

Indiana Department of Natural Resources
Volunteer Script with PowerPoint Presentation

Tree Planting & Care

This presentation developed by the IDNR, Community & Urban Forestry Office and has been made available to interested residents of Indiana through and urban forestry grant provided to the state by the USDA Forest Service, Northeastern Area.



Slide 1:

Introduce yourself and explain how you became involved with or in urban forestry.



Slide 2:

Planting guidelines for Balled and Burlapped Trees from American National Standards Institute (ANSI) A300. This document is on the CD.



Slide 3:

Planting a tree correctly increases its chance for survival, so that it can live to maturity and provide us with the maximum amount of benefits.



Slide 4:

Call 811 on your phone to be routed to your Local One Call Center. Call toll free, two full working days before planting, to allow the utilities time to mark their lines. Visit www.call811.com for info.



Slide 5:

There are 3 types of trees available. Pick the type that works best for the situation.



Slide 6:

Bare root trees have been harvested when dormant, and are sold with out soil around the roots. There are many advantages to buying bare rootstock, some of which are: price, ease of transporting, ease of planting, and the root system is visible. The disadvantages are that the planting season is limited, it may be difficult to find the species or the size preferred, and certain species need special preparation before being planted.



Slide 7:

Container trees can be planted whenever the ground is not frozen, usually from late February to mid December. Depending on the size of the container, they are not usually difficult to maneuver around. The condition of the roots can be seen by pulling off the container. Typically there is no root loss during production. The disadvantage is that a container tree may have circling roots, or if the tree was recently transplanted to a larger container, there may not be enough roots. Small fine roots that circle the container are hard to avoid, but reject any trees that have woody roots circling the container. This is one reason to buy from a reputable nursery.



Slide 8:

Balled and Burlapped trees are advantageous for many cities and towns to use when planting street trees because of the larger size, which decreases vandalism to the tree by the public. B&B trees can be planted any time the ground is not frozen, and are relatively easy to store if they can't be planted right away. The larger caliper tree, the heavier the root ball will be. A disadvantage to B&B is that the roots and root flare are not visible, which can make it easier for a person to plant the tree too deep.



Slide 9:

Purchase a tree that is free of wounds, has good branching structure, and a firm, tight root ball. Look for an overall healthy tree.



Slide 10:

If unable to plant right away, keep trees out of the sun, and keep the rootball watered. Tree seedlings or bare root trees, can be heeled into the ground like the picture shows. Once a B&B root ball dries out, it can be difficult for water to soak back into it.



Slide 11:

Suggestion of tools to have on hand.



Slide 12:

There are different ways to get the planting hole dug...



Slide 13:

Whatever way is chosen, make sure it is a wide shallow hole. It should be twice as wide as the root ball. Break up the sides of the planting hole. The depth of the hole is determined by the root flare, which isn't always visible, that will be discussed more in a few minutes.



Slide 14:

Before placing the tree in the hole, remove all the tags, twine and anything else that may be in the crown.



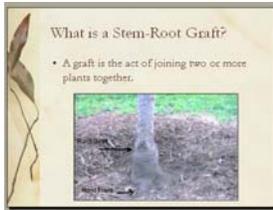
Slide 15:

When planting a bare root tree dig a very shallow hole. The area where the tree trunk becomes roots is called the root flare, and it needs to be at or above the soil level. Create a mound for the tree to rest on, spread out the roots, and start filling in the hole. When the hole is about $\frac{3}{4}$ full of soil, water it to start settling the soil. Continue to fill in the hole with soil.



Slide 16:

To plant a container tree, dig a hole twice as wide the container, and only as deep as the root flare. There may be an area on the trunk that is flaring out, but that may be the root graft, so move aside the soil to check for a main root.



Slide 17:

This is a picture of a stem-root graft. It can be misleading on where the flare is if the planter is not familiar with grafts, this is why it is important to find the first main lateral root. The graft may be unsightly, but as the tree grows, it will be less noticeable.



Slide 18:

Remove the container and cut any circling roots. Straighten out any woody roots, if the root cannot be straightened, prune it off where it begins to curve. The roots may be teased, but don't tear up the root ball. If there was excess soil over the root flare, remove it. Center the tree in the hole. Once the tree is straight in the planting hole, start filling it in with the same soil that was dug out. Unless the soil is very poor, it's not recommended to add amendments to the planting hole.



Slide 19:

Tamp the soil, don't stomp. Stomping can compact the soil and the root ball can be accidentally stomped on. Water the tree; this will help to settle the soil.



Slide 20:

When planting a balled & burlapped tree, be aware that the root flare may not be at the top of the root ball. This is because of production practices at the nursery. (Those practices are weeding, root pruning, etc.)



