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I. Why Plant Trees?



Trees are one of the most beneficial legacies that we can leave to future generations. Not only do trees beautify our surroundings and raise property values, they clean the air, protect us from the elements, and save electricity.

Planting trees as a community creates pride and gives children and adults input into the landscape of a community or city. We hope this collection of materials will help you as community leaders to organize, plan, and effectively carry out a Community Tree Planting event that will benefit everyone now and in the future.

Tree Stats

- "The net cooling effect of a young, healthy tree is equivalent to ten room-size air conditioners operating 20 hours a day." -U.S. Department of Agriculture
- "Trees can boost the market value of your home by an average of 6 or 7 percent." -Dr. Lowell Ponte
- "Landscaping, especially with trees, can increase property values as much as 20 percent." -Management Information Services/ICMA
- "One acre of forest absorbs six tons of carbon dioxide and puts out four tons of oxygen. This is enough to meet the annual needs of 18 people." -U.S. Department of Agriculture.
- "There are about 60-to 200- million spaces along our city streets where trees could be planted. This translates to the potential to absorb 33 million more tons of CO2 every year, and saving \$4 billion in energy costs." -National Wildlife Federation
- "Trees properly placed around buildings can reduce air conditioning needs by 30 percent and can save 20 - 50 percent in energy used for heating." -USDA Forest Service.
- Trees can be a stimulus to economic development, attracting new business and tourism. Commercial retail areas are more attractive to shoppers, apartments rent more quickly, tenants stay longer, and space in a wooded setting is more valuable to sell or rent." -The National Arbor Day Foundation
- "Shade from trees could save up to \$175 per year (per structure) in air conditioning costs." -Dr. Lowell Ponte
- "Healthy, mature trees add an average of 10 percent to a property's value." -USDA Forest Service
- "The planting of trees means improved water quality, resulting in less runoff and erosion. This allows more recharging of the ground water supply. Wooded areas help prevent the transport of sediment and chemicals into streams." -USDA Forest Service.
- "In laboratory research, visual exposure to settings with trees has produced significant recovery from stress within five minutes, as indicated by changes in blood pressure and muscle tension." -Dr. Roger S. Ulrich Texas A&M University

II. Planning Your Project



Setting A Goal

As you decide the logistics of the community tree planting, remember you can achieve other community goals at the same time. For example, if you have wanted to provide an opportunity to involve youth in an activity, mobilize community Seniors, or help neighbors get to know each other, a Community Tree Planting Day can provide an excellent opportunity to achieve your community goals as well as beautify your surroundings.

It seems like a big task, but tree planting projects involving thousands of volunteers take place each year. However, each planting project has a timeline--a road map that describes how to get from an idea to a completed project.

- Project management /getorganized
- Decide what you want to do - tree planting, community clean-up, etc.
- Decide who should participate - groups and/or organizations
- Choose a location - where to plant or where to clean-up
- Set a date and time - when and where everything will happen
- Set a budget - How much is it going to cost? How can we get things donated? (ex:trees, water for volunteers, trash bags or tools for planting)
- Publicize the event - letting others know about the good things you are doing in your neighborhood.
- Answer other questions- Be prepared for last minute changes and unexpected mishaps (ex: people showing up late or not at all, having a small first aid kit ready for minor accidents, and are you having your event rain or shine?)

Like so many planting projects, yours probably started with a simple idea that grew and grew. Now it's time to turn the idea into action. This information will hopefully help you plan a strategy and carry out a project.

Deciding the Right Site For Planting Trees

Deciding on the right site for your tree planting involves several steps:

1. Evaluating the suitability of the soil
2. Getting permission
3. Assessing past and future use for the land
4. Determining if the site is viable

Let's consider each of these individually:

Evaluating The Suitability of the Soil

First determine if the soil is suitable for planting by following these steps:

1. Determine the drainage capability. Dig a hole two feet deep and fill it with water. If the water does not drain at the rate of one inch per hour, select species that can withstand wet roots or select a different site. Topography can affect drainage at the site. Note flat and steep areas and determine if erosion or washout is a problem.
2. Get information about soil testing from the Texas Forest Service. The following soil properties should be tested:
 - pH
 - water-holding capacity
 - micronutrients
 - macronutrients
 - texture
 - organic matter

Getting Permission to Plant

Be sure to get permission from the owner if the land is publicly or privately owned. Be sure to start the permit process early to ensure the necessary permits are received **before** your planting date.

