



Pinal County Cooperative Extension Garden & Landscape Newsletter August 2009



820 E. Cottonwood Lane, Bldg. C., Casa Grande, AZ 85122
Phone (520) 836-5221 Toll Free Phone (866) 836-5221 Fax (520) 836-1750

RESETTING UPROOTED TREES

With the monsoon thunderstorms already here, there will be some trees that will blow over during one of the storms. Each year, about this time, resetting uprooted trees is a popular topic that I am asked to discuss.

Hard, blowing winds account for most of the damage to landscape trees and shrubs during the summer months. Uprooted trees with broken branches, many of them lying at cockeyed angles, toppled over and strung around like so many pins at a bowling alley are all signs that a summer storm has blown through.

To long term readers, this topic may strike a familiar chord. It should. We have talked about it every year now for several years running. At the risk of sounding like a scratched phonograph record, or a modern ipod that loops back in on itself playing the same song again and again, I feel that we need to address it again. Wind damaged trees continue to be all too common in our landscapes.

Once the storm has blown over and we have come out with hands on our hips to survey the damage, one of the first questions we have to ask is, "Can this tree be saved?" If all we have are broken branches, pruning the damaged branch back to its point of attachment may be the only chore and we can safely say to ourselves, "Whew, we got by easy on that one!". If, however, the tree has been uprooted, the decisions become more difficult and the prognosis for full recovery a bit more clouded.

Trees blow over because they do not have a root system large and well established enough to hold them

in place during the blasting winds of severe storms. Young trees and trees that have a constricted root system are particularly susceptible to this problem.

In general, trees with slight to moderate damage to the root system, can often be salvaged. Trees with severe damage to the roots may simply need to come out. It is difficult to place a hard and fast rule on what constitutes light, moderate, and severe damage, but you can pretty much tell by how many roots are sticking up in the air. The more that are dangling in the air, the more severe the damage.

No matter what degree of damage, however, many trees that blow over during a storm can indeed be reset into place without harm, if corrective action is taken within a few hours. Knowing how to do it correctly is important, but what is really important is just doing something, right or wrong.

When trees blow over, several kinds of damage can occur. Roots are ripped and torn; and limbs, branches and even trunks split or break off, sometimes stripping long lengths of bark as they fall. While the damage can be severe, in many cases it can be fixed. There are those situations, however, where the damage is so severe that the best course of action is to simply remove the tree. You, or your landscaper, will have to be the judge.

A tree with roots exposed to the air demands quick action. Ripped from the soil, exposed roots begin to dry out. When they lose their moisture consistency, the tissues die. If the tree can be reset and the roots

—UPROOTED TREES... Continued on Page 5

IN THIS ISSUE:

RESETTING UPROOTED TREES	1
ROCK GARDENS	2
DIAGNOSING TURF PROBLEMS	3
CORRECT IRRIGATION OF LANDSCAPE AND GARDEN PLANTS	4

ROCK GARDENS

Water conservation is always an important topic in the desert, especially in times of drought. One way to enjoy beautiful outdoor living spaces and still be stingy with water, is to install a rock garden.

A properly designed rock garden will give a landscape the texture and feel of a natural desert setting. Properly blended together, rocks and plants can give a visitor the feeling that they have actually stepped into a natural desert setting.

To achieve this feel, good planning is absolutely necessary. Just plopping down some rocks and throwing in a few plants will not provide this atmosphere, but a well designed and installed landscape can give decades of worry-free outdoor living.

A good landscape architect or landscape designer can be a valuable asset during the planning phase. Rocks of any size will be quite heavy, often requiring specialized equipment to safely move them into position. A well designed landscape really is an art form and to get just the right "feel", you might need a little help.

Rock gardens fit well into nooks and crannies of any landscape, or they can be the focal point of an entire area. Rock gardens work especially well in helping to landscape and stabilize sloping banks or hill sides.

