Conserving Water Indoors

WaterSense Products

If you are considering a new product that utilizes water, look for those with the WaterSense label. They have undergone independent testing and certification to meet EPA WaterSense criteria for efficiency and performance. The average household could save approximately $170 per year by making simple changes to use water more efficiently. Installation of water-efficient products throughout the U.S. would save more than 3 trillion gallons of water per year, an equivalent of $18 billion dollars.

Low-Volume Showerheads

Installing a low-volume showerhead is an easy and inexpensive way to reduce the amount of water you use every day. Normal showerheads can dispense 5 to 10 gallons of water per minute! Low-volume showerheads can reduce water use in the shower by %50. Reducing your time in the shower, or turning off the water while you soap up will also dramatically reduce water use.

Front-Loading Washers

These washers use half as much water as a standard top-loading washer. Because they use less water, they also use 60% less energy to heat the water. They can also hold more and are easier on your clothes. Savings while using a front-loading washing machine can top $100 per year. To increase savings, only wash clothes when you have enough for a full load.

Low-Volume Dual Flush Toilets

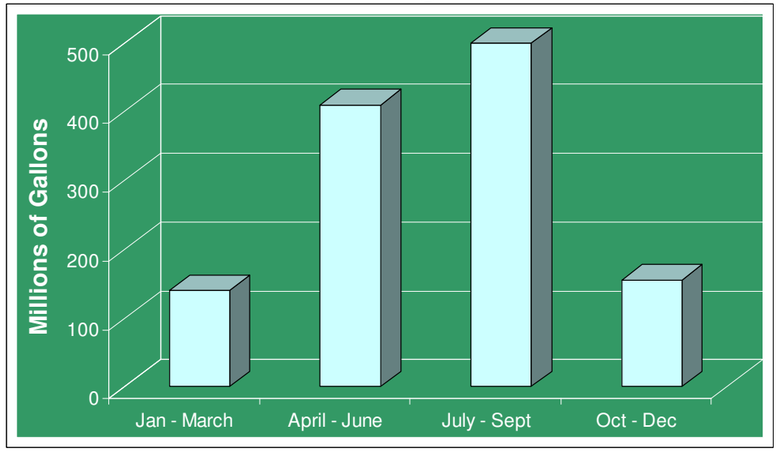
Standard toilets use between 3 and 5 gallons of water per flush. Low-volume toilets only use 1 to 2 gallons. This will cut indoor water use by about 30%. A dual flush toilet allows you to choose between a high and low volume flush. You can reduce they amount of water used by a standard toilet if you sink a couple plastic bottles full of sand and water in the tank.

Faucet Aerators

Aerators are the easiest, and least expensive way to reduce home water use. They come in a variety of styles to fit the needs of your kitchen and bathrooms. They are easy to install and most cost less than $6.

Water Use

2007 Water Use for an Average Suburban Community



The graph above depicts water use for an average suburban community throughout the year. During the non-growing season (October—March), an average of 40 million gallons is used per month. During the growing season (April—September), that amount nearly quadruples to 150 million gallons per month. The majority of the difference between these two numbers is outdoor water use for lawn and garden irrigation, as well as washing cars and maintaining swimming pools. This large increase in water use puts tremendous pressure on groundwater reserves.

When watering your lawn or washing your car, it is important to remember that you are using the same pure drinkable water that comes out of your sink. Finding ways to reduce water use is an easy step we all should take to help conserve this important resource.

Metro Conservation Districts

Anoka Conservation District
1318 McKay Dr. NE, Suite 300
Ham Lake, MN 55304
763-434-2030
www.anokaswcd.org

Carver Soil & Water Conservation District
11360 Highway 212 Suite 6
Cologne, MN 55322
952-466-5230
www.co.carver.mn.us/departments/LWS/swcd.asp

Chisago Soil & Water Conservation District
38814 Third Ave.
North Branch, MN 55056
651-674-2333
www.chisagoswcd.org

Dakota County Soil & Water Conservation District
4100 220th St. West, Suite 102
Farmington, MN 55024
651-480-7777
www.dakotaswcd.org

