

Low Water Gardening

22 Xeriscaping Tips to save you water and money



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Introduction

Water use has become a serious issue in many areas of the country. Rapid growth and unusually dry seasons have stretched water resources and forced many communities to put restrictions in place. In fact, the City of Denver (who originally coined and trademarked the term xeriscape) found that over 40% of its treated water was being used for home landscapes. Other areas of the country have reported similar numbers.

The term xeriscape, which has recently gained much use, is normally used to define water-wise gardening. Xeriscape gardens are not lawn-less landscapes, made up of rock gardens and desert plants. Rather, they include most of the traditional aspects of a landscape, but are designed and managed in a way that promotes efficient, well-controlled use of water. This book contains information that will help you apply these principles.



In order to help reduce water usage and keep our landscape looking great during times of drought or water restrictions, we all need to do our part to make sure that we are making the most efficient use of water. Hopefully you will find some ideas in this book to aid you in that goal.



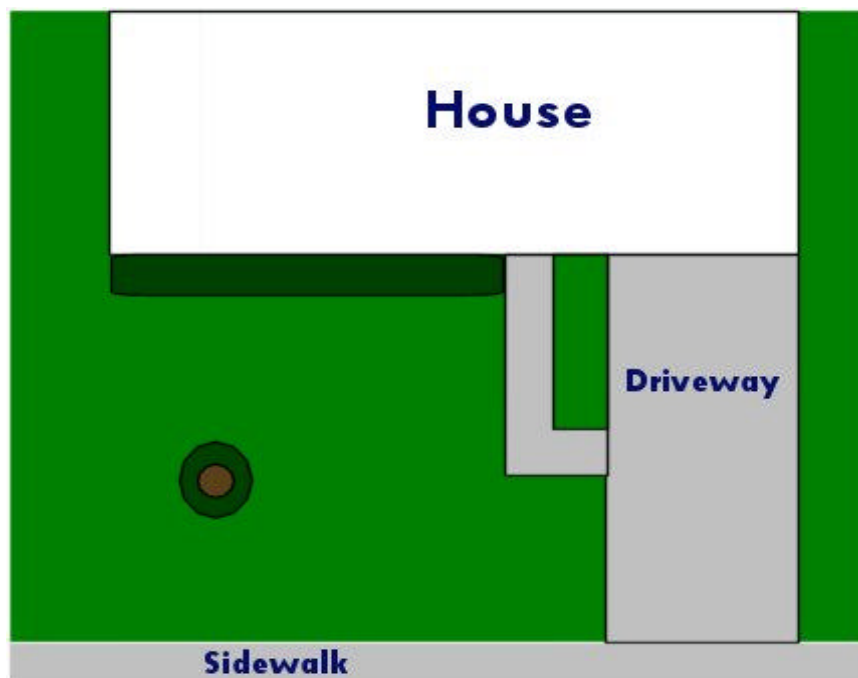
Shrink your lawn

In most home landscapes, over 60% of the water used goes to the lawn. So it makes sense that your lawn is a great place to start to conserve water. One obvious choice is reduce the overall size of the lawn. Some frustrated homeowners have dug up their entire lawns and replaced them with rock or bark mulch. While this approach will certainly result in significant water savings, it is a bit extreme and doesn't provide much aesthetic value, which is the primary purpose for landscaping.

A less drastic, but still very effective, approach is to reduce the size of your existing lawn by expanding existing beds adding planted borders and expanding mulched areas around trees. By increasing the size of existing plant beds or mulched areas and adding new beds that border the lawn you can reduce size of your lawn as much as 30% and add beauty to your landscape at the same time.

As an example, take a look at the layout of a typical front yard. There is a small bed of plants along the front of the house and a small area of mulch around the tree in the middle of the yard. Grass covers the remainder of the yard, including the narrow strip to the right of the driveway and the small spot between the driveway and the walkway to the front door.