Find out whether your community has an ordinance specifying tree species, sizes, and spacing for plantings. The COH Tree Ordinance is available on line at www.cityofhouston.gov.

Finding Out the Past And Future Uses for The Land

Ask these questions before you decide on the site:

- Will people walk through the planting zone or use it for other recreational activities?
- Are other trees in the area being damaged or vandalized?
- Are there any community members who know the history of the site who you can involve in the site plan design?
- Is future development planned for the site?

- What were the site's prior uses, and will that prior use constrain your tree planting needs?

Planting Near Man-Made Structures

- Inspect the site for existing structures that could restrict canopy or root development, such as buildings, sidewalks, roads, paths, or overhead utility lines.
- Do not plant trees where they will block streetlights, signs, or fire hydrants.
- If the site you have decided on does have an existing structure that you want to plant around, ask a forester or arborist to help you select a species that is low growing and has an appropriate root system for the site.

Determining If The Site You Chose Is Viable

Use this checklist of questions to determine viability of your site:

- Have I asked a tree professional about the survival chances of each species of tree I intend to plant?
- Will I need to remove any of the existing vegetation? How much?
- What will I have to do to make the site plantable?
- Would it help to redesign my site?
- Will the site need to be protected from animals or vandalism?

If you have determined the site is suitable, you are ready to begin planning your tree planting by selecting the species to plant and preparing the site. For additional help, contact the Texas Forest Service or City of Houston Urban Forestry Division. See last page 33 for phone numbers.

Recruiting Volunteers

What To Consider When Recruiting Volunteers

Before starting a recruitment program, answer these questions:

- How many volunteers do you need?
- What level of commitment do you expect from your volunteers?
- What skills are needed?

Here are some suggestions for recruiting volunteers:

- Tap into existing community organizations, such as boy and girl scouts, which can be more efficient than recruiting individual volunteers.
- **Ask!** People who are asked to volunteer are more likely to volunteer than those who are not asked.
- Encourage volunteers to ask friends and colleagues to volunteer.
- Use the media. Place a notice in a local newspaper or on a radio station. See page 9, *Planning Media Relations*.
- Place notices in local environmental and volunteer organization newsletters.
- Give posters announcing your event to local businesses and community centers.
- Use direct mail, E-mail, fax, and the Internet to create public awareness of your event.
- Tell local businesses. Many businesses like to participate in volunteer days as company activity events.

What Volunteers Need To Know About The Event

Directions/Access to the Event

Directions to the planting event are critical not only for your volunteers, but also for the media. Directions should be clear, concise and readily available. If possible, provide maps to illustrate the location of the planting site. If the site is hard to find, or parking is limited, consider asking volunteers to meet at an easy-to-find location such as a mall or school, and carpool to the planting site.

What to Wear and Bring

Remind volunteers to dress for the weather, wear clothes that can get dirty, and wear closed-toe shoes or boots. Also, let volunteers know about any other special requirements specific for your area (e.g., long pants, bright colors). If you are going to be planting for more than three hours, either ask the volunteers to bring lunch and drinks for themselves, or provide it for them.

Choosing An Action Team

Every operation needs an action team - a core of concerned individuals who will be involved every step of the way. At best, every member of the team should have a different "specialty" and be prepared to see the project through to completion.

The ideal team consists of seven to ten people and includes:

- a lawyer
- a technical expert (such as a professional tree person)
- a volunteer coordinator
- a reporter or writer
- an engineer
- a well-connected businessperson
- an official from the city or county

With a team like that and access to major funders, you are ready to play in the big leagues. With assured exposure through major media outlets, you will be able to set up a tree planting program that will be long-lived and supported by an official network.

For your first project, you'll probably have to settle for a handful of committed individuals who you can trust to show up when they're needed. However, keep a list of everyone who expressed an interest during your initial canvassing.

Planning Media Relations

Media Attention

Decide why you want media attention and what type *before* you send out press releases. Are you looking for volunteers for your event, or do you want general publicity for your organization or event? Decide your goal. Be sure it's clear and understandable. Be sure that everything you give the media addresses that goal. Know who your audience is, and provide a clear message to that audience.