In order to give the desired effect, a well designed rock garden needs the variety that comes from a blend of rocks, ground covers and desert-adapted plants. Hills and water drainage channels should work together with rocks and plants to mimic the desert in every way. Do not short yourself on the plan because it can save a lot of work, expense, and frustration later on.

To begin a rock garden, carefully evaluate the site in mind and decide what rocks and plants can stay, and what need to go. Then clear the area of unwanted plants and debris.

Any soil improvements that need to be made, should be made at this time. When the area will be devoted mostly to rock, drastic changes are not necessary; but any plant, desert-adapted or not, must have good drainage to prevent future plant health problems. At the very least, drill drainage chimneys through compaction or caliche layers so that water, and air, can move easily through the soil.

It is important to add any contours or other features to the rock garden before any decorative rocks are installed. Any mounds, depressions or artificial drainage channels that may be needed or desired, should be built first and given time to settle, so that when the heavy rocks are added no displacement or settling of the stones will occur.

Contours and other features can provide variety and interest to a desert rock garden. You may want to collect rainwater from the roof or a paved area and send it to a tree or other plant, for example. Water and rock are natural components, and some of the most memorable scenes in nature, result from a view combining these elements. This feeling can be captured, even on a small scale.

If a truly natural appearing rock garden is desired, the rocks must look like they were positioned by nature. When moving rocks from one location to another, it is best to do it skillfully so that the rocks looks like a natural formation. For example, do not place a rock with the side that was previously buried in the soil facing up or outward. Broken, unweathered edges likewise should be hidden from view.

Another hint is to group similar rocks together. Sedimentary rocks and volcanic rocks should be separated because they do not often appear together in nature. If the rock has strata, lines, all of the pieces should be placed with the strata lines in one direction.

If you have a choice of the type of rock to use, select a porous sandstone rather than a hard and non-porous granite or schist. The softer rock will weather much faster and give a more natural appearance to the garden. Be careful of newly quarried rock. These might have sharp edges or signs of drilling which would be unnatural in a native landscape.

When designing and installing a rock garden, do not forget to consider the need for accessibility to each plant in the garden. Small pathways or stepping stones will help one reach the plants in order to groom it or treat it for problems. Safety is also important. You will want to be able to maneuver among the plants without tripping over rocks.

When selecting plants for use in a rock garden, consider first the native, desert-adapted, long-living trees and shrubs common to our area. It will not take many, because the desert does not naturally

—ROCK GARDENS... Continued on Page 7

DIAGNOSING TURF PROBLEMS

Our warm, humid monsoon weather has begun to stimulate the growth of mushrooms or toadstools in some area lawns. These are not a sign of turf disease, but simply a normal function of beneficial, decomposing fungi living in the soil.

Mushrooms, also known as "toadstools", are the spore-producing structures of some kinds of fungi. These fungi are beneficial because they break down organic matter in the soil and release nutrients that are necessary for plant growth. From time to time during the year, when moisture and temperature conditions are correct, these reproductive structures often pop up in lawns. Not knowing what these structures mean, people often wonder where they're coming from, and how to control them.

Mushrooms produce tiny seed-like bodies called spores, which easily blow about in the wind. When these spores reach a favorable place to grow, they germinate and send out long, thin threadlike growths called hyphae. These hyphae decompose wood, fallen leaves, lawn thatch and other organic matter. In the process, they absorb a portion of the decomposed plant material as food. A single strand of hyphae is too small to see without a magnifying glass, but during times of reproduction, the individual hyphae strands begin to grow together in the soil to form masses called mycellium. When the mycellium has developed sufficiently, mushrooms are produced. The mushroom-producing fungi can live in the soil for years and produce mushrooms whenever the weather is favorable.

Because the mushrooms are living off of the dead organic matter in the soil, they are not truly a plant disease. They do not infect living plants. However, the structures are extremely poisonous and for this reason should not be left laying around, especially if they are in a place where children or pets might ingest them.

