THE UNIVERSITY OF ARIZONA
Cooperative Extension

DECEMBER 2018 Garden & Landscape Newsletter

U of A Cooperative Extension, Pinal County 820 E. Cottonwood Lane, Bldg. C., Casa Grande, AZ 85122
(520) 836-5221 **http://extension.arizona.edu/pinal**

TALL, COLUMN-TYPE CACTI

Just about everyone is familiar with the giant saguaro and many choose to plant them in their desert landscapes. There are, however, other choices.

In desert landscapes, the tall columnar cactus is often the main attraction in what can be a striking landscape. Because the saguaro is native to our area, many, if not most, local landscapes prominently feature this impressive cactus either as a backdrop to draw the eye, or as a lateral to define the outside limits of the landscape. It is no wonder, of course. This stately sentinel of the Sonoran Desert is a gorgeous plant that inspires awe in those that see it for the first time up close and personal. I have to say, and I suspect that you would agree, that the saguaro still intrigues us even after years of close encounters.

Still, sometimes a fresh look is needed. There are a number of tall, column-type cacti that could easily be slipped into a landscape in the place of the saguaro. They would achieve a similar purpose but give a drastically different feel to the landscape. In 1987, Kent C. Newlant, horticultural specialist at the Boyce Thompson Southwestern Arboretum, compiled a list of twenty columnar-shaped cacti for landscape use in Central and Southern Arizona. While we will not have space to describe each of those twenty different cacti, just remember that there are plenty of choices left if one of these do not strike your fancy. If you would like a copy of the list, just let us know.

You have probably already figured out what we mean when we say “tall, columnar” cactus. To fit this description the plant must be slender and tall, like a telephone pole. Some of the cacti that fit into this description may be fairly tall and some may be relatively short, but in the landscape, they perform a similar function. Standing up in the air, they automatically attract the eye and, along with the supporting characters, create the image of a desert scene with the illusion that we are actually out in the wild enjoying the natural habitat of the desert.

Since we have been speaking of the saguaro, let’s use it as an example and a gauge by which to consider the other cacti. The saguaro itself can grow up to forty feet tall, an eye-catching giant in a desert where most plants are relatively short and sometimes nondescript. The tall, uniquely shaped cactus with its white flowers tends to draw the eye. However, in our smaller yards, sometimes the cactus reaches a height that is just too tall and becomes a mite too dangerous. We want the same impact with a smaller and less massive plant. That is where some of these other plants can shine.

TALL, COLUMN-TYPE CACTI ... CONTINUED ON PAGE 2

IN THIS ISSUE:

TALL, COLUMN-TYPE CACTI ... CONTINUED FROM PAGE 1

Let's consider as a possible alternative the Arizona organ pipe cactus, Stenocereus thurberi. It has a similar columnar appearance, but only grows to thirty feet in height which would be much less dangerous if it were to topple over like saguaros sometimes do. Still, it does take up more room than a saguaro because what it does not do in height, it does do in width. Because the organ pipe develops multiple branches from the base, it can eventually grow up to twelve feet across at maturity. That may still be too large for some yards, but the many branches offer a spectacular arrangement that definitely draws the eye. This cactus is not for you if you have a tight and constricted soil. It demands good drainage.

Still too big for your yard? A near relative of the organ pipe Stenocereus alamosensis, is the octopus cactus. Native to Mexico, this particular cactus grows only to ten feet tall. The branches are more slender, maybe up to three or four inches in diameter, so it is not as massive as the saguaro or the organ pipe. It does have an interesting growth habit in that it grows relatively straight into the air early in its life, but later on it tends to twist and turn in all directions. This variety gives this plant the eye-catching view that we have been talking about. Olive-green in color, it has attractive red flowers which are different that most other tall cacti.

I really like the toothpick cactus. The name is descriptive of the two-inch long, slender spines that resemble in size and shape its namesake. The toothpick cactus, Stetsonia coryne, is native to Argentina and grows to twenty feet tall, a size that can fit most yards. The longer spines probably means that it should be planted away from walkways and public areas, but its size and shape does not make it threatening at all, compared with other cacti. It has flowers that bloom white only at night.