Slide 21:

During the ball and burlap process, the excess soil is not removed. From the picture, the tree trunk looks like a telephone pole. The root flare is not visible. After digging down, the root flare is found 7 inches below the top of the root ball.



Slide 22:

When deciding how deep the planting hole needs to be, don't rely on the root flare being at the top of the root ball. Look at the sides of the root ball for any large woody roots, or pull out one nail and feel around the trunk for the main roots. Don't compromise the root ball while trying to find the root flare. If the root flare cannot be found, plan to plant the tree a few inches high.



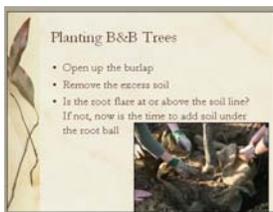
Slide 23:

Make the planting hole twice as wide as the root ball, and not any deeper than need be. It is better to plant the tree a little high, rather than too deep. Break up the sides of the planting hole. With clay soils, if the sides are not broken up, it can create a bathtub effect, where the planting hole fills up with water and can drown the tree.



Slide 24:

When placing the tree in the planting hole, maneuver it by the root ball, not the tree trunk or the crown.



Slide 25:

Once it is in the planting hole, open up the burlap. Start scraping away any excess soil to expose the root flare. Adventitious roots are fine roots that grow from the tree trunk; those can be pruned off. Double check to make sure the root flare is at or above the soil level. If it is not, this is the time to add soil underneath the root ball.



Slide 26:

Now that the root flare is at or above the soil level, make sure the tree is straight. Either cut off the top half of the wire basket or bend it down into the planting hole so that the roots can grow out into the soil uninterrupted by the wire. Do the same with the burlap. If the burlap is not cut off, tuck the burlap down tightly into the planting hole, so that after the soil is added back in, there are no large air pockets, which can let the tree shift and start to lean.



Slide 27:

Fill in the planting hole, using the original soil.



Slide 28:

Pat down the soil, don't stomp. Then water it, which will help to settle the soil.



Slide 29:

Add a 3-4 inch layer of mulch, and **ONLY** prune off any dead or broken branches. Water it throughout the growing season to supplement natural rainfall.



Slide 30:

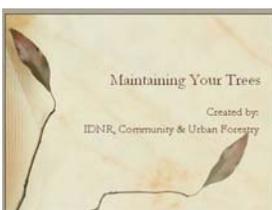
Why does the root flare and depth matter so much?

- Tree roots grow outwards, away from the tree trunk, and they grow in the upper inches of soil because they need oxygen. Trees that are planted to deep have roots that are too far down into the soil, in order for those tree roots to get to oxygen, they begin to grow upward, and not always straight outward. By growing upwards, the roots can grow next to the trunk or grow over the root flare. The main roots of a tree grow in girth just like the tree trunk does. As both the roots and the trunk grow, they can begin to grow against each other (like the pictures show) and eventually it creates a weak point on the tree because they are both pushing against each other and it can actually begin to interrupt water and nutrient flow. The tree begins to strangle itself.
- With trees that are planted to deep, it is less likely they will live to maturity to provide us with the many benefits that they offer. The trunk of a tree is not made to stay moist, so the bark actually begins to rot. This creates an entry point for insects and disease.
- There is increased maintenance on trees that are planted to deep because of the reasons I just mentioned, but also because not all trees live to get to the point of strangling themselves. So the tree may live a couple years, then die. It then needs to be replaced.



Slide 31:

Spending the time and energy to choose the correct species for the site, and spending a few more minutes to plant that tree right will pay off big dividends later! Plant the right tree in the right place, the right way!



Slide 32:



Slide 33:

These are the topics that will be discussed.



Slide 34:

There are many benefits to mulching trees. Overall survival is increased due to these benefits.

- Mulch holds moisture in the soil longer than an un-mulched area.
- Organic mulch breaks down and adds to the soil structure, and also returns nutrients to the soil. Researchers and experts agree that organic mulch provides trees with just about everything it needs.
- Mulch decreases the amount of soil erosion and runoff.
- Having trees mulched decreased the amount of mower and weed whip damage to the tree trunk.
- Having the correct amount of mulch applied will greatly decrease the prevalence of weeds, and those that do appear are easily pulled because they are probably growing in the mulch, not the soil.
- Mulch moderates the soil temperature, so that the roots are not heating and cooling to the extremes of the day.



Slide 35:

There are basically 2 types of mulch, organic and inorganic. (How many bullets are discussed depends on much time is available)

- Wood chips are aesthetically pleasing and provide all the great benefits that one would expect. Try to use product that is somewhat aged, and place it on top of the soil and not mixed into the soil.
- Pine needles are long lasting and look nice.
- Grass clippings can be used, but let them to dry out before using as mulch. Don't use a thick layer because it begins to mat, which doesn't allow water or oxygen to pass through. Don't use any grass clippings from a lawn that has herbicides used on it.
- Leaves work better if they are partially ground or decomposed. If they aren't partially ground, depending on the leaf type they can begin to mat.

