



Pinal County Cooperative Extension Garden & Landscape Newsletter



January 2007

Should I Water In The Winter?

Do I need to water my trees, shrubs and lawns during the winter?

This frequently asked question certainly deserves our attention because responsible desert gardeners strive to find a balance between keeping plants healthy and saving a precious resource. Every drop of water in the desert is important and must not be wasted. For this reason, we need to understand and apply the principles of good irrigation management.

Plants of all kind need water to survive. Even plants with a low water requirement, like cacti and agaves, need water from time to time, especially in these times of drought. Trees with lush leaves, like a mulberry, will need more water than the desert-adapted mesquite with its small, well protected leaves. Apples, grapefruit, peaches and other bearing trees carrying a full load of fruit need more water than the same trees at rest. Violate a plant's basic need for water, and they will simply not survive in our harsh environment.

Water is essential to plants in many ways. Plants use water to cool themselves on warm days. They use it for transport; that is, to help move nutrients from the roots to the trees and energy captured in the leaves to the roots. Water also keeps individual plant cells turgid, that is firm enough for the cells to maintain their shape and function.

Water moving from the roots to the leaves through the process of transpiration eventually evaporates in the leaves. Water vapor inside the leaf escapes through tiny holes, called stomata, into the atmosphere. This movement of water from the inside to the outside of leaves acts like a miniature evaporative cooler that keeps the plant tissues cool.

Dissolved nutrients, like nitrogen, iron and magnesium, move with water from the roots to the places in the plant where they are used. Likewise, sugars produced through photosynthesis in the green

tissues of the leaves and stems are moved from their source of assembly to the various parts of the plant, including the roots, where food supplies are needed. Movement of these sugars is made easy because the sugars are dissolved in water.

Individual plant cells, especially those with relatively thin cell walls, such as those found in leaves and other tender tissues, are dependent upon water to help them keep their shape. We are all familiar with plants that wilt because they are short of water.

The demand for water within a plant to carry out its normal life functions is not the only factor that determines plant water use. The environment in which the plant is growing also plays a significant role. Relative humidity, the amount of water vapor in the air, and temperature play key roles. In the desert, times of high temperatures and low humidity like we see in June and early July, mean high plant water demand while in times of cool weather and moderate humidity, the demand is much less.

So, what does all this have to do with how often we irrigate our landscape plants? If we understand the basic water needs of plants and couple that with an evaluation of the weather, we can draw a fairly accurate estimate as to how much water a plant will need at a given time.

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During the winter time, with cool temperatures and enough humidity to slow water demand, all plants will need less water than they do during the summer months. If the plants lose their leaves as part of winter dormancy, they will use little water at all. If you are still irrigating the same now as you did in the summer, you are definitely giving your plants more than they need.

Whoa, slow down there! Do not just go out and turn the system off for the next few months. We need to talk a little more.

During moist winters, when rainfall events are frequent and drop lots of moisture, we probably could go the entire winter without turning on the irrigation system even one time, if we have successfully filled the soil profile with a previous irrigation. In dry winters, like this one, it may be necessary to irrigate from time to time to keep the roots of our plants moist. However, the plants will still not need as much water as they do during the hot, summer months. Proper irrigation during the winter means that we need to do a balancing act. We always keep an eye on the weather and frequently monitor soil moisture conditions, so that we can make proper irrigation management decisions.

In the unlikely event that we will receive any appreciable rainfall, we might be able to cut back somewhat on our frequency of irrigation, especially in shallow-rooted plants like turf and bedding plants. Even with a good rain, however, I doubt that we will receive enough moisture to help us with our trees and shrubs. The soil is currently just too dry and the weather forecast too bleak to ever hope to catch up.

With all of the stress that has been laid upon the need to irrigate during dry times, we must also speak of the dangers of irrigating too much, which is easy to do during times of cool temperatures. Over irrigation creates an unhealthy root environment and often leads to root disease.

By now, with all of this discussion back and forth, you are probably muttering under your breath and telling me to just get to the point! Okay, here is the point. When you irrigate plants, have a plan. Do not just set the automatic irrigation system and forget about it. You have to change the system settings with the seasons. If you are irrigating with a hose, do not irrigate the same way in the winter that you do in the summer, or vice versa. Know when it is in your plant's best interest to irrigate before you start running water.