Want something really small? Consider the golden torch cactus, Echinopsis (Trichocereus) spachianus. Its average height is six feet which should work for even the smallest of yards. Native to Argentina, it is named for its short golden brown spines which give it a glowing torch appearance. It blooms only at night and has white flowers.

Perhaps you have plenty of room and want something really big! Try the cardon cactus, Pachycereus pringlei, from Baja California. Sometimes called the Mexican giant cardon or elephant cactus, this cactus can reach up to fifty feet tall! The fruit is edible and is reported to be a staple food of the Seri people.

Fence Post Cactus
Pachycereus marginatus
University of Arizona

Totem Pole Cactus
Lophocereus schottii
University of Arizona

Other tall, column-like cacti include names that are familiar to cactus enthusiasts. The totem pole cactus (Lophocereus schotti) is one. Some forms can grow up to forty feet tall but most remain relatively sedate in our yards. The fence post cactus, Pachycereus marginatus, is another. It is a slow grower but can eventually reach heights up to twelve feet. Because it can be planted relatively close to its neighbors, some have used tight arrangements of multiple plants as a living fence. The Peruvian old man cactus, (Espostoa lanata) is a also favorite. Three feet tall at maturity, with its beautiful cottony, snow white hair and short golden spines, it makes a striking accent plant. It has pink flowers.

Cacti definitely fill an important niche in low water use landscapes. Besides their low water demand, their color and texture give landscapes a striking and eye-catching emphasis. The wide variety of shapes and sizes should be sufficient to meet the landscaping demands of even the most unusual of yards. There is an added benefit. Because there are many tall column-type cacti on the plant palette from which to chose, residential and urban planners are not restricted to just the saguaro.

Texas Root Rot

Of the many challenges affecting our ability to grow healthy trees and shrubs in the landscape, one of the most devastating is Texas root rot.

While many of the more common plant diseases nationwide are not found in Arizona because of the dryness of our climate, there are a few that do cause regular problems here. Of those, only a handful could be classified as regular offenders. In my opinion, Texas root rot, sometimes called cotton root rot, is the worst of the lot.

Texas root rot is most serious because it kills plants quickly. A plant can be perfectly healthy one day, start to show symptoms the next, and be completely dead shortly thereafter. Plants die so quickly that the leaves on the plant often do not have time to fall from the plant, but remain firmly attached to their stem or twig.

In addition, Texas root rot claims as its victim a wide range of broadleaf plants. Just about any broadleaf tree that is not native to Arizona, with the exception of citrus it would seem, are susceptible. Mesquites, Palo Verdes, Ironwood and other natives do not seem to be badly affected either, but pecans, grapes, peaches, apricots, and hundreds of our favorite plants are definitely at risk.

When we speak of Texas root rot, we are talking of just one of many root rotting fungi. Each of the root rot fungi are different from one another in at least one specific way; most often in many ways. Sometimes it is the viciousness in which they attack a plant. Sometimes it is simply the way they look. The common denominator among them all is that they attack the outside edges of roots and break them down. Once the capacity of roots to pick up water and nutrients is eliminated, the survival chances for the plant are just about nil.

These root-rotting fungi are all microscopic. With the exception of Texas root rot, you cannot see them without strong magnification. In fact, almost all of them are one-celled. If you are experienced, you can see Texas root rot growth with a hand lens of at least 10X magnification. Look for strands of fungus growing along the outsides of the individual roots. In most cases, mushy roots are the most common way of identifying the disease in the field. The most common symptoms of root rot are disintegrating brown or black-colored roots where the outside of the roots slips easily away from the generally white interior of the root.

Most root rot fungi can only move about when there is sufficient water in the soil to allow them to steer around individual soil particles using the tiny little structures on the sides of their bodies that work like oars on a boat. When there is water available, they flit about until they find a root. Latching on, they begin their diligent work of feeding and reproducing themselves at a rapid rate. Once there are enough of them doing their thing, the plant is in big trouble.

Setting aside Texas root rot, the best solution for solving a root rot problem is correct water management. That is, 1) drain out the soil to prevent the critters from moving around, and 2) apply water correctly.