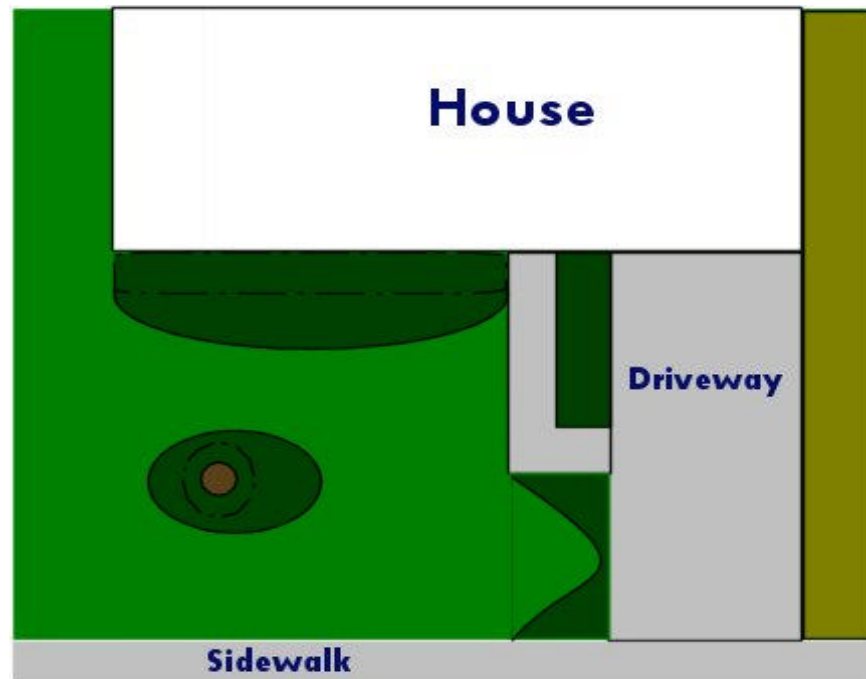




Lawn Before

Now look at the same yard after a few changes:

- Brought the front flower bed out, doubling its size and giving it a softer curve shape
- Increase the size of the mulched area around the tree. You can use an oval shape as shown, a kidney shape, or make the area more random. However, avoid jagged edges or sharp curves that will make it difficult to mow around. This is an excellent place to plant low growing perennials or annuals.
- Added a plant bed in the small spot between the driveway and walkway. This removes the awkward grass strip and adds a focal point for plants that will help to make the walkway to the front door more appealing.
- Removed the grass strip on the other side of the driveway. This can be replaced with rock or bark mulch.
- Added a curved plant bed on the right side of the lawn next to the driveway that helps to frame the driveway and gives an opportunity to add some color to the front of the yard. Another benefit is that plant borders along lawns will help to reduce water runoff.



Lawn After

As you can see, these simple changes have made the landscape more attractive and reduced the lawn size by over 25%. If low-water, low-maintenance plants are used in the beds it will reduce the amount of work required to keep it up and give you significant water savings. In back yards, adding a deck or patio will help shrink the lawn and give you valuable outdoor living space.

Of course this is just an example and your landscape will benefit differently from these types of changes, but if you apply these basic ideas you can save water, money, and reduce the time it takes to mow and maintain your landscape.



Mulch

By covering the surface of the soil in your planting beds and other areas with some type of mulch you give your garden many benefits:

- Prevents evaporation of water from the soil

- Some mulches, such as compost, bark mulch, etc. will hold water and keep the soil damp
- Prevents soil erosion during heavy rains
- Organic mulches break down over time and provide nutrients to the soil

Many consider mulching to be the single most important thing to do in order to reduce the need for water and increase the ability of plants to thrive. In some cases, proper mulching can reduce watering requirements by two-thirds. There are many types of materials that you can use as mulch. Pea gravel and other rock material can provide a low-maintenance, attractive option although it will not absorb water or provide nutrients to the soil.

Bark mulch comes in a variety of sizes and materials and provides an effective and attractive ground cover around plants and trees. Large bark nuggets look nice around trees and larger plants and shrubs and will usually last a few seasons before needing to be replaced. On the other end of the spectrum is shredded cedar or pine mulch that is easy to spread, looks great in flower beds, and, in the case of cedar, will produce a pleasant smell. However, it breaks down quickly and needs to be replaced each spring.

Other popular natural mulches include grass clippings, hay or straw, pine needles, and leaves. Chop large materials into smaller pieces by running a lawn mover over them or putting them in a plastic garbage can and chopping them with a string trimmer.

Compost is an excellent mulch for plants, as it holds water well and is very rich in nutrients. As are other organic fertilizers such as peat moss and manure.



A popular option is to spread a thick layer of compost around your plants and cover the compost with a layer of bark mulch. This gives you the benefit of rich nutrients for your soil and an attractive finish

For most lawns, mulch is not an option. It would get tossed around during mowing and just doesn't look good. However, a nice layer of compost or other organic material spread over your lawn in late fall will go a long way to improving the soil and will be broken down by the time spring arrives.



Aeration

Over time, the soil in most lawns becomes compacted, especially in lawns with high traffic. This compacting of the soil restricts the movement of air and water around the roots, making it difficult for the grass to get the needed nutrients and water. It also prevents roots from growing as deep as they normally would in uncompacted soil. In gardens, this is usually not a problem because the soil is regularly worked or tilled, but this does not occur in lawns, thus the need for regular aeration.

