or two with a water wand. It is not enough to soak the pot, so the plants don't stay wet and soggy, but it is enough to keep the peat from drying.

Coir-containing mixes (coconut husk fiber) are very easy to wet, but mixes with more than small proportions of coir stay wet for a very long time. I don't know of any coir-based bagged potting mixes, though individual components can be purchased and mixed. I recall many years ago, when Chuck Hanson ran Arid Lands Nursery, he used a mixture of 95% pumice and 5% coir for most of his euphorbias. It is very important to actually measure components in a mixture, rather than eyeball it; 20% coir cactus mix, instead of 5%, will stay wet for weeks.

I have heard several soil scientists lecture that our local soils have all the nutrients a plant needs but nitrogen, which can be supplied with ammonium sulfate. (Our soils are too low in manganese for happy palms, but succulents don't mind this at all.) Here in Phoenix, cactus and succulents in pots will do just fine in soil dug up from your garden. In fact, I am sure they will do better than in soilless mixes for all but the most fussy and involved growers. Another good approach is mixing coarse sand or screened desert soil, with commercial potting soil, in a ratio around 3/4 or more mineral material to 1/4 or less potting soil. I grow all my Ariocarpus, Ferocactus, Mammillaria and allies, and most Opuntioideae in such sand.

(continued)
Look in a desert wash to see different sizes of sand. The very smallest sand on the insides of stream bends is too fine-grade for most succulents, but the slightly larger grades closer to the center are suitable. Builder's sand available here is a mixture of many kinds of rock and works well as a sole potting medium for many desert cacti and succulents. Grassland species may prefer 10% to 25% organic matter added. True clay flat dwellers such as some *Ariocarpus* and *Mammillaria* do just fine in our desert silts. Many people add perlite or pumice to soil to lessen the density and make pots easier to lift. Steven Hammer refers to such mixes of soil and pumice or perlite as "Mabel mix," and they also work very well.

I grow almost all my succulents in soil-based mixes. I fertilize with ammonium sulfate at one tablespoon per gallon of water. This is a lot less expensive than standard fertilizers, and it is all succulents grown in our soil need.
Terrestrial cacti come from dry regions where no humus is formed in the soil. Humus is decomposed plant material like what you might get out of a compost heap. We’ve all seen and held our local Arizona soil. It’s dry and seemingly lifeless without any humus.

The first thing to know is that black rich humus-filled soil does not form in desert areas like it does in other parts of the world. Humus in the desert, if there is any, usually forms on the surface from wind-blown weathered plant parts that accumulate under and around plants. The action of rain and weather dissolves the paltry nutrients down to the roots slowly over time. Cacti and succulent plants have evolved to live in nutrient sparse soil. Growing these plants in a rich, over-fertilized soil will weaken them allowing pathogens and bacteria a happy home leading to an early death for the cactus or succulent plant.

What Kind of Soil Should I Use?
Using a prepackaged cactus mix for your potting needs is a good way to start. But, even this soil is too rich and dense for most desert plants. To make the soil more “open,” so that it dries out quickly and allows air to flow around the roots so rot doesn’t set in, it’s important to add pumice and/or perlite. Use these additives as 40-50% of your potting mix. Experiment to see what works best with your growing conditions and plants.

CACSS members who win ribbons and trophies at our shows all add something to open the soil, and none of them agree on exactly what it should be.

Although individuals and nurseries will never concur on the perfect soil mix, we are lucky. We have one local authority that has been growing a wide variety of plants for over 75 years: The Desert Botanical Garden. Their experience with our weather and soil conditions here in the low desert should be an excellent reference for all of us.

Scott McMahon, a CACSS member, who is in charge of the cactus collection at the DBG uses this soil mix:

- 2 bags of cactus mix (currently using Black Gold brand)
- 5 gallons of pumice
- 4 gallons of perlite
- 4 cups of gypsum
- small amount of slow release fertilizer like Osmocote.

Tephrocactus weberii forms a large underground tuber and needs a very open soil so it doesn’t rot.
When repotting my plants, I’ve changed my potting mix to the DBG’s and the results have been fabulous. Better looking plants overall with dense spines and LOTS of flowers. My plants are happy and healthy.

With plants that are more prone to rot like *Mammillaria weingartiana* or, have tubers like *Tephrocactus weberi* or, are in pots over 14” in diameter, I add sterilized 1/4” gravel to the soil to open it up even more. Sterilize gravel? Yes, sterilized. If not, you may introduce pathogens as I did one time with wash gravel that killed many. To sterilize, I put one cup of bleach in a five gallon bucket filled with water and gravel. After soaking overnight, I pour out the water and rinse the rock and let it dry. Some PEG (Propagation Education Group) committee members sterilize their rock and sand/gravel by microwaving it on high for five minutes.

