

PLANTING YOUR NATIVE PONDEROSA PINE SEEDLINGS

By Anastasia Rabin, May 2004

In order to restore an area after a forest fire, we need to look at the whole picture. It is not enough to simply plant a tree, because tree planting on its own does not qualify as restoration. Restoration consists of an integrated process where tree planting happens in conjunction with other strategies such as; erosion control, water harvesting, mulching, re-seeding of native grasses and annuals, and planting of successional species and other native plants for wildlife.

As well intentioned as it may seem, planting can actually do a lot more harm than good when non-native and invasive species are introduced. The Santa Catalinas are home to a genetically unique "sky island ecosystem". The trees and plants that live here have adapted to the specific conditions of these mountains, including fire, and will therefore be able to thrive within the conditions and limitations that naturally occur. The native wildlife depends on this native vegetation for its livelihood.

I strongly encourage people to plant only vegetation that is native to the Santa Catalinas. It is not sold at Home Depot, or Wal-Mart and you may not be able to find it at many of the places where you usually shop, but don't panic! Every effort is being made to provide you with all of the information that you need, as well as free seed and free tree seedlings through Trees For Mt. Lemmon. Any non-natives that may have been planted since the fire should be removed or replaced so that Mt. Lemmon can retain its unique character for generations to come.

This workshop is designed to help you get the best results from your planting efforts, after you have obtained the appropriate, native planting material. Keep this handout as a reference; it contains all of the material that we will cover today. If all of this seems a bit overwhelming don't worry. Nature, with time, will heal the mountain. These are just some things that we can do in the meantime, to help speed up the natural process of recovery.

AN OVERVIEW OF THE PLANTING PROCESS

1. Select general areas where you would like to plant trees.
2. Narrow down these areas based on the criteria outlined in this handout.
3. Test the ground to see how easy it is to dig.
4. Digging conditions
 - a. If the digging is easy and there are no rocks in the way, you can construct your rainwater harvesting earthworks prior to planting your tree.
 - b. If digging is difficult, your rainwater harvesting earthworks will have to be built around the places where you are able to make a good enough hole. You can mark these places by putting stakes or sticks in the ground.
5. Plant your tree.
6. Water and Mulch your tree.
7. Maintenance.

WHEN TO PLANT

- Plant your trees after all of the logging and construction on your site has been completed.
- Make sure that you have addressed all of the potential erosion issues on your property. -Plant when there is adequate moisture in the soil. (This will also make the digging a lot easier):

There are three potential seasons for planting:

1. Springtime- when the snow is melting. Moisture at this time of year is generally limited to the amount of snow-pack leftover from winter. Spring can be a moist and cool season but it is generally short-lived and precedes our hottest and driest months. Trees planted at this time of year will have a shorter period of time in which to become established.
2. **SUMMER**- during the monsoon rains. Local foresters recommend that you plant your trees at this time. The season brings welcome relief from high temperatures and drought, but rain patterns are unpredictable. You will still have to water your trees during dry spells. Heavy monsoon rains have the potential to do more harm than good in areas that have been impacted by forest fires. Without ~e vegetation in place to buffer and absorb the heavy rain as it falls, water flows quickly over the surface in the form of runoff, carrying much of the soil with it. If you have any potential erosion issues on your site you will most likely be faced with them. after the first big rain. Make sure that you don't plant your tree where it will wash away!

FALL- after the monsoon rains. This can be an ideal time for planting when the soil is still moist, and has not yet frozen. Trees will still need watering during the lingering hot and dry months, but cooler temperatures will soon start to slow down evaporation leaving a full six months or more in which trees can become established before the summer heat begins again.

WHERE TO PLANT

Start by defining general areas that are suitable for planting using the following criteria:

1. Follow the Firewise Guidelines
2. Choose sites that you like.
3. Choose sites that are convenient to access and maintain.
 - a. Where your garden hose can reach.
 - b. Next to a path or driveway where you will be walking anyway.
4. Choose a site where there is enough soil to dig a hole.
5. Look for opportunities to harvest rainwater, runoff, and possibly even greywater.

You can stack functions. Think about what you want from your tree and plant it in a place where it can serve multiple functions, such as:

- Screening for privacy
- Beautification and aesthetics
- Shade
- Passive cooling for your house (when planted on east or west sides)
- Windbreak .
- Wildlife habitat

If you are planting in a rainwater harvesting earthwork, you can think about how the placement of your planting could also help to control flooding and erosive runoff.