Hennepin Conservation District
417 North 5th St., Suite 200
Minneapolis, MN 55401
612-348-9938
www.hcd.hennepin.mn.us

Isanti Conservation District
380 South Garfield St.
Cambridge, MN 55008
763-689-3224
www.isantiswcd.org

Ramsey Conservation District
1425 Paul Kirkwold Dr.
Arden Hills, MN 55112
651-266-7270
www.co.ramsey.mn.us/cd/index.htm

Scott Soil and Water Conservation District
7151 West 190th St., Suite 125
Jordan, MN 55352
952-492-5425
www.scottswcd.org

Sherburne Soil & Water Conservation District
14855 Highway 10
Elk River, MN 55330
763-241-1170 Ext. 3
www.sherburneswcd.org/index.html

Washington Conservation District
1380 West Frontage Road, Hwy. 36
Stillwater, MN 55082
651-275-1136
www.mnwcd.org

Wright Soil and Water Conservation District
311 Brighton Ave. South, Suite C
Buffalo, MN 55313
763-682-1970
www.wrightswcd.org

WATER-SMART

Conserving Water at Home

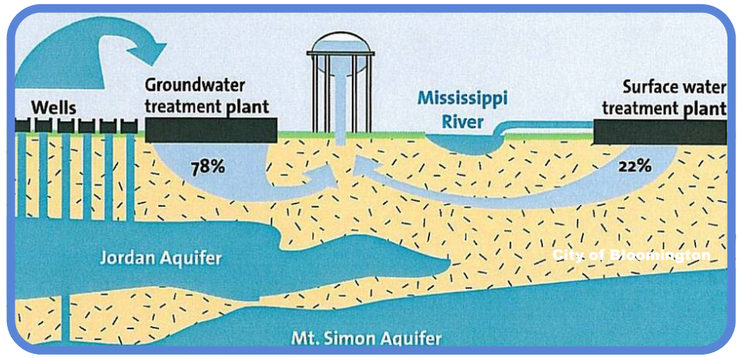
Metro Conservation Districts

A partnership between the eleven soil and water conservation districts of Anoka, Carver, Chisago, Dakota, Hennepin, Isanti, Ramsey, Scott, Sherburne, Washington and Wright Counties.

Prepared by the
ANOKA CONSERVATION DISTRICT

Where Our Water Comes From

Household water can come from a variety of places including private wells, municipal wells, and treatment plants that take water from local rivers. The majority of our water is taken from aquifers located deep beneath the ground. Aquifers near the surface have their water supply "recharged" relatively quickly through infiltration, while deeper aquifers take much longer. Some of the water pumped by city wells was from glacial melt 10,000 years ago and once it is used up, it won't be recharged in our lifetimes. Water from these reserves is very clean and requires very little treatment to make it safe to drink.



The average suburban home will use over 40,000 gallons of water each year for lawn irrigation. That's about one third of the total annual household water use! Saving this water for drinking instead of growing grass will help maintain our drinking water supplies.

Runoff

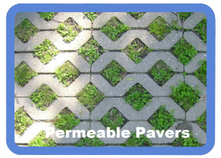
We all value clean lakes and rivers for recreation and clean abundant water for drinking and other household uses. What we do at home can greatly influence the quality and quantity of these resources.

In a one-inch rainfall, a 1/4 acre lot can produce over 5,000 gallons of water from roofs, sidewalks, driveways and even the lawn itself. Grass clippings, leaf litter, soil, fertilizer and other pollutants are all washed off the lot and eventually flow into a storm drain. Water that enters storm drains goes untreated into lakes, streams or ponds. This can severely affect natural systems and water quality by introducing pollutants and excess nutrients.

Runoff can cause a variety of problems for local waterbodies. It transports sediment that reduces the quality of habitat and smothers aquatic life. It carries heavy metals and chemicals that make the water unsafe for human use. Excess phosphorus from grass clippings, leaf litter and some fertilizes are washed into lakes causing algae blooms. Excess algae competes with native aquatic vegetation. Eventually, decomposition of algae will decrease the amount of dissolved oxygen in the water which can result in a fish kill. To prevent these problems, water quality improvement and volume reduction efforts need to be made by everyone, not just the people. living near a water source.