So, how do we get rid of them? There are no chemicals that are effective in controlling mushroom-producing fungi. Insecticides, weed killers, and even fungicides are not effective. To stop the mushrooms, we have to eliminate the material upon which they are growing. In Southern Arizona, we generally see mushrooms growing on excessive lawn thatch, the matted dead layer laying on the surface of the soil. The best thing to do in this case is to dethatch the lawn. Since dethatching removes the fungi's food source, the number and frequency of the mushrooms will decline or stop altogether. For the short term, simply loosening the mushroom with the tip of your shoe or a garden tool and then placing the mushrooms into a trash bag will remove the problem, but it will not kill the mycellium from which the mushrooms grow. To do that, we have to get rid of the material upon which the mushrooms are growing.

Sometimes mushrooms grow in circular patterns called fairy rings. Fairy rings are caused by certain fungi which may or may not produce mushrooms. In some cases, the soil in the ring becomes so matted by the fungus mycellium that water cannot move through it. As a result, the grass in the ring grows poorly, and may die from lack of water. The best solution to this problem is to loosen and aerate the soil inside the ring and then water deeply.

While mushrooms do not constitute a significant threat to lawn health, there are some diseases and insect problems that can be serious. The problem is how to tell them apart and what to do about them.

"Brown patch", "damping off", "melting out" and "greasy spot" are names of turf diseases caused by various fungi. False chinch bugs in large numbers can lead to a general decline as they suck water and nutrients from the plants. Caliche lenses, compacted soil or alkali concentrations slow down or stop the penetration of water into the soil and cause conditions within the root zone that can lead to disease.

Because the early signs of each of these problems are so similar, it is sometimes quite impossible to make a definitive diagnosis without resorting to laboratory assistance. Even the most experienced of turf professionals find it difficult. While laboratory diagnosis is the most accurate means of determining the identity of disease agents, the length of time that it takes to run an analysis, up to ten to fourteen days in some cases, may cause a delay in treatment that can allow the disease to spread and become much worse.

When time is critical, there are a few quick tests that can be done on site that will often provide enough information to make quick, accurate management decisions. Still, if possible, laboratory confirmation is always a good idea just in case more information is needed.

To diagnose turf problems in the field, keep handy a screwdriver or other tool that can be used as a soil probe, a zip lock bag for each sample, a shovel, a small pocket knife and a hand lens of at least 10 X magnification. The screwdriver or probe should be at least fourteen inches long and the plastic bag should be large enough to hold an intact soil sample the size of the shovel blade.

The first step in diagnosing a turf problem is to locate the healthy and diseased areas in the turf. Obviously, it will not be hard to tell the difference between green spots and brown spots in the lawn, but it is important to look for patterns. Are the spots close together or are they widely dispersed? Are the spots fairly round and

-TURF PROBLEMS... Continued on Page 6

CORRECT IRRIGATION OF LANDSCAPE AND GARDEN PLANTS

Unlike many parts of the country where home yard irrigation is simply a matter of waiting for the rain clouds to appear, irrigation in the desert Southwest is a definite must-do task in order to keep plants healthy and vigorous.

The annual hot, dry spell occurring from mid-May to the arrival of the higher humidity and less intense temperatures of the desert monsoon can cause true hardship on plants. When we have sporadic monsoon storms, such as this year, the stress to trees and other plants can continue to be intense. These stresses often cause severe, long-term health problems, especially if the stresses are coupled with improper irrigation. Many of the dead limb and stunted growth problems that are currently being seen in area landscapes can be traced directly to improper irrigation techniques and habits. In order to avoid water stress problems in all types of plants, especially during times of drought, it is important to understand the proper principles and techniques of desert irrigation.

First, it is important to know soil conditions. The soil is a plant's moisture reservoir and the capacity of that reservoir is dependent upon the depth and the particle size of the soil. Soils underlaid with a hard pan or caliche layer, and soils of a sandy texture will hold less water than deep or fine-textured soils. The smaller the holding capacity, the more often plants must receive adequate irrigation.