- Bark comes in different forms, shredded, nuggets, and chunks. It is attractive and the nuggets and chunks are long lasting. Bark is also a good weed preventative.
- Compost can be used as mulch, although since it is a nutrient rich medium, it is also a good place for weeds to grow.
- Rubber mulch won't add anything to the soil, but it still has all the other benefits, and it's long lasting. It is a little more costly, but since it doesn't break down, it shouldn't need to be re-applied.
- Rock or stone is long lasting, but light colors can reflect heat up towards the plant, and if any pieces happen to get in the lawn, it can be a mowing hazard.



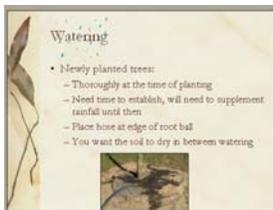
Slide 36:

Two to four inches of mulch, extended out 3-6 feet is all that is needed. This is about equivalent to 1 (2 cu.ft.) bag of mulch. To prevent the bark from rotting, be sure to pull the mulch away from the trunk of the tree.



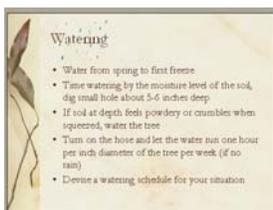
Slide 37:

Contrary to popular belief, more is not better! Do not become a volcano mulcher! Volcano mulching is detrimental to the trees health. It's the equivalent as planting the tree too deep. Too much mulch actually begins to suffocate the roots, and creates a nice, safe spot for rodents to get to the tender bark of a tree and munch away. The bark of the tree will start to rot if the mulch is piled up against it. This creates an opening for insects and disease.



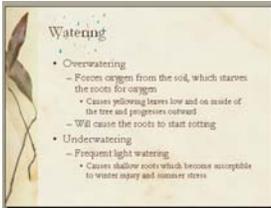
Slide 38:

With new trees, water them at planting time, and then supplement natural rainfall for the first few years.



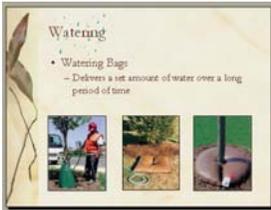
Slide 39:

The time frame for watering trees is from spring to the time the ground freezes. To determine if the trees need water, dig a small hole down 5-6 inches. If the soil there feels dry and crumbly, it's time to water. When watering, it is best to turn on the hose to a slow trickle and let it run for a couple hours so that the water has a chance to soak down into the soil. It is best to water infrequently and deeply.



Slide 40:

Underwater and over watering each has its own set of problems, but by digging down into the soil and checking the moisture there, these problems can be avoided.



Slide 41:

Watering bags are a way to water trees slowly without having to leave the hose out or the water running. Fill up the bag with water and it drips out tiny holes in the bottom of the bag. They can be purchased at some garden centers and online.



Slide 42:

Wind movement helps to develop longer stems, increased trunk diameter, and it enhances root development. These create a stronger tree, which is why it's important to provide lateral movement when staking. The stake should only be in place until root growth is adequate to hold the tree in place, about 1 year. Trees that are planted in very open or windy areas or sandy soils may need staking. Very tall trees with small root balls or like the picture shows, weak trees, may also need to be staked.



Slide 43:

If staking is necessary, make sure the tree is supported in the direction of the prevailing wind. There are several different options for staking, using one, 2 or 3 stakes. Use a somewhat elastic, smooth material so that it doesn't tear up the trees bark. Give the tree 2-3 inches of lateral movement. This movement is necessary to create a strong tree! If a tree is staked, and movement isn't allowed for, it will still be weak when the stakes come off.



Slide 44:

Here are some pictures of staking problems. The problem with staking is that people forget to take the staking materials off the tree after a year. Stake the tree only if it's needed.



Slide 45

Just like staking, wrapping is something that should only be done if the tree needs it. It's usually not necessary, but it can help to prevent sunscald on thin barked trees. Begin wrapping at the bottom of the trunk and work your way up when using traditional wrapping material. This helps to prevent the wrap from holding water, which can lead to fungal problems and create an environment for insects. There is the white polypropylene material that has holes in it which allows for air movement. Remember to take the wrap off after one year! Looking at the picture on the bottom right, wrap was left on that tree for more than a year, and there are now wounds on that thin-barked tree.