What does your tree need from you?

In nature, tree seeds germinate and grow when and where conditions are suitable for their survival. When we plant trees, we make the decision about where the tree will have to live. It then becomes our responsibility to ensure that the tree has what it needs for survival. Tree seedlings need: soil, moisture, nutrients, and shade from the hot afternoon sun. Look for "microsites". A microsite or microhabitat is a low, protected area that provides an ideal habitat for your tree's needs.

Where NOT to plant:

-On top of a mound of dirt: Since water flows downhill and settles in low areas, high spots are the first to dry out. Plant in low spots where the moisture will stay for longer.

-In a place that is difficult to access. Chances are that you will either forget or get tired of taking care of your tree. Make it easy for yourself.

What is rainwater harvesting?

Rainwater harvesting is the act of catching and utilizing rainwater as close as possible to where it falls. Many people are familiar with the use of cisterns or tanks for storing rainwater for later use, but fewer are familiar with the concept of storing and using rainwater in the existing soil, or in vegetation. Imagine your Ponderosa as a living cistern. The water that you harvest gets put to immediate use by your tree, which in turn can be used and appreciated by you and your neighbors, while becoming a part of the forest ecosystem

Harvesting rainwater is both an art and a science. It can be very elaborate, technical, and used on a massive scale, but it can also be as simple and small scale as moving a few rocks or sticks to the downhill side of your planting. Even an act as simple as this can have major positive impacts.

A rainwater harvesting earthwork is essentially a net in the flow. It is any reformation of the landscape that slows down or redirects the flow of water allowing infiltration *into* the soil, rather than erosive runoff *over* the soil. Think of it as a human made microsite. Oftentimes, earthworks consist of a low basin, or planting area, a berm, which is a raised barrier in the path of water, or any combination or variation of these basic formations.

Both the strategy that you choose and the scale on which it is implemented depends entirely on the specific conditions of your site and how much you want to invest in it. For the purposes of this workshop we will be investigating only those strategies that provide the most benefit for the least amount of time and energy spent.

The benefits of harvesting rainwater in the soil:

- Enables you to transform potentially damaging runoff into a resource.
- Helps to control erosion both on your site as well as downhill and downstream of your site.
- Prevents soil loss. By slowing down the flow of water we also slow down the flow of nutrient-rich sediments in the water. As water infiltrates into the soil, these sediments collect

on the surface, providing ideal planting beds.

- Maximizes the potential of any source of water. Whether it is coming from a hose, bucket, storm cloud, or snow-bank, thereby minimizing the amount of supplemental irrigation needed, and gets that water deeper into the soil.
- Reduces maintenance needs by working with nature rather than against it.
- Helps to keep mulch in place reducing the need for re-mulching.
- Protect new plantings from low-angle sun and wind.

Planting your tree

Once you have narrowed down a specific location for planting you should test the ground for digability. If you are unable to dig a hole of the appropriate size for the tree you will have to try another spot. If you are in a very rocky area, the best way to find a location is with a pick. Test the ground with light swings of the tool, passing over the spots where you hit rock. Once you find soil, you can give the pick a good swing, sinking the blade. Then, with the blade still in the earth, jiggle the handle around to test and start breaking up the rocks and soil. The nice thing about using a pick is that you can find the spaces between the rocks more easily and pry them out of the hole.

Now use a digging bar, shovel, yogurt container, or anything else that is handy to enlarge the hole to the appropriate size. **THIS IS VERY IMPORTANT** - a well-planted tree starts with a well-dug hole. Your hole does not have to be much wider than the root ball of the tree, but it is good to be able to fit your hand down in there along with it as you are planting. Adequate depth of the hole is critical. When you fill the soil in around your tree it should ideally come up to (but not bury) the bottom needles. At the very least, it needs to bury the root collar (*see tree anatomy drawing*). The root collar does not always correspond to the level of the soil in the container as this soil is often disturbed or lost during transport. As you dig, you can periodically measure the depth of your hole by placing the tree (still in its container) into it to see how far the soil will come up after it has been filled in.

Once the hole is deep enough, clear it of any debris, organic matter, or rocks. You want the roots of your tree to be planted in subsoil. Clear any grasses or weeds from a 12" radius around the hole that might compete with the tree. Now you can remove the tree from its container and set it down into the hole, taking care not to damage the root ball. Both the above and below ground portions of the tree need to be straight. Hold your tree so that it is vertically oriented while you pack the soil back into the hole around the root ball. You only need to use enough force to ensure that there are no air pockets. Excessive force can damage the roots. After replacing the soil you should be able to give the tree a gentle tug without it feeling loose in the soil.

