

WATERING 101

*Use Buckets
Not Teacups*

Soil Prep • Planting • Watering Basics

**Water Deeply
when you water**

**Too much &
Too little Water
can look the same**

*Roots Go
Where the water is*

*Hand Water
First 3 Weeks*

**“ROUGH WEATHER
MAKES STRONG TIMBER”**

Deeply & Infrequently

**Roots need Air
as much as Water**

Over-watering = Too Frequently

Proximity ≠ Like Conditions

**ONLY New Plantings & Pots
OK with Daily Water**

First months determine Future

**MULCHING
CONSERVES WATER**

*Water needs
change*

Water to Establish

*Drought Tolerant Plants
AREN'T until established*

**Maximize Self-Sufficiency
with Deep Roots**

**How often?
When they need it!**

Long, Deep & Slow

**Daily Water
= Dependent Plants**

Group like Plants

**Shallow Watering
= Shallow Roots**

*Best Water Meter
= Your Finger*

**No such thing as
Too Much Water
at any One Time**

WATERING 101

The #1 Question: “HOW OFTEN SHOULD I WATER?”

The REAL answer: “WHEN YOUR PLANT NEEDS IT!”

THE GOAL

For your plants to be as self sufficient as possible.

THE BASIC GUIDELINES

- Amend your soil with compost & mulch.
- Build watering basins around new plants.
- Hand water for at least the first week or two.
- Water deeply & thoroughly when you water.
- Allow as much time between waterings as possible.
- Pay close attention to your plants for the first 3 months.
- Adjust your watering as conditions change & as plants mature.
- Enjoy your garden regularly, look at your plants & listen to their needs.

THE PROCESS

Understanding the process of planting and establishing a new plant is the key to a new way to think about water. The focus here will be on in-ground planting but the same general concepts apply to container gardening but the stresses are magnified due to a limited soil volume and greater exposure to the elements.

SOILS

We can't really talk about watering without a bit on soils first. Where you plant and the condition of the soil ultimately determines what happens to the water you apply. We have mostly clay soils around here so digging a hole can be a challenge & the temptation to replace the native soil with a nice potting mix can be great. The truth is, clay soils are good soils, they just need to be broken up with organic matter to create space for air because roots need air just as much as water and nutrients.

Dig a hole twice as wide & an inch or two deeper than the rootball, mix the soil from the hole 50/50 with compost discarding any clods that won't break up. You should take every opportunity to amend your soil, organic matter decomposes & needs replenishing. This is your last chance to affect the texture of the soil around your new plant so don't skimp. As for replacing the soil... don't! A transitional blend between the soil in the pot & the native soil is crucial for proper drainage.

If you encounter *hardpan*... that impenetrable layer of compacted clay just below the surface... what should you do? Ideally, you'd plant in another location. If that's not possible, stop digging and consider planting on top of it and mounding the soil above grade. You want to avoid digging into hardpan unless you can get all the way through or it will act like a pot without a drain.

PLANTING

Now that the hole is ready, it's time to prepare the plant. Remove the pot by tipping it over so the plant slides out. Avoid pulling it out by the stem. Loosen the roots so they are free to grow into the new soil. Position the plant so the top of the root ball is even with or slightly higher (~1/2") than the edge of the hole and fill in with your newly amended soil. Firm it around the root ball as you go with a gentle open hand (not a grinding heel). The idea is to maintain all the airspace we've created by adding organic matter while providing enough support to hold the plant upright.

Planting too deep is a common mistake with deadly consequences. The crown (the main stem at ground level) and the surface roots need air, bury them too deep and they'll choke. It's always best to err on the side of too high, if roots become exposed they can always be covered with a layer of mulch. This can also be a problem with established plants if the soil level around them is raised for any reason. You should always be able to see the flare of the trunk (where the roots begin) at or above ground level. If you don't, pull soil away until you can.

Build a watering basin around your new plant by mounding leftover amended soil in a ring just outside the diameter of the plant. This way you can apply plenty of water to soak the original root ball (where the roots are now) and the surrounding soil (where you want the roots to go). For the first few weeks, especially in the summer, you may need to water every day but as the roots grow out into the surrounding moistened soil you will be able to water less & less frequently.

