Watershed Management Group

BYOB

Build Your Own Basin

Friends,

It's time to BYOB! Building a water harvesting basin is a simple practice we can all do that invites nature's abundance into our yards and neighborhoods.

Tired of hearing bad news about wildfires raging, record hot summers, droughts, and dried-up rivers? Then building a basin is your antidote!

Just imagine standing under the shade of your trees on a hot summer day, watching the birds and butterflies enjoy the wildflowers, and enjoying green space you can share with your neighbors. All while conserving precious water!

Check out our how-to videos, classes, workshops, and more at Watershedmg.org or call 520-396-3266.

Lisa Shipek

Executive Director

How to BYOB – Build Your Own Basin!

Building a basin is a simple task that you can accomplish with these eight steps. By starting small, and observing your yard in the rain, you can create your own beautiful basin in just a few hours. Grab your favorite beverage and get started!

Step One: Observe the Rain

Next time it rains, go outside and see where the rain falls and accumulates. Where does it come off the roof? Does it pool in your landscape and quickly run off to your driveway and into the street? Does it flood in an area you don't want it to?

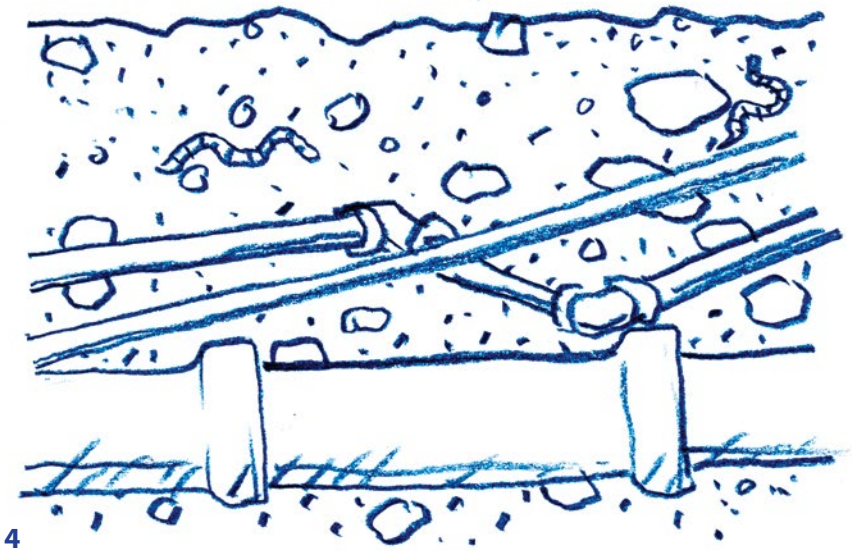
Now observe your neighbor's yards and the street. Does any water flow from neighbor's yards to yours? Does water flow from the street into your yard? You will want to consider if there are sources of stormwater that are flowing onto your property.

Pro tip:
Draw out all the places water flows or pools in your yard on a simple map to help you document what you observe and determine the best location for your basin.

Step Two: Choose Your Basin Location

Using what you have learned from observation, choose a location for your basin that can benefit from the way water flows. Make sure it is at least five feet from your house so water won't sit next to your foundation. If there's an existing tree or shrub you want to support, you'll want to dig just at the edge of the existing plant canopy. This will concentrate water at the "drip edge" where roots are actively taking up water.

You'll also want to call your utility company locator at least three days before you plan on digging (In Arizona, that's AZ 811 or fill out a request online at Arizona811.com). They will send a locator to your property to mark any underground lines, pipes, or cables so you can dig safely. Do your best to avoid building basins over underground lines – you want to avoid puncturing these lines whenever possible!