If you haven't already, now is the time to construct your rainwater harvesting earthworks. Try to incorporate something into your berm that might provide your tree with shade from the late afternoon sun. If this is not practical, you can easily construct something. Pieces of wood or logs work great. Wood is preferable to rock because it does not absorb and radiate heat. Whatever you use should be at least 5" in height. Position it so that it is about 2 or 3" from the trunk of the tree and make sure that it will not fall over onto it. Water right after planting to give it a good start, remove any other air pockets, and settle the soil back into place. Now spread mulch over the area, put up a cage to protect the tree from hungry deer, and you're done.

Mulching

Mulching helps to protect the soil around the tree from drying, cracking, and erosion. It keeps the area cooler and moister. If you use an organic mulch it will also provide nutrients to your tree and help to build the soil as it biodegrades. This is the only fertilization that native trees need. Do not use any synthetic fertilizers, and do not mix any amendments *into* the soil as recent studies have shown that this can actually have negative effects on native trees. Spread a layer 3 to 4' thick taking care not to pile it directly against the base of the tree.

You can get mulch almost anywhere either by buying it or using what is around. I do not recommend rock since it heats up and does nothing to improve the soil. Straw is fine, but it also does little to build the soil. Wood chips, pine needles, and leaf litter work great. Choose whatever best suits your taste. If you limit your mulching to the areas around your plantings you should not have to worry too much about creating a fire danger. Finer mulches are less of a fire danger than coarse mulches but they decompose faster and therefore need to be replaced more often.

Cages

Cages protect young tree seedlings from deer, elk, and other hungry wildlife that love to eat the fresh new growth. There are all kinds of devices that you can buy which are specifically designed for this purpose. The homemade chicken wire cage is the cheapest and easiest to build and use. Simply cut out a piece wide enough to wrap around the tree (while still giving it plenty of room). Cut out another piece to cover the opening on top. Wire it all together with bailing wire or strong twine, and stake it down. .

Maintenance .

Maintenance consists mainly of watering. For the first few weeks, you can give your tree a good, deep watering twice a week. After this, if the tree looks to be healthy (which it should) cut the waterings back to once a week. If you can't get up to Summerhaven in time for a watering, you can either ask a neighbor to lend a hand, or give it extra water and mulch before you leave. It should be fine. Five to ten gallons of water per watering should suffice. Water deeply and allow the soil to dry out between waterings to encourage deep root growth. If you use buckets or containers with holes in them to water, make sure that you weigh them down so that they do not blow away after they are empty.

Observe your plantings and rainwater harvesting earthworks. Make repairs as necessary. Figure out what is working and what is not. Make corrections as needed. Share what you learn with your neighbors and enjoy your trees!

RESOURCES:

Wildworks Landscaping 743-1309

Russ Buhrow is a water harvesting pioneer in Tucson. He and his friend Dorothy Motheral have a landscaping business in town that specializes in native plantings and rainwater harvesting earthworks.

Rainwater Harvesting for Drylands by Brad Lancaster

The long awaited, user-friendly, comprehensive, how-to manual by one of Tucson's most highly regarded authorities on sustainable and restorative design. Available in the fall of