Making Your Story Attractive To The Media

To get into print or onto television, you must tailor your information so it is appealing to reporters and editors. Here's what they're looking for:

1. **Relevance** -- Is your event or organization important to their readers, listeners, or viewers?
2. **Interest** -- Is your information unusual or entertaining? People like to read about people. Write your press releases to focus on people planting or caring for trees, and not about the trees themselves.
3. **Local hook** -- Does your event address needs in your neighborhood? The majority of media outlets cover local news for their local audience, which can benefit a community tree planting organization, especially if the event is of concern to the local population.
4. **Prominence** -- Events involving prominent people frequently make the news. When planning your event, invite local politicians or VIPs to join you. If they agree, mention their presence in your press release.
5. **Timing** -- Can you plant trees in a veteran's cemetery on Memorial Day? In a significant public space on the anniversary of your neighborhood's founding? Pick a relevant day to hold your event and use it to show the media how people in your area are commemorating local or national observances.

Be sure you know the details of your subject before you pitch the story. Editors will be relying on you to quickly relay the "who, what, when, where and why" of the story. Always be prepared with the 5 W's.

Write down assorted facts and figures and keep them handy in case you need it. Editors don't expect you to have all the answers memorized, so feel comfortable looking up some details when necessary. Watch, read, and listen to all of your local news from time to time. Learn which outlet pays close attention to community led environmental projects. Find out if there are specific reporters in your town covering an "environmental beat."

Types of Media and What They're Looking For

Who To Contact

This section is designed to provide you with basic information for publicizing your planting project. Your local library will have many sources with more detailed information on working with reporters, editors, producers, and other members of the news media.

Newspapers:

Local newspapers are a great way for community organizations to tell their stories. For coverage of local events in your community, contact the **City Editor** of your local paper.

Ask first if the editor is on deadline, or if she/he can spare a few minutes. If you are asked to call back, ask when. When you do talk to the City Editor, give your name, describe your group and the activities you do in the community. Explain where your membership comes from. Ask the editor what she/he looks for in selecting stories and what can your group do to obtain coverage. Find out how soon they will need your information. This editor will decide what gets covered, so heed his/her advice.

Also consider calling the Photo Editor of the paper. The Photo Editor assigns photographers, and if you have an event that will be very visual, you may be able to get a photographer assigned. Counting tree seedlings is not visual - planting them in the ground is. Editors also like to see children involved. Ask him/her the same questions and give the Photo Editor the same information as the City Editor. Ask how he/she cooperates with the City Editor, and find out if you can contact both for the same story.

Television:

TV stations tell their stories with pictures. If your event is not visual, it is unlikely you will get coverage. They will want to see activity and movement. Call the News Assignment Editor at your local television news stations. Ask them the same questions you would the City Editor of your local newspaper (see above.)

Be prepared with photo opportunities for both print and television.

Radio:

Radio can be a valuable means of contacting your audience. Find out your stations' formats (news, talk, music, etc.) and what sectors comprise their audience. If you are looking for young volunteers, don't go to a station that plays "oldies."

Many radio stations have talk shows - both guest and call-in. These shows are constantly looking for experts in different fields who are good speakers. Find or train someone in your organization to be a spokesperson on radio shows. Ask your local stations if they will air a Public Service Announcement (PSA) announcing your event.

Daily newspapers, television stations and radio news will want to know about your event at least one (1) week in advance, more if you are looking to place your item in a "community calendar." Weekly newspapers will want to know at least 3 weeks in advance. You should also send PSAs to your local radio stations at least 3 weeks in advance. Don't forget! **Most importantly, always respect their deadlines!**

NOTE: The media may promise to come to your event, but if breaking news happens, they may not show. This is not a reflection on you or your group. It is simply a business decision the editors made about value of the day's news.

Writing The Press Release

Use a press release to:

- Announce an upcoming event and invite the press to cover it.
- Provide background information or supplement late-breaking news.
- Issue a statement or take a stand on a new development or issue.

Use the following guidelines to write an effective press release:

- **Neatness counts.**
Be sure there are no typos, misspellings or crossouts. Type double-spaced, on one side of the paper only. Finish a page with "more" if there's more (keep the most important information up front), and end the release with the standard symbols of ### or -30- or the word "end."
- **Hit the ground running.**
Place a contact's name, with work and home phone numbers at the top of the page, along with the date of the release. Make your headline factual and compelling. Make your first paragraph quotable.
- **Answer who, what, where, when, and why.**
The first paragraph should cover two of the five W's. The second should answer the others. Be sure dates, names, titles, statistics etc. are accurate. Check your research. If you can't verify it, don't use it.
- **Use direct speech.**
If the quoted person did not actually make the quote, have it sound like something he/she might say. Never editorialize.
- **Sign off well.**
Have a standard closing paragraph that states your organization's mission.
- **Take accurate aim.**
Get a local media guide from a friendly PR firm. Develop a personal media database. Include sympathetic reporters or those who have been good to you. Keep them posted. They may help you get coverage even when they can't cover an event themselves.
- **Don't double up.**
Never send a release to more than one person at a paper. Nothing makes enemies faster than having two editors plan the same story in different sections on the same day. Also, if your event involves a partnership, don't duplicate one another's efforts; it may irritate or confuse the media.
- **Time it right.**
Releases should arrive 3-5 days before an event. Longer and they'll get lost. If you have a hot last-minute story, forget the release and phone it in.
- **Follow Up.** Call news desks and city desks and those you've sent your release to by name. Your job is to tell them what's going on, and their job is to decide whether it's important to them.