We speak often here about the importance of correct irrigation in order to prevent root rot. I would again underscore the importance of good water management. Soils that do not drain well soon become saturated with water. As you can guess, that is not a good thing because all desert soils have their supply of these pathogens sitting in their protective resting stages and waiting for enough water to wake up and get started. For most of the root rot fungi, the solution is to prevent water saturation by making sure that there is sufficient time between irrigations for the soil to dry out.

Frequent readers will remember the discussion. To properly schedule irrigations, it is important to dig down six inches into the soil, take a handful of soil from the bottom of the hole, and squeeze it in the hand. If the soil leaves a wet outline on the hand and forms a tight ball, there is plenty of water. Do not irrigate. If the ball of soil is slightly moist and crumbles when you move your fingers, it is time to irrigate. We never allow any garden soil to go so dry that the particles of soil sift through the fingers and blow away in the wind.

- **Texas Root Rot . . .** Continued on Page 4

TEXAS ROOT ROT . . . CONTINUED FROM PG.3

For Texas root rot, solutions do not come easy. Because the disease kills so quickly, a caretaker has to be watching plants all of the time. At the first sign of symptoms, such as wilting of the entire canopy of leaves, one has to take action immediately by determining if it is a lack of water or whether it is the disease. How do we check to see if it is a water problem? Correct. Check the soil as described above. If there is sufficient water available, we have to assume the worst.

When you become suspicious, especially if there is a history of disease in the area, the first step is to check the roots for strands of fungi growing on the outside of the root. You will need a hand lens magnifier for this. If you do not have access to one, feel free to bring it to any Master Gardener diagnostic site for positive identification. Master Gardener diagnostic sites are listed below. There are microscopes available at each site which makes it much easier to see the strands. Pencil-sized roots are the easiest to work with.

If there is a positive diagnosis, plant survival is still going to be iffy because the disease progresses quickly and because it is so devastating to plants. If the plant has a rather small root system, such as one that is irrigated by a drip irrigation system, it may be possible to slow the disease by acidifying the soil. Texas root rot loves alkaline soils, which is a reason that is a problem confined to the desert Southwest. It is not practical, in my opinion, to lower the pH on large and deep-rooted trees simply because of the amount of soil involved.

If you want to attempt lowering the pH of a soil, try a combination of decomposed steer manure compost, ammonium sulfate fertilizer, and soil sulfur. The entire root zone of the plant should be covered with a layer of steer manure or some similar organic material to a depth of at least two inches. Then, to the surface of the mulch is evenly distributed one pound each of soil sulfur and ammonium sulfate for each ten square feet of surface area. Then, irrigate the area to a depth of at least three feet with a good soaking of water. Will it work every time? No, I do not believe so. We have, however been able to stop its spread in a drip irrigated grape vineyard using this treatment, so it is worth trying. To be honest, we have been less successful in other situations.

Here is the bottom line. If you suspect or know for sure that you are gardening in an area where Texas root rot is likely to be present, the best solution is to simply plant immune plants. They are unaffected by the disease. Resistant plants may be affected but generally survive the encounter with the disease. For a list of immune and resistant plants, and for more information about this devastating disease, see the Extension bulletin AZ1150 “Cotton (Texas) Root Rot” by Mary Olsen on the University of Arizona Cooperative Extension website http://extension.arizona.edu.

While Texas root rot or cotton root rot, whichever name you prefer to use, can be a serious landscape threat to broadleaf plants in infested areas, the use of immune or resistant plants, coupled with good soil and nutritional management can go a long way in helping minimize the effects of this formidable disease.

Earthworms and Compaction

Earthworms can be a great help in the constant work needed to improve soil health and productivity, but the tough conditions of the desert environment, and our lack of understanding about these interesting animals, sometimes creates challenges for these creatures that are hard to overcome.