The process of aeration is very simple. It involves creating small holes in the lawn, usually about three inches deep. These holes allow water, air and nutrients to get to the roots resulting in vigorous root growth and a healthier lawn. Proper aeration can also prevent and reduce thatch, which will also prevent deep root growth.

There are a couple of options for aerating your lawn. For small lawns there are a variety of manual tools that are operated by using your foot to push two or three hollow blades into the ground. For larger yards you can rent or hire a landscaper with a power aerator. These are operated much like a lawn mower



and can cover ground very quickly. Some garden centers and catalogs sell sets of spikes that you attach to your shoes. The idea is that you put these on while you are working in the garden and the

lawn is aerated just by walking around. This is not an effective solution since it doesn't guarantee complete coverage and the size of holes it creates are too small to be much benefit.

Both the manual and power aerating tools remove plugs of soil roughly the size of a roll of dimes. Unless you are very concerned about the immediate appearance of your lawn, it is best to leave the plugs on the lawn for a couple of days. Once they have dried out, you can break them up with a little raking giving you a light layer of topdressing for your lawn.

For the average lawn, aerating once a year is usually adequate. Twice for lawns with heavy traffic. However, when dealing with drought or restricted watering, it is recommended that you aerate three times: Once in the spring, mid summer, and again in the fall.



Alternative Grass types

Although it is expensive and time consuming in the short term, replacing the grass in your lawn with a more drought tolerant variety can result in considerable long term savings. Your available choices will depend on the climate where you are located and the amount of shade. Below are a few choices that require less water than most of the common lawn grasses such as Kentucky Bluegrass:

- **Tall fescues** – This is a cool season grass that grows well in sun and shade. It has low requirements for fertilizer and maintenance and holds up well under moderate traffic. In areas with mild winters it will stay green all year. The roots of tall fescues grow very deep for grass, therefore making them better suited to infrequent watering. However, it does not tolerate cold well and is best



- suited to areas with mild winters. (*Festuca arundinacea*)
- **Buffalograss** - Along with gramagrass, Buffalo grass is one of two native North American grasses that are used for lawns. It is a warm season grass but grows in a wide variety of climates and has excellent tolerance of heat, cold, and drought. The only environment in which it does not thrive is shade. It has a dull green color in the spring and summer and changes to a straw-like color when it goes dormant in the winter. It handles wear well, grows slowly and requires little maintenance. (*Buchloe dactyloides*)
 - **Blue Gramagrass** - This grass has similar qualities to Buffalograss, and is commonly used in pastures and conservation areas. However, it does not form as thick a turf as Buffalograss and does not handle traffic as well. (*Bouteloua gracilis*)

Although native grasses such as Buffalograss and Gramagrass do not produce a turf that satisfies everyone's definition of a proper lawn, they are excellent options, especially in large areas where frequent watering is not an option. If you are considering replacing your lawn, keep in mind that even these grasses require considerable watering until they become established and may not be available as sod in your area, so allow for growing time and do not plant in the middle of the summer or when watering is restricted. Also, some neighborhoods have covenants that require a certain type of grass to be planted, so check with your homeowner's association before proceeding.



Collect rainwater

Most areas of the country that are primarily dry or currently facing a drought will still have significant rainfall, just not enough to supply plants with what is needed. When rain does come, the majority of it will run off or soak into the ground too quickly to be of much benefit to plants. Therefore, finding ways to capture rainfall and save it for future use is an excellent method for getting your plants through the periods between rainfalls and is especially



important in areas under severe water restrictions.

In addition to the lack of cost, there are quite a few benefits to using rainwater instead of tap water:

- The temperature is better for plants. Tap water, especially water from wells, is usually much colder than the air temperature, and this can slow plant growth. In very hot weather, water that is too cold can cause plants to wilt and frequent applications of cold water can permanently damage plants.
- It is soft. The minerals, such as calcium, can leave a residue on plants and in some cases will interfere with the roots ability to absorb nutrients from the soil.
- It does not contain chemicals such as chlorine or fluoride. These chemicals can cause plants to wilt and burn the leaves or roots.

If your barrels become empty, you can always fill them from the hose. While this obviously isn't as beneficial as free rain water, allowing tap water to sit in a barrel will help level the temperature and allow some of the chemicals to dissipate.

The most common method of capturing rainwater is through the use of barrels attached to the gutter downspouts to capture rainwater as it runs off the roof. It is amazing how much water can be collected during a short rainstorm. Most rain barrels consist of a plastic barrel anywhere from 50 to 100 gallons in size that is attached to the downspout by a PVC pipe or flexible downspout extension. There are many sites on the Internet with plans for making rain barrels and the required materials can be found at any home improvement store such as Home Depot.