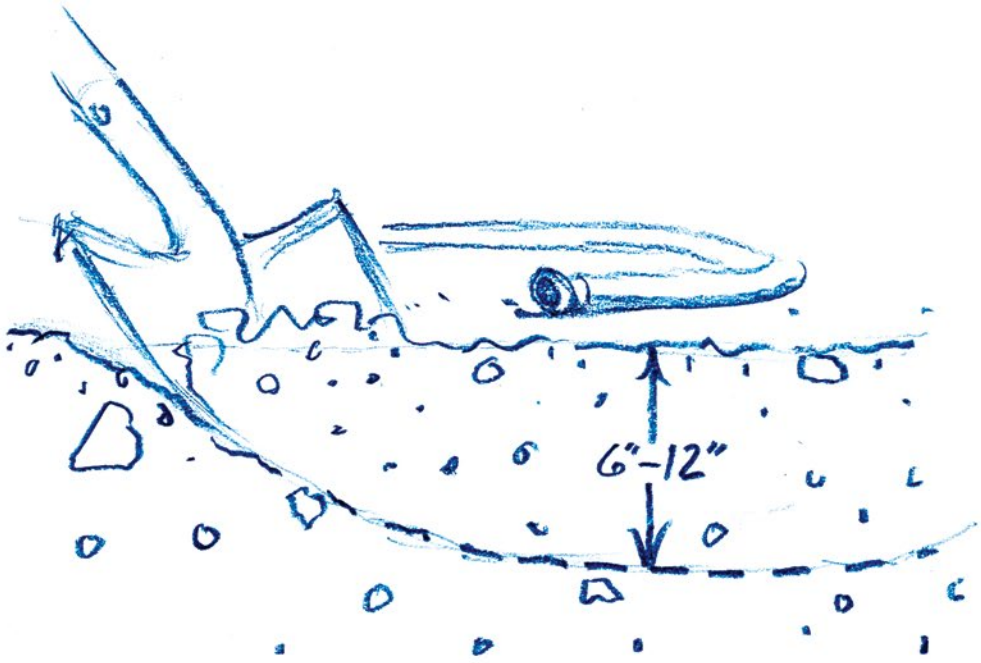
Step Three: Dig Your Basin

Now that your location is approved, just grab a shovel and dig! Okay, it might be a little more complicated than that…

First, mark the outer shape of the basin to guide your digging. You can mark it with a shovel, your foot or use simple markers or stakes. Basins can really be any shape, but water will enhance curves and erode away sharp corners, so curvy ovals last longest!

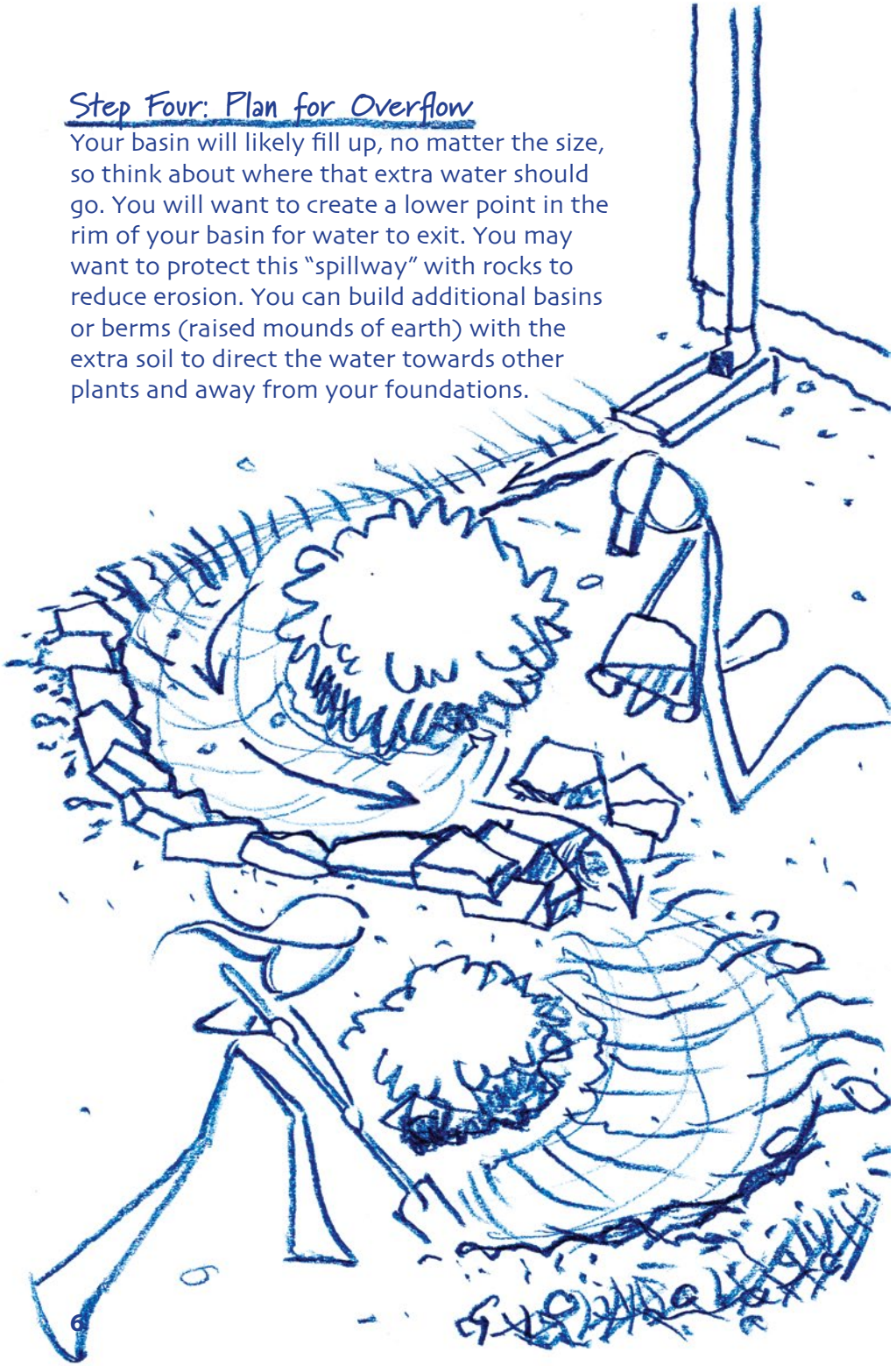
Dig down between 6 and 12 inches. Deeper basins will have more capacity to capture water, but you will need to consider how to prevent the basin sides from eroding. WMG recommends 6 to 8 inches deep for smaller basins.