It is also important to know the depth and location of the plant's root system. Root systems will differ widely depending upon the type of plant and the conditions of the soil. Turf grasses, for example, have an effective rooting depth of about twenty-four inches while tree roots, under good conditions, may descend down to sixty inches or more into the ground. The average rooting depth for other types of plants include eight inches for dichondra, fifteen inches for flowers, and thirty-six inches for shrubs and small trees.

Shallow soils or improper irrigation may prevent proper root development that could cause problems like wind throw, salt burn, stunting and root constriction later on. Plants with shallow root systems should be watered frequently and lightly while larger plants, like trees and shrubs, with deep roots may need more water each irrigation, but less frequently.

Next, it is important to know the water requirement for the plants that are located in the garden or

landscape. Most, but not all, plants will show signs of drought when they need irrigation. Frequently, small areas of a lawn will show moisture stress early and these signs can be used as a warning. Wilting, change to a darker bluish-green or gray color, and slower growth are "need-water" signs.

Timing of irrigations is best decided by watching the soil moisture levels. If you have access to a soil probe, sample the soil at varying depths of the root zone. If not, a good approximation can be developed by digging down six inches into the soil with a hand trowel or shovel. Test the soil moisture level by feeling the soil sample with your hand and determining whether it feels wet or dry. Form a ball of soil by firmly squeezing a handful of the sample. Make a ribbon by pressing the soil between the thumb and forefinger. Irrigate when the soil moisture fits the following description.

For sandy or coarse soils, irrigate when the soil tends to stick together slightly but will not form a ball when it is squeezed in the hand. For silty soils, irrigate when a ball forms but its strength is weak and its appearance is crumbly. For clay soils, irrigate when the soil is pliable, will form a ball, but is too dry to form a ribbon easily.

Leaf temperature is also a helpful tool. The process that plants use to cool themselves is the process of transpiration and it works automatically as the plant extracts water from the soil, moves it up the plant, into the leaves, and out into the atmosphere. The leaves of trees and shrubs will feel cool to the touch when there is sufficient water available for the plant but will feel warm when the plant cannot pull enough water to meet plant needs.

There are exceptions. On windy days, the holes in the lower sides of leaves which allow water vapor out and air in, the stomata, will close to prevent drying winds from pulling too much water too quickly from the leaves. Because transpiration stops, the leaves will begin to feel warm to the touch even though there may be adequate water in the soil. If there is sufficient water in the soil, it is not necessary to irrigate under these conditions.

During hot weather, depending upon soil depths and textures, grass and shrubs will probably have to be flood irrigated with the hose every five to ten days, flowers every three to six days, trees every ten to fifteen days, and dichondra every two to three days. Mature citrus trees should be watered every seven

—CORRECT IRRIGATION... Continued on Page 7

covered quickly, many roots can be saved. Resetting downed trees is a fairly simple process. It takes the proper tools and supplies, and a little know how.

When you come to a downed tree, it will generally be laying on its side with the crown of the tree pointing away from the direction of the wind. If there is damage to the root system, it will usually be most severe on the upwind side. Because broken and stretched roots can't provide enough support for the tree, it is important to provide support on the weaker side, by placing one or more stakes on the upwind side, or the side that is the base of the tree.

Stakes should be of solid construction and at least six feet in length. Seven foot stakes would be better, especially for larger trees. Metal fence posts can be used, but most nurseries will have supplies of the long wooden landscape stakes.

To set the stakes in the ground, you will need a sturdy folding ladder and a heavy hammer. I like to use a ten pound sledge for this purpose. The extra weight makes it easier to drive the stake. A fence post driver works well for both metal and wooden stakes, as long as the diameter of the stake does not exceed the inside diameter of the driver.