One of the major frustrations that gardeners face in the desert is the problem of soil compaction. Because desert soils contain so little natural organic matter, which acts to separate and then bind together individual soil particles into healthy soils aggregates, our soils tend to collapse in on themselves and create tightly packed and hard-to-work soils. In order to successfully garden, it is important to break up these compaction layers and aerate the soil. Tillage, and the addition of large amounts of organic matter, can go a long way in accomplishing this, but, if the right conditions can be provided, earthworms can be a big help also.

Many wonder if there are any earthworms native to Arizona soils. The answer is a definite yes! It is actually quite common to find members of the Lumbricidae family in Arizona soils. In acknowledging that there are earthworms in Arizona soils, I must add that there is also a caveat. Earthworm activity is actually limited to locations were there is suitable habitat. They just are not going to set up housekeeping in locations where soil conditions will not support them.

The greatest limits to earthworm populations in Arizona are, no surprise, water and food. If earthworms dry out, they lose their ability to breathe through their "skin" and they will die. Likewise, if there are no dead plant residues in the soil, they will have nothing to eat and they will either die from starvation or migrate to where conditions are better. In Arizona, most native populations of earthworm reside in and around areas that contain water. River, lake, and stream banks, wherever the soil is moist and organic matter high, is the most common place to find native populations of earthworms. However, well managed landscapes are also excellent habitat. If we provide the necessities of life, we will regularly see greater accumulations of earthworms in our gardens.

Just what is an earthworm? They definitely are not nematodes, the microscopic, non-segmented round worms that also live in the soil. Some of these cause problems for plants, but most either cause no problems or, in some cases, are actually beneficial to plants. Earthworms, on the other hand, have body segments that allow them to move around, and they are easy to see where nematodes are not. They have well-developed circulatory, muscular, and nervous systems which gives them a leg up when compared with the other soil-dwelling organisms.

Earthworms prove their worth in by doing a number of absolutely critical tasks in the soil. In the process, they help improve the soil health and plant growing environment. When you see earthworms active in your soils, you pretty much know that your garden soil is in good to excellent shape. So what are some of these beneficial activities performed by earthworms?

The first critical function is the breakdown of soil particles. Earthworms take soil into their bodies and grind it down in an organ called a gizzard. You may recall that birds, including chickens, have the same type of organ that helps them break down their food. During this process, the earthworm breaks the soil down into smaller particles. One benefit from this is the release of plant nutrients from the individual soil particles. These are not removed by the earthworm, but remain in the residues and are added back to the soil.

While all of this is happening, the earthworm is adding back its own waste products to the remains of the ground-up soil. These waste products are actually highly beneficial to plants because they are high in nitrogen and other plant nutrients. There is another benefit that occurs. During the movement of the materials through the worm's digestive system, the waste is eventually formed into little round balls, called castings, before they are returned to the soil.

Worm castings are actually quite beneficial in the soil. With all of the free nutrients, both mineral and organic, and the natural glue that they contain, their presence represents an improved soil that is in much better shape from a plant's

Earthworms and Compaction . . . Continued on Page 6

EARTHWORMS AND COMPACTION - CONTINUED FROM PAGE 5

point of view than what was taken in. The natural glues, we should add, are part of the reason that castings help build healthy soils. Worm castings are to gardeners in the know, a highly sought after prize than many are actually willing to purchase as a soil amendment. By fostering earthworm populations in the soil, you can get them for free.

What is the payoff to the earthworm? By breaking down the soil and the organic matter that a soil contains, the earthworm is able to extract much needed energy for its own life processes. Their work is silent and efficient. The best of all, they do it whether we are paying attention or not.

Another key function of earthworms is the tillage and turnover of soils. While they are doing their thing, they are mining out tunnels in the soil. It doesn't really matter to them whether the soils are easy to dig in or whether they are hard and compacted. They just have to be moist and with enough energy-containing materials to make the work worthwhile.

Tunnels in the soil are important to water and air management in the soil, both of which are essential for good soil health. Let's look at water first.

Plants need water throughout their root zone in order to properly grown and develop. During an irrigation, water follows the path of least resistance and that often is down through an earthworm tunnel. By so doing, the tunnels help direct water down to the lower limits of a plant's root zone and this process serves indirectly to improve plant health. As the burrows begin to dissolve and the soil begins to reconsolidate, the soil left behind has loosened itself which also makes it easier for water to move through the soil. The gluing effect from the castings help seal these particles together in healthy soil aggregates.