Water-Smart Surfaces


Permeable Pavement Driveway


Permeable Pavers


Permeable Asphalt

Driveways, sidewalks, patios and roofs all produce runoff during a rain storm. However, there are ways of maintaining a hard surface area while also allowing water to soak in. Permeable pavers lock together to create a solid surface but have gaps between the pavers that allow water to soak through. The gaps can be filled with gravel or even seeded to allow small plants to grow! They are great for driveways, sidewalks or patios.

Permeable asphalt is another hard surface that will allow water to soak into the ground instead of flowing into a storm drain. It is extremely durable, can be plowed in the winter and will reduce ice buildup because water will not sit at the surface.

Yard Maintenance Tips

With proper maintenance, you can keep your lawn healthy through the hottest part of the summer while also reducing your water use.

- Water thoroughly, but infrequently to encourage deeper root growth.
- Install a rain shut-off device to prevent watering during rain events.
- Repair leaking sprinklers, and adjust sprinklers to prevent spraying water on driveways or the street.
- Water in the morning to reduce water lost to evaporation.
- Mow your grass no shorter than 3" for deeper roots and fewer weeds.
- Use low-maintenance grasses like fine-leaved fescues and drought-resistant types of Kentucky bluegrass in newly seeded areas
- Let your lawn go dormant during the hottest months. Water 1/4" inch every two weeks (minus rainfall) to keep the crowns healthy.
- Mulch around trees, shrubs and in your garden. It will keep moisture in the soil and reduce weed growth.
- Use a plug aerator to improve water infiltration, making a healthier lawn and reducing runoff.
- Utilize drip-irrigation in gardens to apply water directly where it is needed and minimize losses to evaporation.

Water-Smart Landscaping

There are many ways to landscape your yard that will reduce runoff and water use. Many of them relate to the fact that traditional turf grass is not adapted to live in our climate and requires a lot of water to keep it alive. By limiting turf grass on your property to the areas of active use you can dramatically reduce your watering needs.

- Convert an area of lawn or existing garden to "xeriscaping", a form of landscaping that uses drought tolerant plants.
- Replace high-maintenance grass with low-maintenance trees and shrubs. They provide shade that will reduce the amount of water needed to keep your lawn healthy and have deep roots that promote infiltration.
- Install a water-free landscape feature like a rock garden.

Consider natural landscaping for the rest of your yard. Natural Landscaping is the use of native vegetation that is well adapted to the soil, moisture and sunlight conditions of the property, greatly reducing long term maintenance. Natural landscapes have many other benefits as well.

- Provide a variety of habitats for insects, birds, reptiles and mammals.
- Once established they require very little maintenance, resist disease, and easily survive drought due to deep root structures; saving on water, fertilizers and pesticides.
- They can be designed to look natural or formal depending on your preference.
- You can use natural landscaping to create a rain garden that will capture runoff and allow it to soak into the ground instead of flowing into a nearby water body.

To further reduce water use and runoff from your property ;

- Recycle rainwater with a rain barrel. Rain barrels capture rainwater from your gutters and store it so you can use it later to water your plants.
- Direct downspouts into your yard instead of onto your sidewalk or driveway.


Native Planting


Rock Garden


Rain Garden


Rain barrel

Auditing irrigation systems

By Sam Bauer, Extension Turfgrass Educator sjbauer@umn.edu

Auditing your irrigation system is an important practice for maximizing water use efficiency in the home landscape. Audits entail checking for irrigation uniformity and converting minutes of irrigation to inches of water applied. A basic irrigation audit should be performed every spring as systems are charged up for the growing season. Below is a step-by-guide to auditing home lawn irrigation systems.

REPLACE BROKEN AND LEAKY SPRINKLERS

Step 1: System inspection

Run each irrigation zone. Look for broken sprinklers, low water pressure and arcs or angles of water spray that are distributing water where it is not needed (i.e. on streets). Replace sprinklers, correct water pressure accordingly, and make adjustments to the water distribution so your system is supplying water only where it is needed.