Once collected, water from the rain barrels can then be used to hand water thirsty plants. When setting up your rain barrel, keep in mind the following suggestions:

- Keep the barrels covered to prevent mosquitoes from getting to the water and laying eggs. This is especially important to help prevent the spread of mosquito carried diseases such as the West Nile Virus. The best solution is to purchase a barrel with a complete lid and place screens over any holes. These screens will also help to catch debris in the water before it enters the barrel.

- Create some type of overflow system. Make sure that the water has some place to go once the barrel is full. There are many options, such as keeping the end of the downspout extension elevated above the barrel to allow it to runoff, or attaching a PVC pipe to the upper side of the barrel. Whatever solution you choose, keep in mind where the overflow water will go. Downspouts are used to direct rainwater to a safe place, so make sure that your rain barrel has not interfered with that intention.
- Attach a spout to the bottom of the barrel. This can save a great deal of trouble lifting heavy buckets out of the barrel. You can get a cheap plastic spout at any home improvement store and drill a hole in the bottom side of the barrel. If necessary, place the barrel on a stack of bricks or rocks to raise it up enough to get a bucket under the spout. If your plants are close enough to the barrel, you can also attach a small hose to the sprout to really save time.
- Hide the barrels with a fence or plantings. Rain barrels are not attractive objects, so unless your rain barrel is in a part of the yard that is completely hidden it is a good idea to plant some bushes or build an attractive fence around it. An inexpensive and simple solution is to use a cedar trellis to make a three sided fence.



Reduce chemical fertilization

Chemical fertilizers are designed to provide nutrients to your plants very quickly. They are delivered in a form that can be used instantly by plants, unlike organic fertilizers which must first be converted to usable nutrients by the bacteria in the soil. Although chemical fertilizers deliver noticeable results in just a few days, there are some drawbacks:

- Chemical fertilizers do nothing to improve the long term quality of the soil. It is either absorbed by the plants' roots or is washed away. Adding organic fertilizer works slower, but over time results in high quality, nutrient-rich soil.
- Plants and lawns need more water to process chemical fertilizers. In the period of time shortly after you apply the fertilizer, the plants will need extra water. Without this water, the plants may become stressed.
- Chemical fertilizers have to be applied regularly. Because these fertilizers do not remain in the soil, they have to be applied quite often; as much as weekly with plants and monthly for lawns. More fertilizers also mean more watering.
- It causes plants to sprout new growth quickly. This new growth is very susceptible to disease and drought conditions, and can hurt the entire plant if not given extra care.

Chemical fertilizers do have their place in the garden, but in areas where water is at a premium, you are much better off in the long run by also adding organic fertilizers, such as compost and manure, to your garden. Not only will this provide long term nutrients for your plants, but will also improve the moisture retention of the soil. Continue to supplement the organic material with chemical products, phasing them out gradually if desired. After a few years your garden or lawn will be able to thrive on just a bi-annual top dressing of new organic material.



Water deep rather than often

If you've been living in an area where frequent dry periods are common, no doubt you've heard this rule repeated often. The idea is that frequent, short periods of watering encourages your plants, trees, and lawn to only grow shallow roots, while watering for longer periods of time less often will force roots to grow deep as they look for water between waterings.

This rule is accurate and very important to follow; however, it is important to understand a couple of things. First, this will only work if your soil is able to hold the water that you give it. If you have very sandy soil, the water will drain through so quickly that grass and other plant roots will not grow deep because there is no water below the top couple of inches. Conversely, if your soil is primarily

clay, the water will not penetrate, and again the roots will have no reason to grow deep.

Secondly, there is a limit to how much water plants, trees, grass, and the soil can absorb. Watering a small area for two hours is going to waste a lot of through runoff and the fact that water soaks deeper than the roots, so you need to make sure that the water you are giving to your garden is staying where it is needed. The best solution is to water lightly for a longer period of time, or use the "one-two" method of watering. One-half to one inch of water at a time is a good guide.



Water crystals (polymers)

Water absorbing Polymers are manufactured under many commercial names, but all of them are a high-tech crystals that soak up and hold water in your lawn or garden. They are not a new product. For years they have been used in disposable diapers, but are only recently being adapted and sold for garden use.

Polymers look like salt crystals and are mixed into garden soil or injected into lawns to help the soil absorb moisture. Think of them as small sponges that absorb water when it is available and then release the water when the area around it is dry. Once the polymers have absorbed enough water, usually 20-50 times their weight, the roots will actually grow into the polymers and tap the water when needed. Some estimates indicate that you can save as much as 50% of your water by using Polymers. Depending on the brand they will last from 3-5 years before they break down and are absorbed into the soil.