Talking To Reporters

Reporters may call to ask a question, verify a fact, clarify a position or get an opinion - especially if you've made it clear you're a local expert in your field. Here are some tips for responding to reporters:

- When you get a call, take it immediately.
- If you receive a message, call back ASAP.
- Ask reporters what publication or station they're from, what their deadline is, when the story will appear, and what they usually write about...what their "beat" is.
- Offer your phone number with every press release and media contact.
- Stay informed on urban forestry issues and how they affect your community.
- Know the stance of local political figures.
- Don't let anyone take a press call unless they know the position of your organization.
- Always be completely honest. If you don't know the answer, say, "I don't know but I'll find out. How soon do you need an answer?" Always call back.
- If you don't want to answer, simply say, "I can't answer that right now." Don't say you'll get an answer if you can't or won't.
- Follow the reporter's line of questioning and respond as completely as you can. Keep your answers to the point.
- If you have other points to communicate, try interjecting them and see what happens. It's okay to have your own agenda and insert important messages throughout your responses.
- Treat reporters as professionals.
- Don't reveal anything you don't want the world to know.
- The reporter's job is to report what he/she sees - not what you've told him/her.
- Ignore unfair coverage unless it represents a pattern; you'll simply call more, possibly unfavorable attention to yourself.

Local media are most interested in local stories. But applying a national statistic, problem, or trend to a local reaction or activity makes a story even more appealing.

For Example:

The Soft News Approach: "This community is coming together to plant trees on January 10th."

More Impact: "Though local government has slashed urban forestry funding, citizens from neighborhood X raised money and came together to plant 50 trees to enhance the local environment, where tree cover has decreased 20% in the last ten years due to air pollution and development." _

(NOTE: this is an example not fact).

Planning "Planting Day"

Deciding When To Have The Event

Deciding the correct time to hold the event is one of the most important parts of the planning process since timing may determine the future health of the trees. **Here are a few suggestions for determining the best date:**

- Fall and early spring are good times to plant trees in Houston because temperatures are neither too hot nor too cold, and soil moisture is plentiful. Trees planted during summer need more regular watering. October through late February is the ideal planting season for the Houston area.
- Although National Arbor day, which is on the last Friday in April, is a traditional time for tree planting, **the City of Houston's local Arbor Day, is the 3rd Friday in January.**
- When you choose a date, remember that weekend events usually have a higher volunteer turnout.
- Consult a local forester or arborist for information on appropriate times of year to plant trees in the Houston area.

Gathering Equipment

Have all of your equipment ready the day of the event. You don't want any last minute scrambling. Here are a few suggestions, but **use the Checklist on page 15 to get suggestions for what to bring.**

Be sure to:

- **Provide a water source** for your volunteers to wash up before heading home.
- **Find accessible rest rooms for volunteers.** If facilities are not close to the planting site, consider renting portable toilets.
- Contact groups that may provide free supplies, or ask volunteers to bring some of their own.

What To Do On The Big Day

Planting day is the climax of your planning effort. To ensure that the day goes smoothly, get organized. Divide the responsibilities of your tree-planting event among several people. Delegate!

Put one person in charge on planting day. This may not be the person who coordinates the event or chairs the committee.

The person in charge should:

- Be able to think on his or her feet and effectively direct the work of volunteers.
- Know the logistics of the event and the desired tree-planting method.
- Be able to communicate with other leaders throughout the event.
- Avoid the temptation to plant trees and focus entirely on keeping the event flowing smoothly.

Have a meeting prior to the event. For success, plan an orientation meeting for volunteer leaders immediately before the tree-planting event. Follow it with a planting demonstration. Leaders can then put on mini-planting demonstrations for each work crew.