To make the digging easier, wet the ground the day before, or dig after a rain!



Step Four: Plan for Overflow

Your basin will likely fill up, no matter the size, so think about where that extra water should go. You will want to create a lower point in the rim of your basin for water to exit. You may want to protect this "spillway" with rocks to reduce erosion. You can build additional basins or berms (raised mounds of earth) with the extra soil to direct the water towards other plants and away from your foundations.



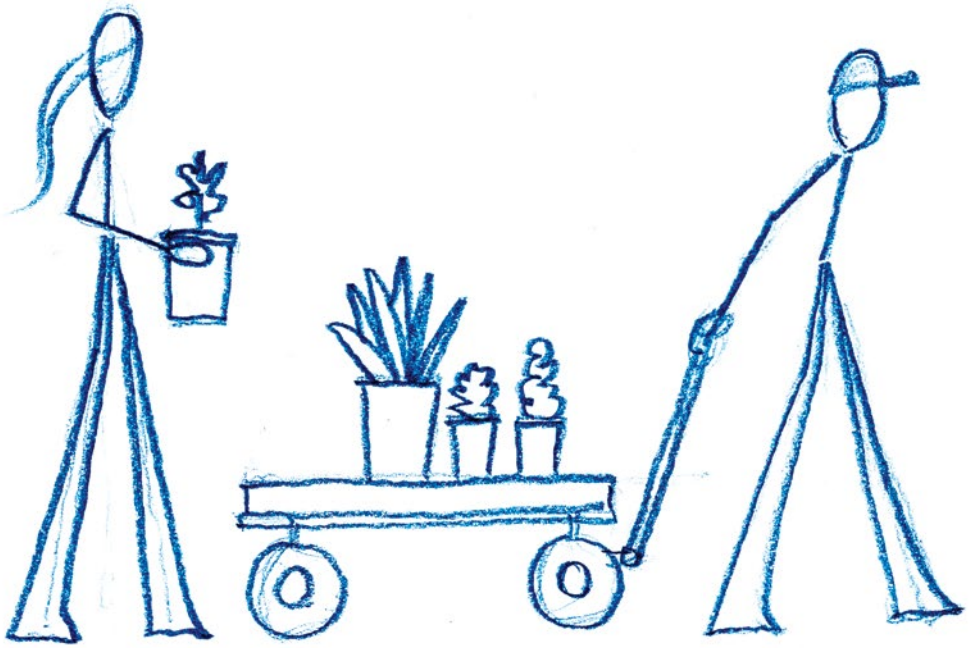
Step Five: Create Gentle Slopes

For a simple basin, we recommend having gently sloped sides instead of steep sides or steps. After digging, use the flat side of a hard rake along the inside edges of the basin to smooth it out. A 33-degree angle looks natural and has limited erosion potential. Anything steeper than that will likely require rocked edges or gravel to reduce erosion.