These products are becoming more common and sold under dozens of brand names using various ingredients. They can be purchased in packages of many different sizes and can be manually mixed into gardens or injected into the soil in lawns. In order to be effective, they must be placed in the soil at root level.

In some applications they have been put directly on the roots of plants to help reduce stress during shipping and storage.



Use drip irrigation

Drip irrigation is basically the process of watering plants very slowly through a number of means. It is primarily used to irrigate specific plants or small beds of plants. Because of the difficulty in using drip irrigation to water large areas, it is generally not used on lawns. The advantage of drip irrigation is that water is delivered slow enough that water does not have the opportunity to runoff or soak into the ground below the reach of roots, thus wasting very little water.



Drip irrigation is typically achieved through the use of drip or soaker hoses attached to faucets or in-ground sprinkler systems. Drip hoses have small holes in them and are generally placed on the top or just above the ground, allowing water to slowly drip down onto plants. Drip hoses can also be placed around young trees, tracing the drip line, although the water will not get deep enough for mature tree roots and can be detrimental to the root growth of trees if used after the first couple of years. Soaker hoses are made of a porous material that allows water to pass through very slowly.

In areas where hoses will not reach or there are only one or two plants to be watered, you will need to find another solution. One cheap and very simple solution is to use a plastic one gallon water jug. Make a small hole in one side of the jug, very close to the bottom, and another hole somewhere near the top to allow the air to escape.



Fill the jug, put the cap on, and place the jug close to the plant. If necessary prop the jug up on a couple of rocks to make sure the hole is above ground. The water will leak, giving your plant a long slow drink. The size of the hole can be changed to adjust the rate of water flow. Larger jugs can be used for bigger plants or make two or more holes to water multiple plants at the same time. At

this price, you can easily create individual drip jugs for many plants and water them all at the same time.



Create some shade for plants

Evaporation is one of the major causes of moisture loss in soil and plants. In extreme cases, moisture evaporating from grass and plant leaves can actually burn the plant during periods of strong sunlight. Giving your plants some shade can help to reduce the evaporation of moisture from the soil and help avoid sun damage in extremely hot areas.

Trees are the most common method of shading your garden, but privacy screens, fences, or any other structure will work fine. Before providing any shade, make sure that your plants will grow well in this environment. Most plants need some sunlight, so place your shade tree or structure so that it gives shade during the hottest part of the day, but allows the plants to receive sunlight during the remainder of the day. The majority of common garden flowering plants and especially drought-tolerant plants are described as needing full sun. However, if you live in an area with cloudless skies almost every day, even your sun loving plants will benefit from some shade.



Be careful with using too many trees as shade for plants. Mature trees require a lot of water. So over time, you may find that your source of shade is taking much of the water from your other plants, especially trees that grow a lot of feeder roots near the surface. Therefore it is best to supplement your shade trees with other structures, such as fences or arbors.

Planting thirsty plants next to the house is also an excellent method of providing shade (see section on Zone Planting). However be careful of planting too close to brick or concrete walls. These walls will absorb the heat from the sun and can continue to give off heat for a few hours after the sun has passed.



Build wells around plants

Much of the water that your plants receive will runoff or soak into the ground before the roots are able to absorb it. In a large bed with plants of similar needs, this is not as big a problem since there are many plants working hard to take in water, however, in smaller beds or areas where you are trying to target specific plants with your watering, this can lead to a lot of wasted water.

A simple step that can greatly increase the amount of water that stays with the plant is to build a well around each plant. Using soil, build a lip around the plant about 1" – 2" high and as wide as the drip line (the width that the foliage reaches) around the plant. Then fill the well with mulch to help absorb the water and hide the edges of the well.



It is important that the well only slow down the draining of water and not hold water for too long. After watering, check back in about an hour. If puddle water still exists then it is draining too slowly and you either need to give your plant less water or remove the well.



Use Aquarium water

For those people who have a freshwater aquarium in their home, aquarium water is an excellent source of water for their plants. Many aquarium enthusiasts change twenty to fifty percent of the tank water as often as weekly. That can add up to a lot of water for thirsty plants, especially for those people who have large aquariums.

In addition to the basic benefit of watering the plants, the nitrates contained in aquarium water are also an excellent source of nutrients. Be aware, however, that salt is very bad for plants, so you should never do this with salt water tanks. Some freshwater aquarium owners also add small amounts of salt to their tanks. In small enough doses, this will probably not harm the plants, but if you do add salt, it is better to avoid doing this anyway.