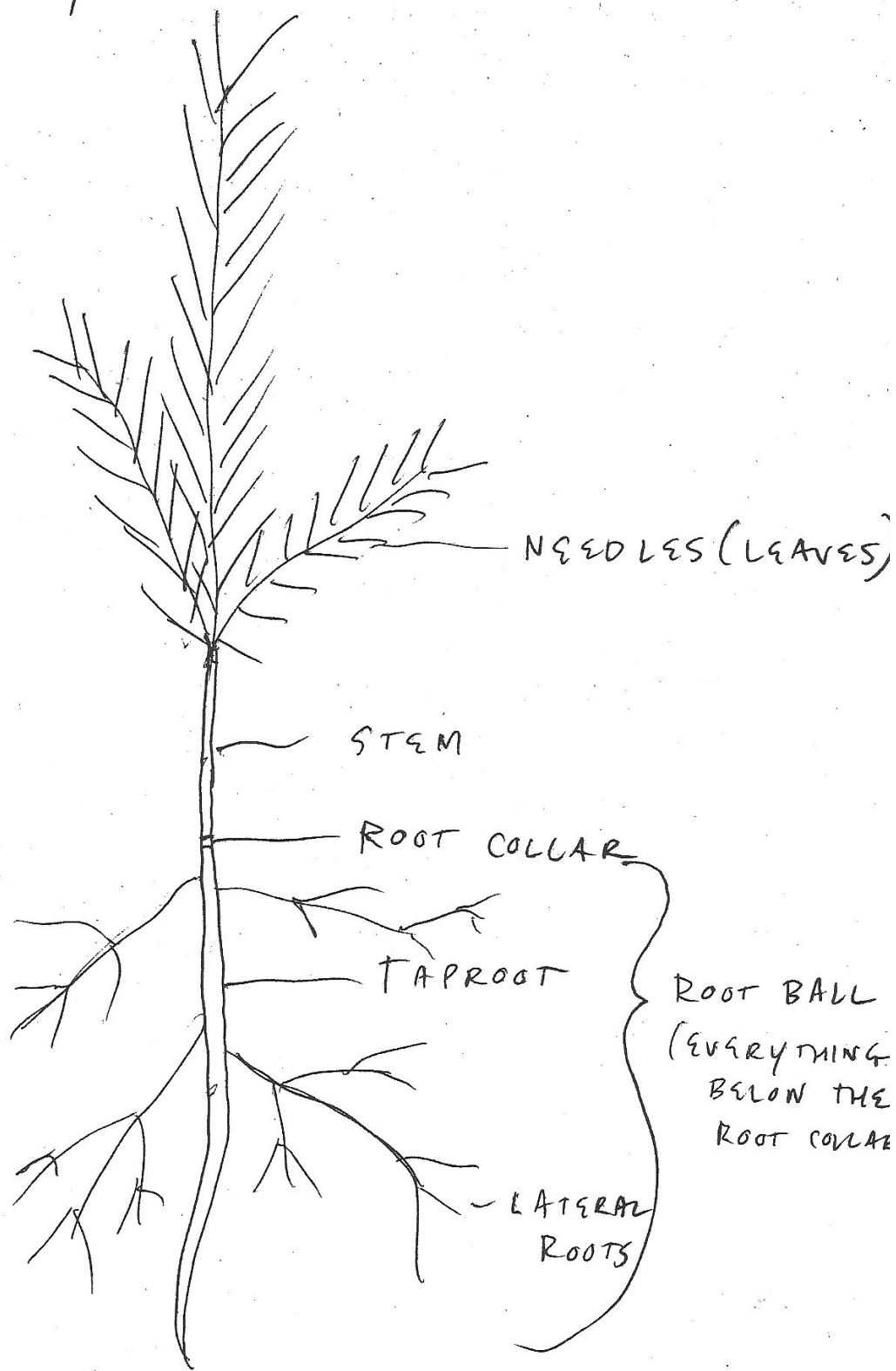
2004! Go to www.HarvestingRainwater.com to pre-order a copy and get more details.