Step Six: Plant Like Nature

Choosing your plants is quite exciting, and we encourage you to use native plants, plants that are naturally found in your bioregion. For example, try to find out what plants grow in a 50-mile radius of your home that are found at a similar elevation to you. If that sounds too complicated, research nurseries that specialize in native plants, and ask them what they recommend.

Again, look to nature for inspiration! Plant cacti outside and around the basin, native trees on basin slopes, and grasses in the deepest part of the basin. Perennials and shrubs can be planted on small terraces on the inside slope of the basin. These terraces can be stabilized with rock to keep them from eroding over time.



Step Seven: Add Mulch

Mulch limits evaporation and increases moisture retention to allow your plants to use more of the water you spent so much time getting to them! It also limits weeds and adds additional nutrients, so it is good to use when your plants are getting started. We recommend using organic mulch, like wood chips, which you can often get for free from tree trimming companies. As your trees and shrubs mature, they may drop leaf litter. Use this to replenish the mulch in your basins each season.

Step Eight: Observe and Adjust

Enjoy your basin and observe it when it rains! You will see how well your basin captures water, and if you need to make any adjustments to your inflows or overflows.

For more guidance, check out our BYOB how-to videos and other resources at: **Watershedmg.org/BYOB**

Notes and Observations

How to Plant a Native Tree With Your Basin

Rain gardens are best paired with native trees. Native plants have evolved in the place they are growing over thousands of years and can thrive on rainfall alone. They play an important role by providing critical habitat and food for wildlife.

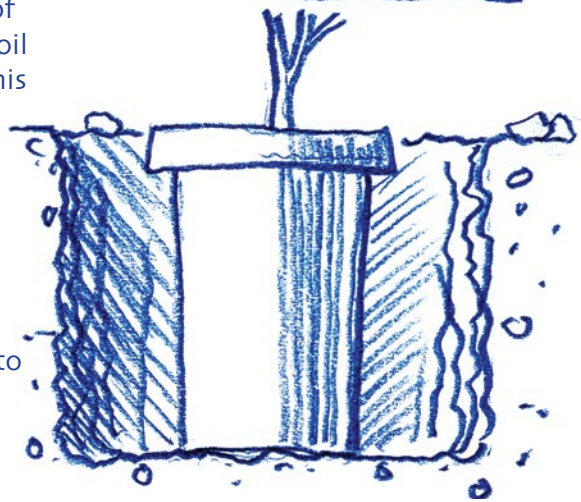
In the Sonoran Desert, we recommend velvet mesquites, desert ironwoods, and blue palo verdes as shady native trees. Call nurseries ahead of time and ask if they carry these native trees.

Step One: Pick a home for the tree

Trees generally do better adjacent to a basin or on a raised terrace within a large basin. As the tree grows, its roots will extend to seek the rain-soaked soil stored underneath the basin. Avoid planting trees at the bottom of a basin because it can be damaging for the base of the tree to be soaking in water.

Step Two: Dig a hole based on the tree pot size

Dig a hole twice the width of the pot and as deep as the soil in the pot. You will re-use this soil to refill around the tree roots in a moment, so place excavated soil to the side. No compost or other soil amendments are needed. If you encounter caliche (a cement-like soil layer), then try to break through it just to the side of where the tree is being placed.

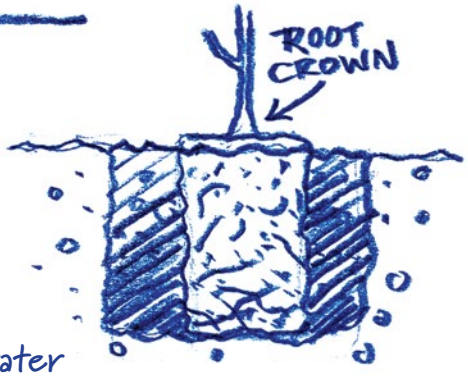


Step Three: Gently prepare the tree

Turn the pot on its side and press gently on the bottom and sides to loosen the tree in the pot. It should slide right out. Gently slide the root ball out of the pot, keeping the soil intact. If roots have grown thick at the bottom, gently break them up or trim off an inch at the bottom of the root ball.