Water at night

Much of the water that you put on your landscape is lost to evaporation. This is especially true if you are using a sprinkler and the most significant loss occurs on lawns where much of the water sits on the grass blades. In flower beds and gardens, the amount of evaporation will depend on the type of soil and mulch and how quickly it is absorbed.

In addition to the loss of water, the evaporation of water from leaves and grass can actually burn the plants. This is common in extremely hot climates or high altitude areas where the sun's rays are quite strong.

To significantly reduce evaporation, water your lawn and gardens at night. The best time is early morning, a couple of hours before sunrise. This gives the water time to soak into the ground before the sun's rays can evaporate it and gives your landscape a healthy drink to start the day. As the sun rises any water remaining on the grass or plant leaves will be slowly evaporated by the gradual increase in temperature, thereby preventing damage.



If you don't have an automatic sprinkler system, or you don't like getting up before sunrise, watering in the evening is also an option. The biggest criticism for watering after sunset is that the lack of sunshine can mean that water can remain on the plant leaves or grass all night, which can be a prescription for mildew and other related plant diseases. This can be a problem, especially in humid climates or areas that experience a significant temperature drop at night. You really have to evaluate your situation and decide if

there is a risk. If so, try watering a couple of hours before sunset to give the plants time to dry off before the air cools too much.

The same benefits apply to watering on cloudy days as well. If you have the flexibility to water anytime, watch the weather forecast and try to water on days when the sun's rays are limited by clouds.



Mow lawn higher

While it may be very satisfying to have a lawn that looks like a golf course putting green, keeping your grass cut extremely short is very hard on your lawn and will require a lot more water.

Raising the blade on your lawn mower will allow the grass blades to shade the roots and the soil, preventing the roots from drying out and significantly reducing the amount of water that evaporates. Some reports estimate that raising your mower blade by one inch can reduce evaporation by as much as 15%. Regardless of whether this figure is accurate or not, there is no doubt that your lawn will benefit from giving the roots and soil a little shade.



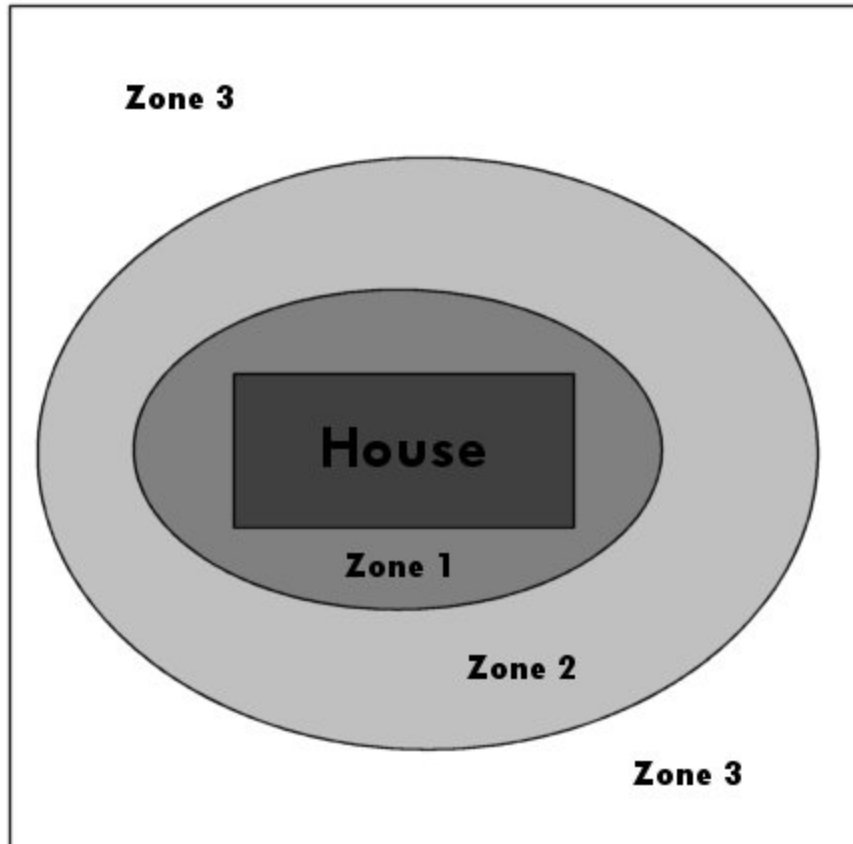
Zone plant your garden

This is a pretty straightforward idea but requires some planning before beginning to plant your landscape and can be difficult to adopt in existing gardens. The idea is to group your plants together according to their water requirements so that you can apply water only where and when it is needed. This reduces waste and saves you time in the process, and from an



aesthetic standpoint, plants with similar water requirements tend to look better planted together.