Depending upon the weight of the tree, one or two stakes should be placed approximately eighteen to twenty-four inches away from the trunk of the tree and driven to a depth of at least twelve inches. Twenty-four inches would be better, especially if the tree is large and heavy. Have someone hold the folding ladder while another person climbs high enough to provide good access to the top of the stake. Safety is important here. We do not want anybody hurt.

Once the stakes are in place, but before lifting the tree, cut sturdy rope or wire of sufficient length to go from the stake, around the trunk of the tree, and back again to the stake. Be sure to leave enough rope to tie a knot behind the stake or enough wire to twist the ends together. String the wire or rope through a piece of old garden hose and place it into position so that once the tree is upright all you have to do is gather the ends and tie off. Be sure that the protective hose is next to the trunk of the tree so that the rope or wire will not cut into the bark.

Once the stays are in place and ready to tie off, lift and push the tree back into position and secure the stays to their separate posts. When this is accomplished, the tree should be solidly in place. If the tree continues to wobble, place more stakes and add more stays until the tree is properly supported.

With the tree upright and supported, it is now time to bury any exposed roots. With a spade or digging fork, dig a trench long enough and deep enough to cover roots that have been pulled from the soil. Be sure to check the watering system to ensure that there are sufficient emitters to wet the soil around the tree in all directions. This will encourage new root growth and development.

Heavy leaf canopies, branches with many leaves, can act like sails on a ship. These trees, which unfortunately are generally the best looking, are usually among the first to blow over. The increased resistance to the wind is simply too much for the roots to handle.

With the tree reset in the ground, it is a good idea to thin out a few of the branches to lighten the total weight of the tree and to present less resistance to the wind. Pruning of branches is best done in the winter when the trees are dormant, but selective thinning, like we are discussing, can be done safely during the summer if only a few small branches are selected for removal. If we are thinking ahead, sometimes we can avoid damage to trees altogether by practicing some selective thinning prior to the storms.

Try to make as few cuts as possible by first removing branches that are damaged or broken. If necessary, remove branches that clog up the middle of the tree, or that are growing in a downward direction. Practice good pruning techniques and never leave a stub that you can hang a hat on. Stubbed branches turn into open doors for disease and insect infestations. Do not apply any pruning sealers to the fresh cuts. Leave them exposed to the air for quick drying.

Trees that have been reset after blowing over, need time to recover. You will know that the tree is recovering when you see signs of new growth. The growth of new leaves and stems are an indication that the roots are growing once again. It is a sign of healing.

Trees are worth their weight in gold in the desert. They pick up carbon dioxide, a greenhouse gas, from the atmosphere. They cut down on the "heat island" effect by shading bare, heat-retaining surfaces. They also increase the value of property at the time of resale. For these and other reasons, every tree is important. Saving wind-damaged trees, in the final analysis, saves you money.

-TURF PROBLEMS, Continued from Page 3

spreading, which might be caused from a point of infection that is moving outward, or is the diseased area fairly widespread throughout the lawn and not spreading, which might indicate a soil problem? Answers to these and other questions can provide valuable hints.

Find the healthiest location in the yard; that will be the spot with the darkest, most uniform green color and the most lush and thickest canopy. Use the long screwdriver or other probe to test the soil in this healthy area first by pushing the tool firmly into the soil. Where the soil is moist and the entire root system is well irrigated, the probe will slide into the soil easily, stopping only when it reaches dry soil. At this point, it will become very difficult to push the tool further into the soil.

When the probe stops sliding easily into the soil, place your fingers on the barrel of the tool at the soil level and pull out the probe. The distance between the tip of the tool and your fingers becomes the effective wetted zone of the soil. Most turf grasses prefer at least twelve inches of good rooting area but eighteen inches to twenty-four inches is desirable. Less than twelve inches of good root area usually leads to dry spots in the lawn. In healthy lawns where the grass is dark green and lush, a probe will slide easily and deeply into the soil.