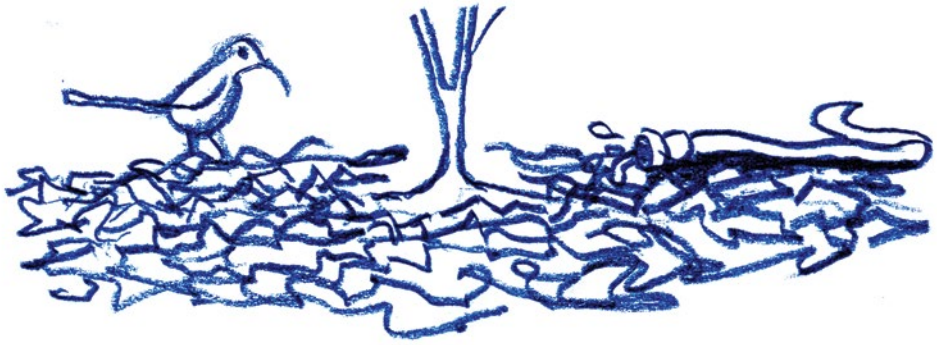
Step Four: Plant the tree

Place the root ball in the hole. Make sure the crown or base of the tree is level with or slightly above the surrounding soil grade. You want to keep the root crown uncovered by mulch. Fill soil back in around the tree and tamp lightly to remove open pockets.



Step Five: Add mulch and water

Add wood chip mulch over the area, but not right next to the base of the tree. Then give the tree its first slow and deep soak! You may want to create a little berm around the tree to keep water close to the tree to benefit its roots when hand watering.



How Much Rain Can You Harvest?

Calculate how many gallons of water you can harvest from your roof or other areas, like a patio or driveway. You'll be amazed by how many gallons you can harvest in a year!

Fill out this simple worksheet to find out.

1 What is your roof area (in square feet)?

_____ft x _____ft = _____ft²

Multiply the length by width of your house.

2 What is your annual rainfall (in feet)?

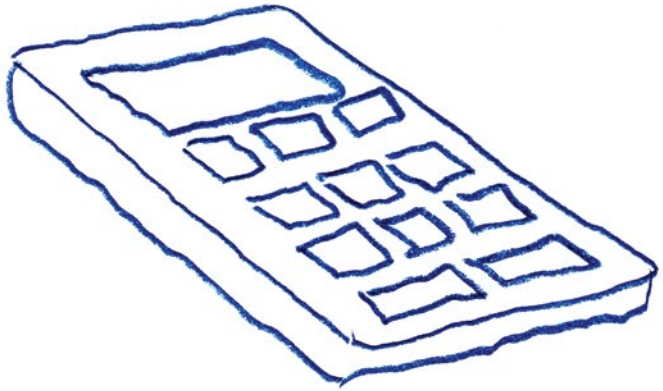
_____in ÷ 12 in = _____ft rainfall

Divide the inches of rain your local area gets each year by 12 inches to get feet of rainfall.

3 How many gallons can you harvest? Multiply your roof area (in square feet) by your annual rainfall (in feet) and then convert that volume to gallons. There are 7.48 gallons in one cubic foot.

_____ft² x _____ft x 7.48 gallons/ft³ = _____ gallons of rainwater each year

Multiply roof area (ft²) x annual rainfall (ft) x 7.48 (gallons/ft³)



Here's an example for a typical house in Tucson with 12 inches of annual rainfall:

1,000 ft² roof x 1 ft annual rainfall x 7.48 gallons/ft³ = 7,480 gallons per year

And, in a 1" rainfall that same 1,000 ft² roof generates:

1,000 ft² roof x 1/12 ft rainfall x 7.48 gallons/ft³ = 623 gallons per 1" rainfall

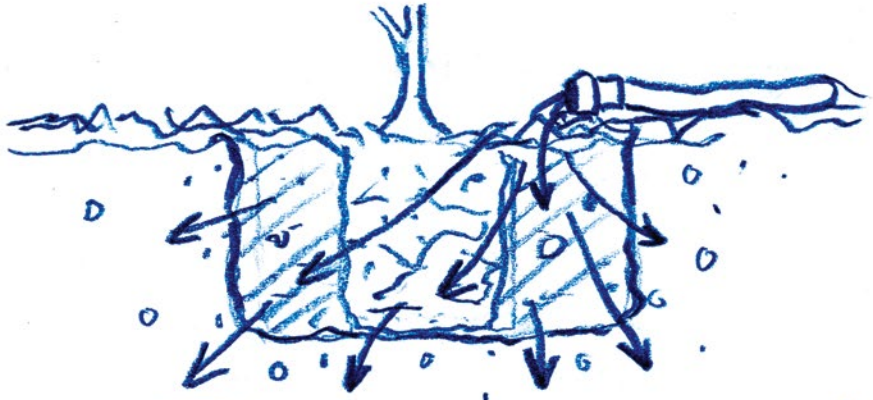
Water Your Tree & Plants to Get Established

Trees and other plants in your rain garden can thrive solely on rainwater and stormwater, but the plants that you transplant from pots will need supplemental irrigation to get their roots established, which can take one to three years after planting. To avoid the extra cost and plastic waste of an irrigation system, consider watering by hand or using a movable reusable irrigation system. If you are planting from seeds, spread them before the rainy season, and the plants that sprout should not require additional irrigation for establishment.