The image below is broken up into three zones. They appear in this picture as rings around the house, but you can also group your water zones in other ways (specific beds, front of house, etc.) as long as plants are kept together based on their water needs.



In the example the zones are defined as:

- **Zone 1** – This contains all of the plants requiring the most water. These types of plants are generally kept close to the house due to the need for more watering and maintenance. If they are close enough, the house will also provide some shade at certain times of the day, reducing evaporation and allowing for less frequent watering. Potted plants, window boxes and planted annuals are usually placed in this zone.
- **Zone 2** – The middle zone is typically where the lawn is planted, as well as shrubs, ornamental trees and other perennials that can thrive when watered only a couple of times a week. Many plants and shrubs will need extra

watering and care when initially planted in this zone, but once established will do fine.

- **Zone 3** – Generally this is the farthest zone from the house and serves as a transition area to non-landscaped areas of the property such as a native field or street. If possible, leave native plants that already existed in this area intact, possibly thinning them out to make the area more attractive. If native plants are not present, such as a crowded neighborhood, zone 3 is an excellent area to landscape with bark mulch or stone, and possibly plant a few hardy shrubs. The goal should be to make the area attractive but avoid the need to supplement natural rainfall and limit the amount of maintenance needed.

This example is a very general overview of some ways to zone plant your garden. Obviously the layout of your landscape and the climate you are in will determine your options, but now you have some ideas that can be adapted to your situation.



Optimize your sprinkler system

If you have an in-ground sprinkler system, you may have a number of possibilities for saving water. Your options will depend on the setup and the brand of equipment you have, but generally all of the major sprinkler system manufacturers have similar choices available.

- **Change the sprinkler heads to lower volume nozzles** – If you have rotor head sprinkler in your system, most manufacturers offer as many as ten different nozzles. Each of these nozzles have specific volume (measured in Gallons per minute), distance and precipitation settings. By adjusting these nozzles you can often reduce the amount of water used in a sprinkler zone by 10-15 percent. Especially if you are experiencing runoff or uneven soaking. Combined with the “one-two” watering method (see next tip) this can be extremely effective.
- **Use pop-up type sprinkler heads** – Anywhere that your sprinkler heads are exposed to foot or vehicle traffic, make

sure that you use automatic popup sprinkler heads. These heads pop up automatically when the water is on and disappear back down to ground level when not in use. Besides the obvious visible damage that can occur when someone trips or drives over the sprinkler head, repeated incidental contact with the heads can loosen or damage connections and pipes underground. Eventually this can cause small leaks that are hard to detect and even more difficult to repair.

- **Install an automatic rain shutoff device** - These devices are designed to prevent your sprinkler system from going on while it is raining or shortly after a significant amount of rain has fallen. They range in price from \$20 to over \$100, but can result in significant water savings, especially if you have your system programmed to run when you are sleeping or not at home. There are also high end options that will shut off your sprinklers when the temperature is below freezing or it is very windy.
- **Clean the sprinkler heads** – Over time, leaves, dirt and other debris will get down into your sprinkler heads and can interfere with the mechanisms, so it is important that you check them every couple of months to ensure proper performance.

As you look at areas of your sprinkler system to optimize, keep the following tips in mind:

- Don't mix different types of sprinkler heads into the same zone. Different types (such as high volume rotor vs. sprays or drip heads) have unique pressure requirements and often should have different timing settings
- Stick to the manufacturers recommendations on spray distance – Although many sprinkler heads can be adjusted to reach farther or limited to a shorter distance than what is listed, the recommendations are there to ensure the optimum performance of the sprinkler. If your needs require a different throw distance, change to a different sprinkler size or type.





Use the one-two method

When watering a lawn, quite often water is delivered at a rate that is much too fast for the grass to efficiently absorb. Much of the water either runs off onto the sidewalk or street, or is soaked into the ground below the reach of the grass roots. Runoff is especially problematic if parts of your lawn have a significant slope or very sandy soil.

A simple solution to this is the “one-two” method of watering your lawn. This involves watering your lawn for a shorter period of time (about half of normal), then turning the sprinkler off for that same amount of time, and finally running the sprinkler again for the same period of time. This gives your lawn time to soak up the water before giving it the rest, thereby reducing the amount of wasted water.

For example, if you know that it takes 40 minutes for your sprinkler system to deliver the required amount of water, set your system to turn on for 20 minutes, off for 20 minutes and then back on for another 20 minutes. The wait time does not have to be exact, but it is important to make sure that the period of time between watering is not so long that the soil begins to dry out. Otherwise, water will not get to the proper depth and the grass roots will begin to grow too shallow.