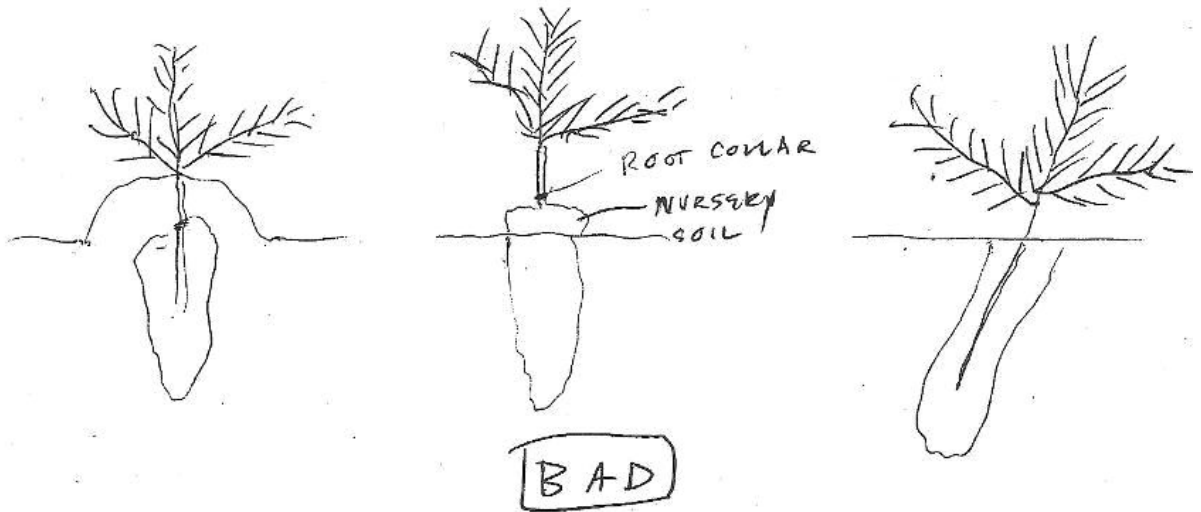
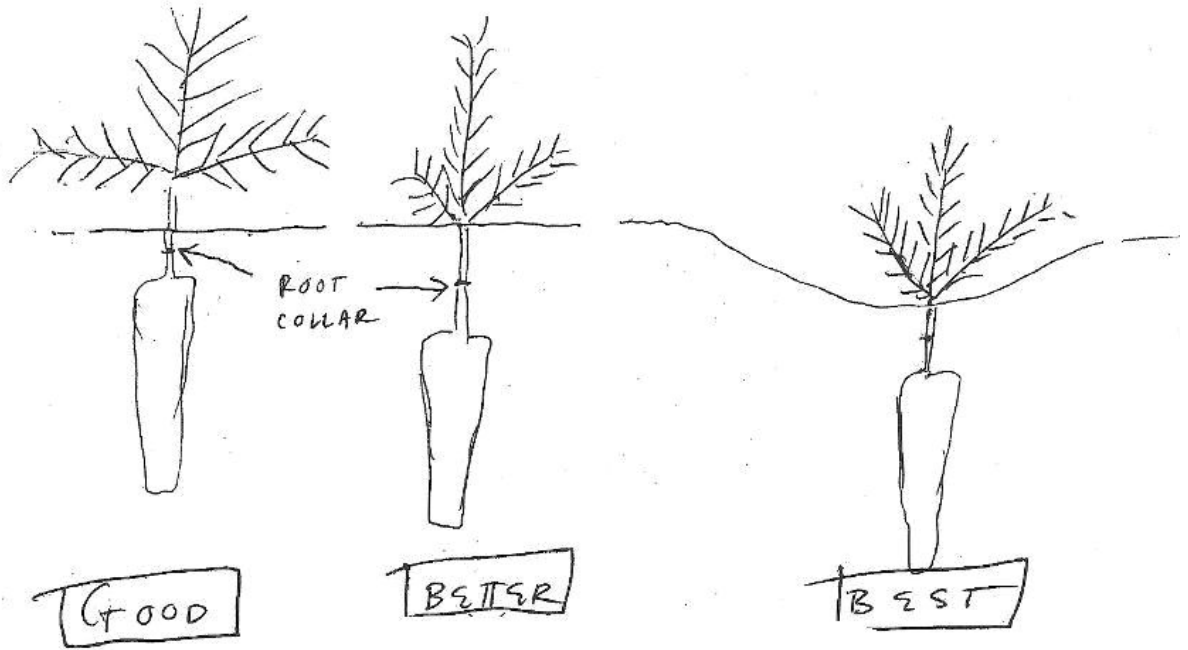
City of Tucson Water Harvesting Guidance Manual by Ann Audrey Phillips

Copies of this manual are available from the City of Tucson, Department of Transportation, Stormwater Section located on the third floor of the development services building downtown. It is also available on the web at:

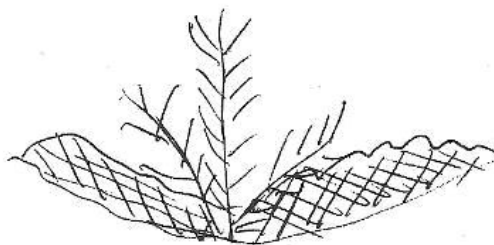
<http://dot.ci.tucson.az.us/stormwater/educationlwhm.pdf>

ANATOMY OF A PINE SEEDLING

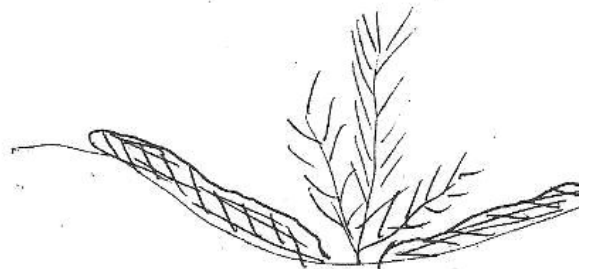




MULCHING



NO



YES