Schedule breaks throughout the planting event. See the page 16 for an example of a Planning Schedule.

Have a first-aid station and rest rooms available. Be sure that volunteers know where to find them. Make a backup plan for bad weather.

Equipment List

Use the following checklist for necessary planting equipment. Don't forget to ask your volunteers to bring what they have on this list as well. Bring:

- _____ Seedlings/Trees
- _____ Shovels
- _____ Wheelbarrows
- _____ Dibble Bars
- _____ Pruning Shears, Heavy Duty Kitchen Scissors
- _____ Water Buckets, Hoses
- _____ Hammers
- _____ Rakes
- _____ Mulch
- _____ Tree Protectors
- _____ Flagging
- _____ Gloves in case volunteers don't have pairs of their own
- _____ Safety vests for each volunteer if you are planting trees along roadsides
- _____ Water for your volunteers since some of them may not remember to bring their own
- _____ A first-aid kit

Volunteers can do more than plant trees at the event, so have them tag trees, mulch, or install tree protectors.

Sample Planting Day Schedule

Below is a sample planting day schedule.

Site: Southgate Elementary School

8:00	Set out team stakes at each planting area.
8:25	Staff briefing in front parking lot or selected location.
	Agenda Preview the day. Put name on every tool. Discuss meeting places, communication, and safety.
8:30	Nursery delivers plants. Plants delivered to each bed. Soak bare root trees & shrubs.
8:30	Students/Volunteers sign in and are assigned to teams.
9:00	Break up into respective groups, and get safety instructions from Staff or team leaders.
9:10	All volunteers gather for welcome and tree planting demonstration.
9:20	Students/Volunteers directed to sites. PLANT! COMPOST! SPREAD WOOD CHIPS! WATER! Install rodent guards (if necessary.)
11:30	Lunch served outdoors, staggered by teams.
11:45	Thank you and closing remarks. Clean up lunch supplies.

III.

All About Trees



Selecting Quality Plants

Different types of trees and shrubs, often called **stock**, are available for purchase. Stock varies in terms of root mass, size, relative cost, ease of planting, handling, season of availability and establishment success.

Large trees and shrubs are sold by the caliper inch. A caliper inch is the diameter of the stem measured at 6 inches above the ground for plants up to 4 inches in diameter, or 12 inches above the ground for larger trees. Smaller shrubs are sold by height or by the size of container. Evergreen trees and shrubs are generally sold by height or by the size of the container holding the plant (e.g. 3 feet tall or a #5 container).

Using Donated Or Purchased Trees

In some cases trees can and will be donated by groups such as Trees For Houston or the Park People. Call them to find out more. See our **Sources** section for additional telephone numbers.

How to Judge Quality

The order form or contract for the plant material used in the planting project should specify: the species and/or variety of the plants; the size of the plants; and the type of planting stock. Some plant material requires that you specify a grade, level of quality, or material. Whether you personally go to pick out the plants at a nursery or you are simply accepting a delivery, **check these things out carefully before accepting any plants:**

- **Species of Tree:**
Read the tags on each plant. Is it what you ordered?
- **Size:**
Are they the right size? Does the root ball size match the caliper size? For each inch of trunk caliper, the ball should be 11-12 inches wide.
Plants with good form require less maintenance than plants with poor form. **Look for:**
 - **Trunk:**
Trunks should be straight above middle of root ball; branches should be growing at regular intervals; there should be no wounds except for superficial scrapes which do not go through the bark; no discolored, sunken areas, or holes.
 - **Branches:**
Branches should be balanced on the trunk. There should be at least 2-4 inches of new shoot growth from the previous year that is flexible, with healthy, living buds and few broken branches.
 - **Leaves:**
Leaves should be normal size and color for that plant at that time of year and should not show spots, blights, distorted shape or wilting. Reject deciduous bare root material that has leaves on it. Reject evergreens with limp shoots.
 - **Roots:**
Roots should not be exposed or covered by more than 4 inches of soil in potted or balled and burlapped (B&B) stock; roots, in bare rootstock should be firm, moist, and white inside - not dry, black, crushed, torn or mushy.