Your ability to utilize this method will depend on the capabilities of your sprinkler system controller. Gardeners who manually water their lawns will probably find this method too time consuming to use.



Plant in the fall

The fall is an excellent time to get a head start on the growing season. By planting your perennials, shrubs and trees in the fall, you give them extra time to establish roots in preparation for the next season. Most of these plants normally do over 70% of their

root growth in late summer and fall because their above ground growth has slowed, diverting more energy to root growth. Also, as the top of the plants go dormant in the fall, the roots will require less water to become established. This is often the only way to plant new plants during a drought or while under water restrictions. With stronger roots you will see a number of benefits the following season:

- Deeper roots mean the plant will require less water during the heat of the summer
- Plants will grow faster and resist disease much better
- Flowers will bloom quicker and more vigorously
- Will be able to stand up to wind and heavy rains

Even for native and low-water usage plants, planting in fall is necessary to give them time to get adequately established. In areas that are under severe water restrictions, this is the only time to plant, as most plants will not survive without daily watering if planted in the spring or summer.



Improve the soil

To improve the moisture retention of your soil add organic material, such as compost or aged manure to the soil. Fresh manure should not be used, as it is usually very high in ammonia. Organic material will also add nutrients to the soil, reducing the need for chemical fertilizer.

An inch of water will penetrate sandy soil 10" – 12" inches deep, encouraging deep root development, but it drains very quickly requiring more frequent watering. Clay soil will hold water for longer, but only allows an inch of water to penetrate 2" – 4", resulting in shallow root development. Whether your problem is too porous (sandy soil) or too compacted (clay), organic material improve the soil, giving you the correct balance of water retention, drainage and



aeration. You should never add sand to clay soil and vice versa. Clay, sand and water were once used to make bricks! Not the best material for growing plants.

The best process for amending soil is to add a 1-2" layer to the top of the soil and till it into the soil to a depth of 5-6". For established lawns, top dress the area with a layer of organic material and leave it. It will take some time, but eventually the organic material will work its way down into the soil. A layer in spring and again in the fall is a good idea.



Measure Water

It is not always easy to tell how much rain has fallen during a given period, especially during the on again, off again drizzle that we often get during the spring and summer. To help, purchase a few rain gauges, available at most garden centers, and place them around your garden. After it rains, check the measurements on the gauges and take an average of all the gauges to get an idea of the amount of rain. Then use that number to determine how much watering you need to do. Instead of purchasing commercial rain gauges, a coffee can will do. Set the can into the ground, just deep enough to prevent it from tipping over. After each rainfall, measure the depth of water with a ruler.



Also, many local newspapers will print daily or weekly rainfall totals and even give you watering recommendations. These reports can be a good general gauge, but rainfall can vary greatly over small distances, so it is best to get an accurate reading in your garden.

Another method of measuring the water in your garden is through the use of a soil-moisture meter. While there are many types on the market, most of these meters contain a metal rod that is inserted into the soil. When moisture is detected, an electrical current is generated which moves a pointer on the meter display. There have been some questions about the accuracy of soil-moisture meters, however, if you use them regularly in your garden, they should give you a relative idea of how wet your soil is.



Use Self-watering containers

Using containers is generally not an efficient way to conserve water. They restrict root growth, tend to dry out the soil quicker, and the plant leaves often completely cover the soil in the container, preventing water from rain or a sprinkler from reaching the roots. However, if you have a few favorite plants that require more water or special care, isolating them in containers can make maintenance much easier and allow you to focus your extra watering.

To aid in the use of plant containers, some garden centers and mail order companies sell what is called self watering containers. There are a few different types, but they are all basically plant containers that have a reservoir that sits below the plant and soil. The reservoir is filled with water, which is then slowly absorbed by the soil via small tubes, a sponge or other mechanism. In some instances, the reservoir is positioned in the sides of the container, between an inner shell containing the plants and soil and an outer shell. Water then slowly seeps into the soil through small holes in the inner shell.



Self watering containers can provide a number of benefits. They prevent water waste, keep the soil moist, and reduce the frequency with which you have to water your containers. This is especially important in the hot summer months when typical containers must be watered as often as twice a day in order to keep the soil from drying out. Now you can go away for a weekend without returning to shriveled plants on your front porch.



Windbreaks

Placing an object on the windward side of a plant can provide a significant amount of drought protection. Even small rocks and hardy plants can reduce the wind enough to prevent some evaporation.

Typically windbreaks consist of hedges or rows of trees planted on the windward side of a yard. In some case they will also provide shade and protection from harsh weather. Larger windbreaks, such as a row of trees, planted on the southern side of a house can slightly cool the house during the summer months. Using deciduous trees will allow solar heat to pass through to warm the house in winter.



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