Step 2: Performance testing

Performance testing involves placing catch cans on the lawn in an evenly spaced grid pattern throughout an individual irrigation zone. Can should be placed 5 to 8 feet apart for small area spray-sprinklers and 10 to 20 feet apart for large area rotor-type sprinklers. A minimum of 20 cans should be used for each irrigation zone- more cans allow for greater accuracy. Tuna or coffee cans work well for this, or you can purchase specialized cans for conducting audits.

PLACE CATCH CANS ON A GRID PATTERN

After the catch cans are placed throughout an irrigation zone, run the zone for a set amount of time (30-60 minutes). A longer run-time provides more accurate results. Next, measure and record the depth in inches of water in each can. Repeat this procedure for each individual zone of your irrigation system.

Step 3: Uniformity calculations and scheduling zones

MEASURE THE DEPTH OF WATER IN EACH CAN

To calculate the precipitation rate of each irrigation zone, calculate the average depth of water in the catch cans for one hour of run time. For example, if the average depth of our 20 cans was 0.75 inches and we ran the zone for 30 minutes, our precipitation rate would be 1.5 inches per hour. For uniformity calculations, take the average depth of the lowest 25% of cans (in this case the five lowest cans) and divide by the overall average of all cans. For example, if the average of our five lowest measuring cans is 0.5 inches, divide 0.5 by 0.75 = 0.67 or 67%. Irrigation systems with lower than 60% uniformity should be adjusted for more uniform coverage.

Once you have calculated the precipitation rate for each zone, you can set the run times. If your goal is to apply 0.5 inches in one irrigation cycle and the precipitation rate is 1.5 inches per hour, set the zone for 20 minutes.

For more information:

U of M Extension Lawn Care: www.extension.umn.edu/turfgrass

U of M Turfgrass Science Blog: www.turf.umn.edu

Conducting an Irrigation Audit: www.irrigation.org/Resources/Audit_Guidelines.aspx

Water-Saving Strategies for Your Lawn

By Sam Bauer, University of MN Extension Turfgrass Educator sjbauer@umn.edu

Are you ready for a beautiful lawn this year? In the Twin Cities, on average three times more water is used during the summer than in the winter because of outdoor irrigation. Save money, keep your grass happy and help the city conserve water by following these water-saving tips:

1) **Watch the weather:** During a Minnesota summer, we may see heavy rains followed by extended drought. Save on your water bill by no longer relying on the "set it and forget it" irrigation schedule that is often programmed into automatic systems. Operate irrigation controllers in manual mode and turn the controller on only when your lawn shows signs of drought.

2) **Drought-friendly fescue to the rescue!** Whether you are establishing a new lawn or renovating an existing lawn, choosing the right grass species can make a difference! Fine fescue, and tall fescue offer the best drought tolerance. Fine fescues simply use less water, and tall fescue has a deep root system able to access more moisture.

3) **Adjust irrigation programs to conserve water:** To encourage rooting and drought tolerance, water your lawn infrequently (one time or less per week) wetting the soil six inches deep, assuming no rainfall has occurred. Depending on your soil type, your lawn may only need as little as a half-inch of water. Don't water in the heat of the day--set irrigation programs to water during the morning hours to retain moisture.

4) **"Water-wise" technologies:** Rain sensors connected to irrigation controllers are good water-saving devices along with "smart" irrigation controllers, soil moisture sensors and more efficient sprinklers. Smart irrigation controllers save water by automatically adjusting irrigation programs based on water use estimates or stored historical data. Inexpensive ($150 or less) soil moisture sensors can placed throughout the lawn and they won't allow an irrigation system to run if soil moisture levels are good.

5) **"Water-wise" lawn maintenance:** High mowing heights (3 inches or greater) and proper fertilizer use will not only improve your lawn, but reduce the amount of water it needs. Lawn aeration followed by top-dressing with quality compost can lessen compaction and add organic matter to soil. This improves water infiltration in heavy soils as well as increase moisture-holding capacity of sandy soils that drain rapidly.