A healthy garden soil will have clumps or aggregates of soil particles. Soil particles acting independently from each other are a common reason for compacted soils. The formation of clumps, crumbs, and aggregates, is a sign of a healthy soil and earthworms are wonderful partners in making sure this process takes place.

Plants need air around their roots. Highly compacted soils tend to seal off the pores in the soil and this tends to reduce water drainage. Poor soil drainage leads to soils saturated with water, and a common result from this condition is an environment that is ripe for root rot and poor nutrient pick up by the roots. Earthworms help improve conditions in the soil that prevent these from occurring.

Of course, earthworms need our help also. Good gardening practices, such as proper tillage, correct irrigation, regular addition of soil organic matter, and protection of the soil from overheating by good mulching practices are key to maintaining a soil climate that will aid and benefit plants.

Earthworms can be invaluable allies in maintaining overall soil health. To help them be successful in their work, it is important to 1) understand their mission, 2) create conditions that are optimum for their work, and 3) know how to best protect them from the challenging environmental conditions of desert soils. If we can successfully overcome these obstacles, earthworms can indeed fulfill their important mission in our gardens.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Jeffrey C. Silvertooth, Associate Dean & Director, Economic Development & Extension, College of Agriculture and Life Sciences, The University of Arizona. The University of Arizona is an equal opportunity, affirmative action institution. The University does not discriminate on the basis of race, color, religion, sex, national origin, age, disability, veteran status, or sexual orientation in its programs and activities.

Rose Cane Borers

If you enjoy growing roses, you may be familiar with the excavated holes and the hollow canes that are often attributed to rose cane borers.

Roses are a popular landscape plant here in Pinal County. The huge selection of forms and shapes, together with the gorgeous blossoms, make rose culture a favorite pastime. Not only are they fun to grow, they can also provide an added emphasis to many landscapes. While roses can survive in just about any climate, and in any soil, they actually prefer a moderate climate and a slightly acid soil pH. To those familiar with our hot desert climate and our alkaline soils, this assessment will cause a pang of anxiety. It should. Our local conditions make growing roses a challenge for sure. Now, don't get me wrong. Roses will do well in our area. There are many beautiful examples to prove it. There are, however, multiple challenges that a gardener must face to grow happy roses in the desert. Among those challenges are the cane boring insects.

Rose cane borers is a name that rolls easily off the tongue, but it is not a name for a particular insect. Rather, it is a general category that covers a wide variety of culprits that leave behind them empty tunnels and dead branches. Cane borers in the Pacific Northwest could be sawflies, horntails, or twig girdlers. In the South, it might be a red-headed cane borer or a raspberry cane borer. Here in Arizona, the hollowed-out stems of rose canes are almost always caused by the flat-headed wood borer.

Flat-headed wood borer
University of Arizona

Flat-headed wood borers are just that, insects with a flat-shaped head. In their larval stage, the body around the head of the borer is larger than the rest of the body. With the unusual, hammer shape of its head, it characteristically chews tunnels that leave behind oval holes. These oval tunnels are easy to spot and simple to diagnose. The flat-headed wood borer is a decomposer, meaning that it prefers dead or dying wood to healthy green tissue. When we see their presence, it is almost always in wood that has been somehow compromised or injured. Sunburn, drought stress, pruning injury, and other damage are usually the attractant and the entry point for these insects.

It makes sense, then, that when we snip off a blossom for that wonderful dining room bouquet, we will also expect that the flat-headed wood borer beetle adult will find that cut end of the stem attractive. The tip of the stem, or near it, will be the site that the female will lay her eggs. When the eggs hatch, the tiny larva begins eating its way down into the soft center core of the stem leaving behind the tunnel that is a sign of insect infestation. The feeding damage is easily seen and is the tell-tale diagnostic symptom that we use to identify the culprit. In some cases, however, it is the death and drying of the tips of canes that calls our attention and tells us that there is a problem.