The best way to tell when it is time to irrigate is to dig down into the soil with a shovel, trowel or probe to a depth of about six inches. Take a handful of soil from that depth and squeeze it in the palm of your hand. If the soil feels moist, leaves a wet imprint on your hand and, or remains in a hard ball after you release your grip, do not water. There is plenty there for all your plants for the next week or so. If the soil is still slightly moist, but the ball begins to crumble when you let go, it is time to irrigate.

Plants use much less water in the winter time than in the summer, but there remains a small requirement that must be managed correctly. By carefully balancing soil water levels around our landscape plants, we can keep them both healthy and productive all year long.

Groundcover Options For Pinal County

If you want to help minimize the heat island effect, consider planting a ground cover.

“Heat island” is a term used to describe the elevated temperature readings that are experienced in urban areas as compared with the rural areas that surround the city. Differences of five to ten degrees are not uncommon in these islands as heat is collected by the hard concrete and asphalt surfaces that are typical of urban areas. The heat is then released back into the atmosphere to create the elevated temperature readings. These higher temperatures cause significant increases in cooling costs and heat stress to people and animals.

One way to minimize heat accumulation is to use plants to shade ground surfaces. Instead of dedicating the majority of a yard to bare rock or concrete, we ought to consider the use of trees, shrubs and ground cover plants to absorb light and minimize temperature gain.

Ground covers are creeping, sprawling, or vining plants whose primary function is to cover the surface of bare ground areas in landscapes. Ground covers include plants that come in a wide range of shapes, sizes, textures, and colors. Many bear attractive flowers that add seasonal beauty to their other good characteristics.

One of the best ways to begin deciding upon a particular ground cover is to look at their water use. You would not want to put a ground cover with a heavy water requirement on the same drip irrigation line as a low water use saguaro cactus. It is always best to group plants with similar water needs. Look at your existing plants and their water needs and then try to match a ground cover with that of the plants that are already in place.

Examples of ground covers with heavy water needs include Sprenger asparagus, Carolina jessamine, prostrate juniper and Japanese honeysuckle. Examples of those with moderate water requirements include ice plant, gold dalea, trailing gazania, myoporum, santolina, white evening primrose and verbena. Low water use ground covers include black foot daisy, trailing indigo bush, desert broom hybrid and Australian saltbush. Once you have selected for water use, it becomes a simple matter to further choose color, growth rate, light exposure or height.

Ground covers differ in the amount of foot traffic they will tolerate without injury. Although none can withstand the heavy use that turf grasses receive, a few species are adapted to light traffic. However, others are so brittle or tender, that it is nearly impossible to walk on them without causing damage.

Those who are unfamiliar with the general growth characteristics of ground covers may expect these plants to provide a permanent foliage cover once the planting has filled in. Unfortunately, this is often not the case. Within two to four years, many ground cover beds will develop bare spots or areas of sparse, open foliage. This occurrence may be due to weather, cultural practices, pests, or the gradual change from vigorous young leafy plants to older, tougher, less dense foliage plants. As a result, most ground covers do require regular care and refurbishing to keep them dense and vigorous. In addition to proper irrigation, fertilization, and pest control, replanting bare spots and pruning or mowing old stems may be required to stimulate new growth.

Many gardeners and landscapers attempt to establish dense ground covers in desert landscapes that receive little or no irrigation. This is nearly impossible to accomplish, even with drought-tolerant species. The nature of the desert is such that vegetation is scattered with areas of open ground in between. Low-water-use ground covers will assume a similar growth pattern if they must survive and grow with natural precipitation only. Supplemental irrigation is required for a solid foliage cover even with arid plant types.

The best planting times are fall and early spring. Plants set out in either season will develop a good root system before the stress of hot summer weather. Ground cover plants should be spaced in a new bed so that they will cover the site in one or two growing seasons. This practice reduces weed control problems and usually results in a smoother cover with no mounding by individual plants.