6) **Change your expectations:** When it's dry, your grass may not be as green—it may even go dormant. That's okay—it's very rare to have extended droughts that completely compromise the integrity of a lawn.

7) **"Water-wise" landscapes:** Right plant, right place—choose plants that are well-suited to your site including drought-tolerant plants for dry areas. Mulch garden beds to retain soil moisture and reduce weeds. Retain water on-site using rain barrels, raingardens, and planted slopes.

Finally, consider conducting your own irrigation audit—done properly, homeowners can save up to 50% on their water bills!
http://blog-yard-garden-news.extension.umn.edu/2016/09/water-wisely-auditing-home-lawn.html

For more information, go to U of M Extension Lawn Care:
www.extension.umn.edu/turfgrass

Water-Saving Strategies for Home Lawns

By Sam Bauer, University of MN Extension Turfgrass Educator sjbauer@umn.edu

Water use in the home landscape is a hot topic- even in Minnesota. In the Twin Cities, on average three times more water is used during the summer than in the winter and much of this water is used outdoors. As urbanization increases and we continue to experience more extreme heat and drought, greater pressure is placed on our water resources. If you own an irrigation system or water your lawn with portable sprinklers, reduce your overall water use by implementing the following water-saving tips.

WATER-SAVING TIPS

1. **Pay attention to the weather:** During a Minnesota summer, we may see heavy periods of rainfall followed by extended drought. Homeowners with lawns should adjust irrigation practices accordingly. This means no longer relying on the "set it and forget it" irrigation schedule that is often programmed into automatic systems. Operating irrigation controllers in manual mode is one way to solve this issue: turn the controller on only when your lawn shows signs of drought.

RESEARCH AT THE U OF M HAS IDENTIFIED FESCUES AS THE MOST DROUGHT TOLERANT FOR LAWNS

2. **Select lawn grasses that use less water and can tolerate drought:** Whether you are establishing a new lawn or renovating an existing lawn, choice of grass species will impact irrigation requirements. Traditional grass species for Minnesota include Kentucky bluegrass, perennial ryegrass, fine fescue, and tall fescue. Fescue species offer the best drought tolerance. Fine fescues simply use less water, and tall fescue has a deep root system able to access more moisture.
3. **Adjust irrigation programs to conserve water:** To encourage rooting and drought tolerance, lawns should be irrigated infrequently (one time or less per week) with a sufficient volume of water to wet soils to a depth of six inches, assuming no rainfall has occurred. Depending on your soil type, your lawn may only need as little as a half-inch of water. Set irrigation programs to water during the morning hours. Watering during the heat of the day reduces the amount of water absorbed by the soil and made available to plants.
4. **Audit your irrigation system:** Auditing your irrigation system is a good step toward water conservation. Irrigation contractors will perform this service for you if you contract with them. There are three basic steps: 1) check system components including sprinklers, valves and controllers; 2) conduct a performance test, and 3)

program the controller. For more information on conducting an irrigation audit, see "Conducting and Irrigation Audit" noted at the end of this article.

5. **Implement water saving technologies:** Rain sensors connected to irrigation controllers are good water-saving devices. Over the past decade, we have also witnessed "smart" irrigation controllers, soil moisture sensors and more efficient sprinklers. Smart irrigation controllers save water by automatically adjusting irrigation programs based on water use estimates or stored historical data. Additionally, inexpensive ($150 or less) soil moisture sensors can be purchased and placed throughout the lawn. These sensors will not allow an irrigation system to run if soil moisture levels are adequate. Many municipalities offer rebates (as much as $250) for installing these smart irrigation devices on your home irrigation system.

6. **Improve soils and lawn quality through good maintenance:** Lawn care practices have a direct impact on irrigation requirements. High mowing heights (3 inches or greater) and proper fertilizer use will improve lawn quality and reduce irrigation requirements. Aeration of a lawn followed by top-dressing with quality compost can lessen compaction and add organic matter to soil. This will improve water infiltration in heavy soils as well as increase moisture-holding capacity of sandy soils that drain rapidly.