Remember, plants native to the Sonoran Desert are accustomed to having dry periods between rains. Your supplemental irrigation to establish the plants should have a wetting-drying cycle, so the soil is not always wet.

Water Deeply Instead of Spraying the Surface

Water with a hose on a low setting, put the hose close to the plant, and let the water seep into the soil. How you water will help train the roots of your plant. Water to encourage roots to grow down into the basin. It's better to let water seep down into the soil than to surface spray your plants.



Pro tip:
Another way to water is the five-gallon bucket system. Drill two small holes (¼" drill bit) in a five-gallon bucket. Place near the plant and fill near full for trees and 1/3 full for shrubs.

Watering Schedule for Native Plants

1st Year

First two weeks: water deeply right after you plant, and every two to three days

Summer & Monsoon: water two times per week (skip or water less if it rains)

Fall/Winter/Spring: water one time per week (skip or water less if it rains)

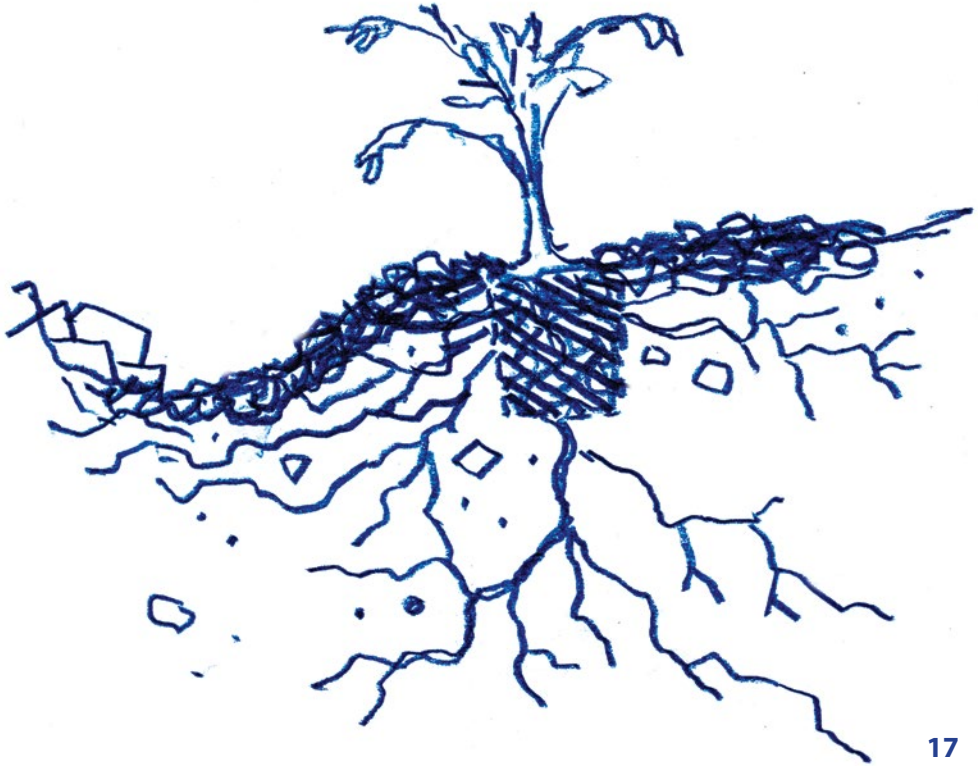
2nd Year

Summer & Monsoon: water one time per week (skip or water less if it rains)

Fall/Winter/Spring: water –one to two times per month (skip or water less if it rains)

3rd Year (and beyond)

Water monthly (only if needed) during dry summer months or during times of drought



Watershed Management Group

Watershedmg.org/BYOB

Watershed Management Group (WMG) is a non-profit organization that envisions a world where the relationship between communities and the environment creates prosperity for all.

If you are interested in joining WMG as a donor, visit **Watershedmg.org/Contribute** or return a check in the envelope provided.

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