WATERING TO ESTABLISH

The goal of good watering (deeply & infrequently) is to encourage roots to grow deeper and access a larger, more stable volume of water which isn't subject to the drying effects found at the surface. Deep soaking puts water down where you want the roots to grow & infrequent watering forces them to go searching. Shallow and/or frequent watering will create a shallow root system more subject to the elements. After the first few months, a properly established tree should be able to go a week between waterings, the following year, a month and by the second season it should be self-sufficient only needing water during extreme conditions. The smaller the plant, the smaller the root system but the concept is the same... shrubs may ultimately need water only monthly, perennials maybe only weekly, your lawn only every 3rd day and annuals every other day! Only new plantings and plants in pots are OK with daily water when needed.

GARDEN WATERING

Even an established garden which is used to frequent, shallow watering can be retrained and made more self-sufficient. Surface roots will remain but you can encourage new deeper roots by applying the same concepts discussed above. **Step one:** water half as frequently but twice as long. Each month you can extend the time between waterings and water longer. Within a year your plants should be retrained.

HOW TO WATER

How you apply water has a lot to do with where it ends up. Very few soils around here can absorb an hours worth of water applied all at once, you may have to apply it more slowly or in smaller doses. So how do you **deep water**?

When watering by hand: for smaller plants, it's best to build a basin which extends just beyond the drip line and fill it 2 or 3 times. For larger plants apply a slow trickle of water for 20-30 minutes at several spots around the drip line of the plant.

When watering by sprinkler (in ground or manual): run your sprinkler to the point of run-off, turn off and allow the water to penetrate, repeat once or twice. Most sprinkler systems can *and should* be programmed to cycle through stations repeatedly. You can determine the output & efficiency of your sprinklers with the 'can-test'. Space shallow cans in a straight line out from sprinkler, run sprinkler for 30 minutes, take note of the various amounts of water in each can and adjust your watering technique accordingly. It's always best to water in the morning so your plants are dry before nightfall when wet foliage will encourage a number of diseases.

When watering by drip system: run system long enough (usually an hour or two) to apply adequate water, most emitters are a gallon or two *per hour*. Water moves down and out through the soil wetting a cone of soil so initially emitters should be placed on top of the root ball... a few inches

out to the side and the water will miss the roots. Established plants are best with multiple emitters placed farther from the trunk so roots on both sides are watered. Shallow rooted plant such as Azaleas cannot be watered with drip. If they are on the same line, use micro-sprinklers to spread the water over the surface and wet the entire root zone. Check emitters regularly, they clog easily.

How often: determine watering **frequency** by periodically measuring how long it takes for a plant to start wilting after it's been watered thoroughly... this is the maximum time between waterings under those weather conditions. "*Needs regular watering*" is different for every plant but basically it means that plant will never be entirely self-sufficient. The **Time to Wilt Test** is a good way to determine each plants need.

FACTORS TO CONSIDER

Keeping in mind the general concepts discussed above, here are just *some* of the variables to consider for each individual planting:

Plant type: Trees root more deeply than shrubs or perennials, leaves that are smaller, grayed, or needle-like are all adapted to require less water. Natives may need water for the first month or two but then want nothing beyond what mother nature gives them.

How long established: Assuming good watering practices, the longer a plant is in the ground the less watering it will need. New plantings, on the other hand, can require water more than once a day - check on them frequently.

Soil conditions: The fine particles of clay soils accept water more slowly & hold onto it more tightly than sandy or loamy soils which drain more quickly. Water applied on a slope needs to be slowed in order to penetrate (basins, mulches, drip emitters, etc.).

Exposure: The amount of sun & when it's received affects how quickly a plant will dry as will reflected heat from walls & wind.

Weather: Cool and humid weather (fall & winter) minimize water usage while warm, dry & windy weather (spring & summer) are demanding. Spring and summer also signal higher water use because plants are actively growing and conditions are more extreme.

MOST COMMON PITFALLS

- Poorly amended soil
- Planting too deep
- Shallow watering (= shallow roots)
- Watering too frequently
- Forgotten irrigation systems (clogs, adjusting for weather, etc.)

THE NEW WAY TO THINK ABOUT WATERING

Like a parent, take extra care in the beginning to nurture your plants, meet their needs (without spoiling them) and help establish them so they become as self-sufficient as possible.