Prepare the soil in the area to be planted by tilling well and removing rocks, clods, and other large debris. Make sure that the hole for each plant drains well. A good way to do this is to fill the holes with water, then check to see how long it takes the water to drain into the soil. If it takes longer than thirty minutes, you have problems. Check the soil to see if there is a caliche layer or hardpan restricting the flow of water into the soil. Set the plants in the hole slightly deeper than they were growing in the container and gently put backfill soil around the roots. On banks and slopes, leave a shallow basin around each plant to hold irrigation water.

Invasion by Bermudagrass is the primary reason that ground cover beds fail to thrive. It is not impossible to control if the bed can be kept clean until a solid planting exists. Bermudagrass is less likely to invade once ground covers fill in the bare spaces between plants. Chemicals are available for establishing a relatively weed-free planting site. In most cases, however, two or more treatments must be made during the late summer to rid an area of existing Bermudagrass. This must be considered in deciding when to set out a new bed in a Bermudagrass area.

Bermudagrass often invades ground cover beds in summer when outdoor gardening activity is reduced, and once it is well-established, this aggressive grass is difficult to eradicate without also destroying part or all of the ground cover. Removing even small infestations from tender brittle ground cover species is impractical because of the difficulty in getting into the bed without damaging plants. Thus, one should eliminate this would-be weed before planting ground covers and immediately remove any Bermudagrass that is found. For broadleaf groundcover, the over-the-top grass weed killers found in most nurseries make the problem much easier to solve, but the problem can still be a challenge. Read any labels and labeling material to make sure the product fits your particular need. Nitrogen is usually the key element that must be supplied. The percentage by weight of nitrogen in a fertilizer is indicated by the first number in the analysis,

such as 21-0-0 and 16-20-0. This information is printed somewhere on the fertilizer bag. A typical fertilizer recommendation for mature ground covers is two pounds of ammonium sulfate (21-0-0) or other garden fertilizer of similar nitrogen content per hundred square feet per year. Apply the fertilizer uniformly when the foliage is dry. Then water thoroughly to wash off any fertilizer particles lodged in the plant foliage and to move the nutrients into the plant root zone. Nitrate nutrients tend to move with water, and excess amounts can be leached below the root zone and lost to the plant.

Ground covers are generally more attractive if pruned back each year in late winter or early spring. However, wait until danger of frost is over before cutting back tender species. Ground covers that grow rapidly may need trimming two to three times during the growing season. The appearance of the planting will usually serve as a guide for scheduling pruning work. To encourage a ground cover bed to recover quickly, fertilize and irrigate after pruning is done.

A great leaflet that you might want to have is "Ground Covers for Arizona Landscapes". If you would like a copy, or if you have questions, please call (866) 836 5221 ext. 0. We will be happy to send one out to you.

Rock Gardens

If you like to work with plants, but do not have a lot of time or space to dedicate to a more formal garden, you might consider a rock garden.

A properly designed rock garden will spruce up any type of landscape, but these gardens, I think, are especially attractive when dedicated to the natural forms and plants of the Sonoran Desert. Properly blended, 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 needs 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.

The time to add contours and other features to the ground is before any 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 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 look like a natural formation. Do not place a rock with the side that was previously buried in the soil facing up or outward, for example. 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 support a lot of plants in a given area, but the selection should blend in with the environment. Consider saguaro cacti, agaves and Chilean mesquite or palo verde trees placed in a natural-appearing display. If a smaller tree is required to fit the space, consider 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, can give a pleasing, natural feeling to any landscape.

Growing Aloe Vera In Desert Landscapes

If you are interested in water conservation, and enjoy landscapes that contain plants with eye catching shapes and colors, you may want to think about one of the many species of the genus *Aloe*.

Most of us know about the medicinal aloe, *Aloe vera*, but there are many other types that not only look good, but bring interest and color to the landscape. By selecting the right type for a particular use or site, you can definitely achieve a unique look in your landscape.

Although the aloes are not native to the desert Southwest, there are many that are well adapted to our environmental conditions. Most will take the heat just fine, but the fierce sun of our hotter areas can burn the soft, tender tissue. In Pinal County, it is best to plan on growing them in filtered sunlight or light shade.

All aloe species need a well drained soil. If their roots stay bathed in water for too long, they can be attacked by soil dwelling root diseases. Most will survive without much water, but they always look better if they are given an occasional irrigation, especially during the hot, summer months.