PROPER INSTALLATION OF A RAIN SENSOR

7. **Recycle water when possible:** Recycling water for irrigation requires proper design of water storage containment and separate pumps to supply the water to irrigation sprinklers. Professional contractors who have expertise in this area have designed these systems for large commercial buildings and sports turf complexes. For homeowners, rain barrels can be purchased from local municipalities and companies for the purpose of reusing rain water to irrigate landscape plants.

8. **Change expectation:** Consider changing your lawn expectations to allow for temporary discoloration during drought periods. It is very rare to have extended droughts that completely compromise the integrity of a lawn.

9. **Design landscapes for water conservation:** Choose plants that are well-suited to your site including drought-tolerant plants for dry areas. Mulch garden beds to retain soil moisture and reduce weeds. Retain water on-site using rain barrels, raingardens, and planted slopes.

For more information:

U of M Extension Lawn Care: www.extension.umn.edu/turfgrass

U of M Turfgrass Science Blog: www.turf.umn.edu

Conducting an Irrigation Audit: www.irrigation.org/Resources/Audit_Guidelines.aspx

Watering Newly Planted Trees and Shrubs

University of MN Extension

Newly planted trees and shrubs need regular and consistent watering until root systems establish. Root systems of bare root, containerized, and balled and burlapped trees and shrubs have been severely reduced or restricted by nursery management practices. After planting, root systems will grow and establish until they are much wider than the above ground portion of the plant. During this establishment time, newly planted trees and shrubs need consistent watering to prevent water stress.

When to water

Newly planted trees or shrubs require more frequent watering than established trees and shrubs. They should be watered at planting time followed by watering at the following intervals:

Table 1. Watering schedule for newly planted trees and shrubs

Weeks after planting:	Watering frequency:
1-2	Daily
3-12	Every 2-3 days
Until established*	Weekly

* See Table 2 for tree establishment time. Shrubs establish in 1-2 years.

How long does it take for tree and shrub roots to establish?

Newly planted shrubs are considered established when their root spread equals the spread of the above-ground canopy. In Minnesota, this will take 1-2 years.

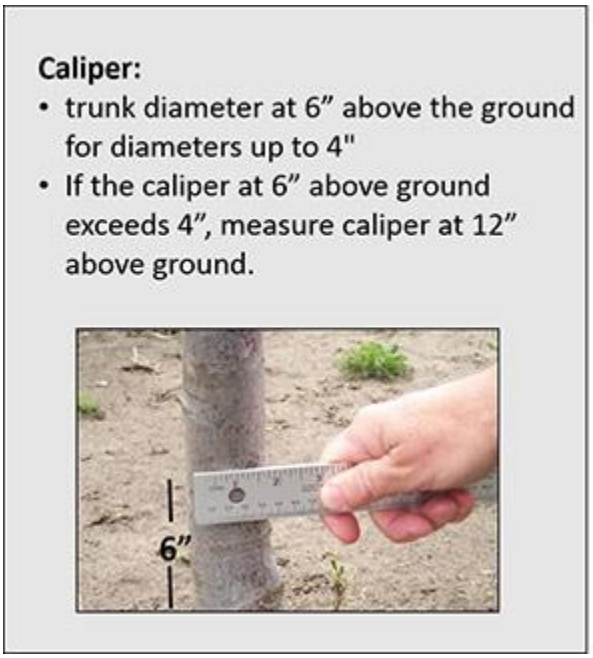
Establishment times for trees increases with tree size. Trunk caliper at planting time can be used to determine the time it takes for roots to establish (Table 2).

Table 2. Establishment time and watering volume for newly planted trees.

Caliper (inches)	Root establishment time for trees (years)	Water applied during each irrigation (gallons)
1	1.5	1-1.5

Table 2. Establishment time and watering volume for newly planted trees.

Caliper (inches)	Root establishment time for trees (years)	Water applied during each irrigation (gallons)
2	3	2-3
3	4.5	3-4.5
4	6	4-6
5	7.5	5-7.5
6	9	6-9



How to measure tree caliper.