Next move to a dry, dead or dying spot in the lawn and repeat the test. If the tool shows a wet soil of less than twelve inches, the lawn problem is probably due to poor water penetration, a problem with sprinkler coverage or a hard layer in the soil. In this case, the best solution is to drag a hose and flood the area carefully to deep irrigate the location. If a hard pan is suspected, use a water pick on the end of the hose or a soil auger to drill holes down through the soil profile to loosen the soil and provide a channel for water to penetrate deeply into the soil.

If the probe test in a dead area shows no difference in the depth of water penetration, that is, if the probe slides just as easily and deeply into the soil in dead areas as it did in the healthy area, take a shovel slice of soil from the edge of the dead or dying area so that the sample has both green and diseased plants and place it in the zip top bag. Place the sealed bag and soil sample in a warm, sunny area and watch for insects to begin leaving the sample and climbing on the inside of the bag. False chinch bugs in fairly large numbers could be causing the problem. Solve false chinch bug problems by applying a liquid malathion spray to the surface of the grass.

If no insects are seen leaving the sample, use the hand lens and pocket knife to carefully dissect the turf sample just under the surface of the soil. In this case you are looking for the small, less than one-eighth in diameter, round, whitish bodies of the ground pearl scale insect. These insects can cause a turf, particularly hybrid bermudagrass to quickly turn brown in the summer. In sufficient numbers, they can cause severe problems. If they are there, they should be easy to spot. Other lawn insect pests such as white grubs, sod webworms and billbugs are quite large and easy to spot either inside the bag or in the turf sample. A granular insecticide is best for soil-inhabiting insects.

If no insect pests are readily seen, it is fairly safe to assume that the problem is caused by a disease-causing fungus. Choose a wide spectrum fungicide like benomyl or chlorothalonil for disease control.

While mushrooms do not cause health problems to lawn plants, there are other diseases appearing about this time of year that can be significant. Good diagnosis and treatment coupled with good irrigation, good aeration, and good fertilization techniques will often guarantee a beautiful, healthy lawn.

-CORRECT IRRIGATION, Cont'd from Page 4

to ten days depending upon fruit load and temperature. Again, do not overstress your plants for water because permanent damage could occur if the plant gets too dry for too long. To be safe, check the soil at a depth of six inches as previously described.

Just as it is essential not to under-water, it is also essential to not over-water. In addition to the danger of leaching valuable nitrogen fertilizers out of the root zone, certain soil conditions can create severe health hazards for plants when the soil is kept moist for too long.

Shallow soils with caliche underneath can cause harm to plants when they are not correctly irrigated. Under these conditions, plants tend to be extremely susceptible to iron chlorosis, especially when roots are kept too wet for too long. Root rot, the old nemesis of just about every plant, will thrive in this wet environment.

Correct irrigation of landscape plants requires a knowledge of soils and plant characteristics. A good knowledge of these basic principles, coupled with a little experience, will allow anyone to accurately walk the tightrope, between over-irrigation and under-irrigation in our warm desert climate.

-ROCK GARDENS, Cont'd from Page 2

support a lot of plants in a given area, but the selection should blend in with the environment. Plants also help to shade the rocks and reduce solar heat gain that can heat up the local environment. Consider saguaro cacti, agaves, Chilean mesquites or palo verde trees and arrange your selections into a natural-appearing display. If a smaller tree is required to fit the space, you might want to think about the sweet acacia or one of its relatives.

There is a web site for the North American Rock Garden Society at www.nargs.org that will give more tips in designing, installing and enjoying rock gardens.

A rock garden, properly designed and assembled, is an effective water conservation tool and can give a pleasing, natural feeling to any landscape.

If you have questions, please don't hesitate to contact us at the Cooperative Extension office in Casa Grande at 820 E. Cottonwood Lane, Building C. Our telephone number is (520) 836-5221, extension 204 is the Master Gardener message line. gibsonrd@ag.arizona.edu is the author's email address.

Richard D. Gibson

Richard D. Gibson
Extension Agent, Agriculture

RDG/te/sh

55 copies