Because aloe plants are succulents, fleshy plants with a unique life chemistry, they do not need fertilizer. Succulents have a way of living that allows them to get by without us adding any additional nutrients beyond that which they can get from the air and soil.

Aloes can reproduce vegetatively, which means that they can spread by forming young baby plants, "pups", at their base. Some aloes do this quite aggressively and one cute aloe can quickly turn into a weedy monster. To keep them under control, plant them in a location where you can place some type of barrier all around them. A sidewalk or concrete barrier in front and a wall behind, for example, will define the space where you want them to be.

While aloe plants are fairly tolerant to cold temperatures, most are quite susceptible to frost and freeze damage. It is always a good idea to plan on giving them some protection during the coldest nights. A cloth covering, such as a bed sheet, quilt or piece of burlap, should be sufficient to protect the more sensitive plants. Plan on uncovering the plants during the day so

that they can continue to make food from the sunlight and to allow the sun's rays to heat the soil under the plants. It is this heat trapped under the covering that provides protection during the cold night.

When selecting a planting site outdoors, it is a good idea to keep the aloe plants well away from turf areas or other grassy plants. Because aloes and grasses are closely related, weedy grasses like Bermudagrass growing up through an aloe plant will be particularly difficult to remove. Herbicides that work well at controlling grasses will harm the aloe. This leaves us with the unpleasant choice of hand pulling as the only recourse. Be sure to wear gloves if you have this problem. The sharp spines on the aloe can be quite unpleasant!

Lets talk now about some of the species that might fit into your landscape. Because just about everyone knows about *Aloe vera*, let's take that one first. It is sometimes sold under a different scientific name, *A. barbadensis*. With either name, it is the same plant.

The medicinal aloe is used frequently in folk medicine as a treatment for burns, bites and inflammation. Because of its fame, and because it is so common, just about everyone has one growing somewhere. It grows equally well in containers or free standing in the landscape.

This plant is one of those aloes that can become a weed quickly. It forms tight clusters of plants and the colony will continue to expand as long as there is room to grow. This aloe is definitely one that needs a barrier to keep it under control.

The medicinal aloe has narrow, fleshy, stiffly upright leaves that can grow up to two feet long. It has yellow flowers on top of a stalk that can reach three feet in height. Because of its winter hardiness, it is one of the best aloes for the warmer areas of Pinal County.

Among the more striking aloes is the tree aloe, *Aloe arborescens*. This one is big! It needs a lot of room to properly grow. It can reach heights of ten feet and will grow about six feet wide or more. Some older plants have grown to about eighteen feet in width. I would put it in a corner of a yard where it will have plenty of space and provide a focal point to attract the gaze.

The tree aloe flowers in the winter with bright yellow flowers in long clusters. It is not particularly hardy in frosty areas. The foliage can be damaged by temperatures of 29 degrees F. but can survive temperatures down to 17 degrees F. This plant is probably best grown in Maricopa

or Casa Grande. In colder areas, such as Coolidge or Florence where temperatures are slightly colder than the western part of the county, you may need to give it a warm microclimate in the yard. A protected corner, in between houses or other structures or in the midst of other plants might give some added protection.

There are many other aloes, all of which bring just a little different flavor to the landscape. They come in all sizes. Here are some which have been recommended for our desert area.

Small aloes that do particularly well in containers include the Jewelled aloe, *A. aristata*, the partridge-breast aloe or tiger aloe, *A. variegata* and *A. distans*.

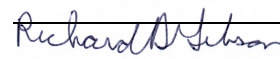
Medium sized aloes that can be grown either in containers or in outdoor planting areas include *A. brevifolia*, *A. nobilis*, *A. plicatilis*, *A. saponaria*, *A. striatula* and *A. tenuior*.

Large, tree-like plants that probably should only be grown outside include *A. arborescens*, the tree aloe mentioned earlier, *A. bainesii*, *A. ciliaris*, *A. ferox* and *A. marlothii*. Some, such as *A. bainesii*, are quite sensitive to frost, so care must be taken in selecting the planting site.

If you are looking to conserve water and want to plant something different, consider planting one or more of the aloes.

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