The flat-headed wood borer, as one of the rose cane borer group, can be devastating to a rose bush. The cane, at least as far down as the borer feeds, is likely to die. Heavy insect infestations can take a serious toll on any given plant. They are particularly a nuisance on hybrid tea and grandiflora types that are commonly used for cut flowers. How we manage the susceptible bushes can have a tremendous effect on the overall success of any given rose bush.

The first step in preventing flat-headed wood borer damage is to maintain a healthy shrub. Because this particular pest prefers sick or damaged plants, it stands to reason that a vigorous and healthy rose bush will be of less interest to the borer adult than one that is stressed or struggling.

First off, roses need to be planted in the correct soil. Roses require well drained soils that holds water well but does not easily become super saturated with water. None of the roses like wet feet.

The rose also likes a soil that has a slightly acid pH. This is maintained in our alkaline soils by regularly mixing organic matter into the soil. Occasionally it is necessary to amend the soil with an application of soil sulfur. Both of these

Rose Cane Borers . . Continued on Page 8

ROSE CANE BORERS . . . CONTINUED FROM PAGE 7

ingredients have an acid reaction and help to lower the soil alkalinity to neutral or slightly below. Soil pH, you will recall, is measured on a scale of 1 to 14 with 7 being neutral. With roses, we aim to maintain a pH value that is right around 6.5 to 7. The further beyond this range a soil may get, the more difficult it will be to maintain a healthy rose.
Roses are not a low water use plant. They require a lot of water. A regular irrigation schedule during our hot summers will mandate a deep, flood irrigation at least once a week. Irrigating with a drip system, or extra hot temperatures may require a more frequent irrigation. When we under irrigate a rose bush, we create stress that is the bread and butter of the flat-headed wood borer.

Roses are voracious consumers of nitrogen. Since our native soils are relatively low in residual nitrogen, we have to fertilize regularly. A standard nitrogen fertilizer like 21-0-0, ammonium sulfate; 16-20-0, ammonium phosphate; or blood meal should be added about once a month for best results. Rose bushes short of nitrogen will be slow growing and seriously weakened because nitrogen is a critical part of the basic chemistry required for plant growth and development.

Weeds and diseases are also factors to consider in good rose bush health. Weedy plants steal water and nutrients that otherwise would be available for the rose bush. They should be eliminated from the rose garden. There are several diseases that cause stress to rose bushes in Arizona. Dead or diseased wood should be pruned out as soon as it is identified. A mulch of redwood or juniper bark on the surface of the soil will help reduce the spread of diseases by eliminating a reservoir of disease-causing agents. These two types of wood are resistant to diseases and therefore help reduce the spread of disease agents. Surface mulches of compost or steer manure are not recommended for this reason.

Because there are no insecticides that will do a good job of preventing or eliminating the flat-headed wood borer, applications of systemic insecticides are not recommended for this pest. Prevention must be the key. Maintaining a healthy, vigorous plant as we have discussed is one way to prevent them from entering the plant. In addition, most rose enthusiasts recommend applying a drop of wood glue to the tip of each stem that is cut. The glue forms a protective barrier and prevents a condition that would attract the attention of the flat-headed wood borer adult female. The solid seal also prevents the entry of the larva into the stem.

Proper management of the rose bush will go a long ways towards prevention of borer entry into the cut ends of freshly pruned canes.

If you have questions about this newsletter, have any plant related problems, or wish to have a publication sent to you, please call (520) 836-5221 x204 or (520) 374-6263 and leave a message. If you have a plant problem and are able to email a picture, please send a picture with any information you can provide about the plant, and your contact information to our diagnostic team at macmastergardener@gmail.com and a Master Gardener will contact you.

This newsletter is available to view on our website at: http://extension.arizona.edu/pinal

Richard D. Gibson

Richard D. Gibson

Extension Agent, Agriculture

RDG/te/sh/aw

59 mailed copies

262 emailed

How to connect with **Rick Gibson online**…

Blog: *Booming Deserts*
ricksgardenspot.blogspot.com

Facebook:
https://www.facebook.com/PinalCountyGardenandLandscapeProgram

Twitter: https://twitter.com/RickGibson4