Sadly, there is no one answer as to what soil is perfect for your plants. It depends on what the plant is, what kind of pot it’s in, what microclimate you are growing it in, how big it is, and what’s going on underground.

Check out other articles in past CACSS newsletters (available on the web site) that discuss soil and potting mix:
- *Coir (Coconut Husk Fiber): A Universal Potting Medium?* by Mark Dimmitt, 7/13
- *Perfect Potting Mix for Cacti and Succulents* by Tom Gatz, 10/08
- *Repotting Cactus and Succulents* by Jim Oravetz, 7/90
- *So Much for Peat Moss and Watering* (no author), 10/94, 4/91
- *Soil Uptake of Nutrients in Relation to Acidity or Alkalinity*, Gary Petterson, 4/90

The Cactus and Succulent Society of America’s January-February, 1998 *Journal* (in the club’s library) has several articles about soil and soil mixes by renowned growers. Guess what? None of them agree either.
SAVING A PLANT THAT HAS BLACK ROT

This tip comes from the San Diego Cactus and Succulent Society newsletter. Cut off the black rot until you have healthy tissue. Let it sit a few days to callous over. Melt some paraffin wax. Cool it to the point where it would no longer cause blistering of the skin. Then dip the butt of the stem into the wax to a depth of about one inch. Repot the plant. This method produces re-rooting in *Stapelia gigantea*, *Aloe*, *Haworthia*, *Ferocactus*, and *Epiphyllums*.

ATTENTION PHOTOGRAPHERS

Would you like to see one of your photographs on the cover of the *Central Spine*? Images of central Arizona native plants are especially wanted but, all cactus and succulent subjects are welcome. Please forward images in the largest digital format to Editor Sue Hakala at: CACSSCentralSpine@gmail.com.

CACSS WEB SITE: centralarizonacactus.org

Visit the club’s web site to see a complete list of library books, periodicals and DVD’s that are available for checkout at monthly meetings. You can keep checked out items for two months. On the web site also find articles about plant care.

TUCSON BUS TRIP

By Rita Gosnell

On April 23, the club is planning a one-day bus trip to Tucson nurseries for $44 a person. I’m coordinating the trip. Call me to see if there is still space available at: 480-595-0292. There is space for 50 people.

The morning of April 23, please arrive at the west end of the Walmart parking lot, 1380 West Elliott Road, Tempe, by 6:15 a.m. for a 6:45 a.m. departure. The itinerary includes Bach’s Greenhouse Cactus Nursery, B & B Cactus Farm and Plants of the Southwest. With bathroom stops, lunch and a quick dinner we should be returning by 6:45 to 7 p.m.

Bus departure times are very important so please wear a watch or use your cell phone clock so you can return to the bus on time. Making the schedule work depends on everyone’s cooperation.
Other items to bring include snacks, drinks, water (no glass containers), medications, sunscreen, comfortable walking shoes, name tag, magic marker, some newspaper and boxes for your plants. Caps, hats and sunglasses are recommended. The club is providing some water on the bus. A few volunteers should bring a flashlight and alligator snout tweezers to enable unpacking Saturday evening. Let's have a safe and fun adventure!

If you've never been on a bus trip, go to the CACSS web site and read the December 2012 newsletter to get a sense of what the last trip is like.

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PLANT SUBJECT MATTER SPECIALISTS

**Doug Dawson** 480-893-1207 | dawsonlithops@hotmail.com
Specializations include Growing from Seed, Flora of Namibia, Lithops, other Mesembs, Melocactus, Miniature Cacti and Succulents of Arizona.

**Mike Gallagher** 602-942-8580 | mgallagher26@cox.net
Specializations include Aloes, Haworthias, Columnar Cacti, and Turbinicarpus.

**Dean Patrick** 480-759-0312 | desertpatrick@cox.net
Specialization in softwood stem-cuttings, plant division and seed starting (rooting cacti, agave and aloe).

**Steve Plath** 623-915-7615 | revegdude1@juno.com
Specializations include General Propagation and Desert Revegetation, Ariocarpus, Astrophytum, Cyphostemma, Echinocereus, Fouquieria, Thelocactus.

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Specializes in adeniums, raising adeniums from seed, grafting and adenium culture in general

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Specializations include Desert Landscaping, Unusual (including Rare Fruit) Trees and Shrubs, Aloes, Agaves, Columnar Cacti.
Next newsletter issue submission deadline: April 10, 2016. Email all submissions to: caccsscentralspine@gmail.com. We encourage members to submit high resolution images of their plants with captions for inclusion in the newsletter when and where possible.