Where to water

Apply water directly over the root ball. Also be sure to keep the backfill soil in the planting hole moist. This encourages the roots to expand beyond the root ball into the backfill soil. Tree roots grow approximately 18 inches per year in Minnesota so remember to expand the area being watered over time.

Initial watering of a newly planted tree or shrub is easily accomplished by creating a circular mound of earth 3 to 4 inches high around the plant at the edge of the root ball to create a reservoir for irrigation water. A slow trickle of water can be used to fill this reservoir, which

allows water to slowly infiltrate into and around the root ball. Treegator® bags can also be used to provide a slow delivery of water over the root balls of establishing trees and shrubs.

Mulching trees and shrubs maximizes water uptake

When trees and shrubs are planted into turf, competition for nutrients, water, and space occurs below ground between turf roots and woody plant roots. Turf wins because its dense fibrous root system prevents woody plants from producing water- and nutrient-absorbing roots in the top few inches of soil. As a result, woody plant establishment and growth is slower in turf areas than in mulched or bare soil areas.

To optimize root production, water uptake, and establishment of newly planted trees and shrubs:

1. Eliminate turf and weeds from the base of the plant out to several feet beyond the plant canopy.
2. Leave the top of the root ball bare and start the mulch application at the outer edge of the root ball.
3. Apply a three inch layer of organic mulch around newly planted trees and shrubs in a circle that extends several feet beyond the tree or shrub canopy.

Mulching around newly planted trees and shrubs with organic materials (wood chips, pine needles, etc.) has several advantages over bare soil cultivation. Mulch:

- decreases water evaporation from soil.
- serves as a sponge that prevents runoff around plants growing in heavy clay soils or on sloped sites.
- helps to control seed germination and growth of weeds.
- insulates soil and buffers extreme summer and winter soil temperatures.
- reduces soil compaction from mowing equipment.
- prevents damage to stems and trunks by lawn mowers and weed cutters.
- improves soil health (increases microbial activity, nutrient- and water-holding capacity, soil pore spaces, and air penetration) as it decomposes.

Deep mulch applications can be problematic because they may:

- prevent movement of rain or irrigation water into the root ball of newly planted trees and shrubs. This can result in root desiccation and plant stress.
- lead to root production and growth in the mulch. This often results in circling and stem-girdling roots.
- reduce oxygen levels around roots and cause root suffocation.
- keep poorly drained soils too wet, which favors root rot development.
- keep bark excessively wet when piled around trunks and stems. This may lead to bark decay.
- create habitat for rodents that chew bark and girdle trunks and stems.

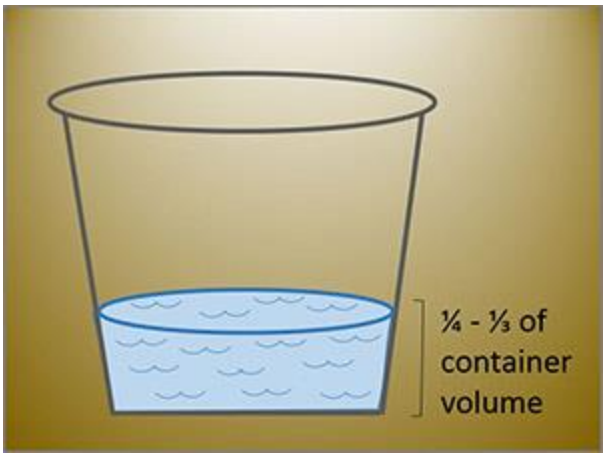
  Other images:

Kathy Zuzek, UMN Extension

Create a reservoir over the root ball for watering

Kathy Zuzek, UMN Extension

Treegator® bags hold 14-15 gallons of water and release a slow trickle of water over 5-9 hours



Kathy Zuzek, UMN Extension

Water newly planted shrubs with a volume of water that is 1/4-1/3 of the volume of the shrub container

Kathy Zuzek, UMN Extension

Apply a 3" layer of mulch from the outer edge of the root ball to several feet beyond the plant canopy

Kathy Zuzek, UMN Extension

This tree's root system was 12-13' wide before it was balled and burlapped