Slide 46:

Before starting any fertilization regime on any trees, it is recommended that a soil test be done to see if there are specific nutrients that are lacking, or if the nutrients are there, but the pH is too high or low. Some nutrients can't be absorbed if the pH is out of range. By having a soil test done, time or money won't be spent on fertilizer that the tree may not need or can't absorb. There is no reason to fertilize a tree unless there is an issue. Don't waste money or time fertilizing a healthy tree. (There is soil sampling information included on the CD) There are many nutrients that trees need, more than what is listed on the screen, and many are naturally in our soil. Nitrogen is not held by the soil, so if plants don't take it up, it can be leached through the soil, which can make it a limiting element.

- N – nitrogen
- P – phosphorous
- K – potassium
- Ca – calcium
- Mg – magnesium
- S – sulfur
- Fe – iron
- Mn – manganese
- B – boron
- Cu – copper
- Zn – zinc
- Mo - molybdenum



Slide 47:

Organic or inorganic, it comes down to preference, and what might be readily available. Also take into consideration any lawn fertilization regime that the tree may be benefiting from. Over fertilizing can be detrimental to a tree and lawn. When looking at a bag of fertilizer, note the analysis, which consist of 3 numbers. It represents the percentage of nitrogen, phosphorous and potassium, in that order. If a soil test shows that the soil needs nitrogen, buy a fertilizer that contains only nitrogen, rather than purchasing a bag that contains a large percentage of nutrients that aren't needed. Always follow the label directions to avoid over fertilizing.



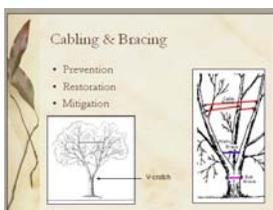
Slide 48:

Fall and spring are good times to fertilize. Fertilizing can be done when a nutrient deficiency is noticed. Avoid fertilizing newly planted trees, trees that have been recently damaged and avoid fertilizing in the late summer. Fertilizing in the late summer will give the tree a lot of new growth that will not harden off before the first frost, so it can end up with tissue damage.



Slide 49:

There are different methods to fertilizing. Surface application is quick and easy, be careful not to over fertilize. There are tree spikes that can be used, but that can cause spotting in the lawn, which means the grass around the spike location can become greener than the rest of the lawn. Subsurface applications require specific equipment, and would normally be hired out through an arborist. Tree implants and injections also need specific equipment and expertise, which does increase the cost. Tree implants and injection are very effective in treating specific deficiencies.



Slide 50:

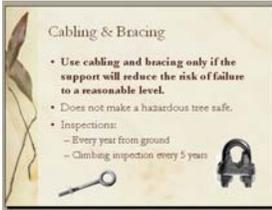
The next few topics are going to be covered lightly, and in very general terms. These are practices that would be used on a specimen tree or a tree that is important to the owner. They are costly practices that have required future maintenance.

Cabling and bracing are commonly used to provide structural support for trees. This involves installing cables and rods to reduce the chance of failure in weak unions. They may be installed as a prevention technique, such as when a specimen tree is in good condition, but it has large limbs with V-crotches. They could also be used as restoration, to prolong the life of a tree that has been damaged. Mitigation is when the tree has hazard potential and by using cables and braces, the hazard potential decreases.



Slide 51:

Pictures.



Slide 52:

Even cabled trees can fail. Not all trees can be cabled and braced. There may be a point when the tree has too much decay within it for cabling and bracing to help. Once the tree is cabled and braced, it still needs maintenance. It should be inspected from the ground every year, and every 5 years, it should have a climbing inspection. The cables and rods may also need to be replaced in time.



Slide 53:

Lightning seeks the path of least resistance to the ground. Trees, because of their height, are natural lightning rods. A lightning strike can damage a tree minimally or it could literally blow the tree apart. A tree that has been struck by lightning can die quickly or it could live for many years. To prevent lightning damage to special trees consider having a lightning protection system installed.



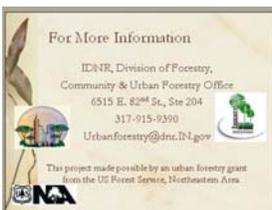
Slide 54:

Installation involves the placement of copper conductors into the highest portions of the tree, down the main branches and trunk, then out beyond the drip line where they are grounded. Just as with cabling and bracing, there is continued maintenance with lightning protection systems. Inspections every year from the ground, climbing inspections every 5 years, and the air terminals will need to be replaced when the tree branches grow to far past them.



Slide 55

For more concise information, hire an ISA Certified Arborist or a reputable tree care company.



Slide 56:

CUF offers assistance and grant dollars to cities, towns, and non-profits throughout Indiana. Contact CUF at 317-915-9390 or email urbanforestry@dnr.in.gov. This project made possible by an urban forestry grant from the US Forest Service, Northeastern Area.