How to Care for Stock Before Planting

Properly caring for a tree before it is planted is crucial to its survival. Each type of tree to be planted - bare root, B&B, or containerized - has specific needs. However, the following precautions apply to **all** donated or purchased stock:

- Handle trees with care. Don't drop them! This could damage roots, or it could cause the root ball to break apart. When the root ball breaks, small feeder roots are torn from larger roots. This can kill the tree.
- Watch out for branch tips when you move the tree around. Be careful to leave buds, leaves and branches on the tree. Taking these steps also prevents injuries to people, such as poked eyes and scratched skin. Protect trunks and bark from tools, equipment and rubbing. Temporary guards, such as those made from cardboard, are helpful, especially for heavy trees.
- Cover plants with a tarp if transporting them on streets or highways - particularly if leaves have emerged, and weather is hot and dry.
- Keep plants shaded and root balls moist until planting. Roots can dry out and die quickly on both bare root and containerized plants. Mulch bare root and B&B stock to keep roots moist.
- Carry container-grown, potted, or B&B stock by the pot or root ball.
- Use ball hooks, a ball cart or a front-end loader to carry B&B material. Dragging or rolling may cause roots to separate from the trunk.

How To Plant Trees

Select the right location and the right tree. Choose your tree and planting site carefully! Follow these steps to ensure success.

Step 1 - Prepare Site

Draw a circle 3 to 5 times the root ball diameter with the center being the location of the tree. Remove sod or grass. Remove, till, or break up the soil to a depth of 10 to 12 inches.

Step 2 - Dig Hole

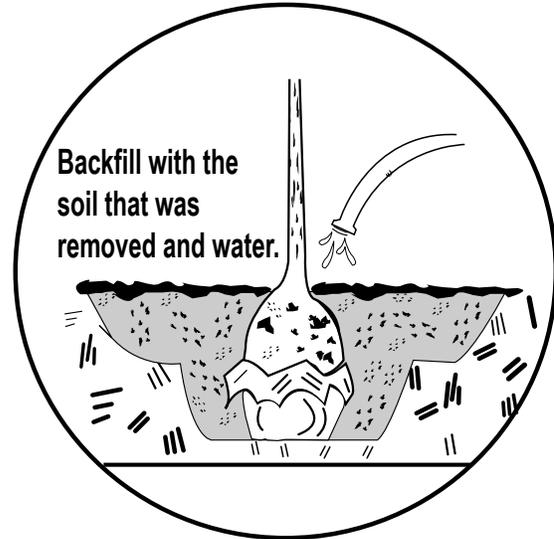
Dig a hole in the center of this circle that is 1-foot larger in diameter than the root ball. Dig only as deep as the distance from the root collar to the bottom of the roots. Maintain undisturbed soil beneath the root ball to prevent the tree from settling.

Step 3 - Place Tree

Carefully place the tree in the center of the hole. (See diagram on page 20) Some trees require that a container or basket be removed (See Planting B&B Trees and Planting Containerized Trees for specific information on removing baskets and containers).

Step 4 - Backfill

Be sure that the tree is at the right depth and plumb. Fill the hole with the soil that was removed. As the backfill is added, lightly push the soil around the roots or water the soil to eliminate air pockets. Backfill to the height just below the root collar. To prevent compaction, do not pack soil after you water. See the diagram below left for proper backfilling technique.



Step 5 - Mulch

Add 4 inches of organic mulch on top of the planting circle. Keep the mulch 4 inches away from the trunk to prevent fungus from growing on the tree trunk.

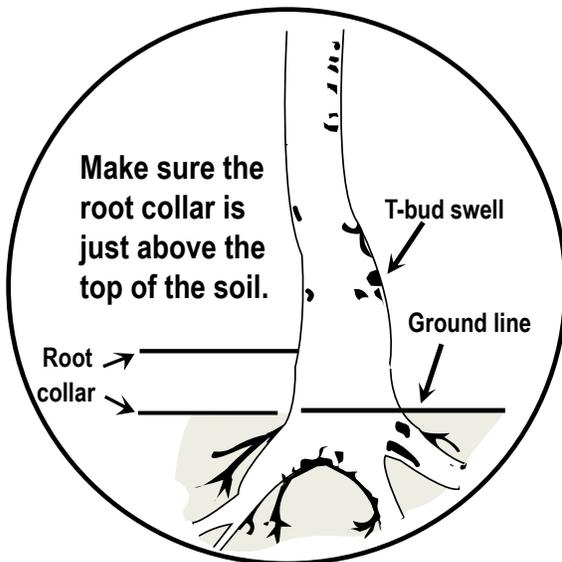
Step 6- Pruning and Staking

Limit pruning to removing broken or dead branches and roots at the time you plant. Delay cosmetic pruning for a year. A tree should not be staked unless absolutely necessary because of extremely windy conditions or a high risk of vandalism. See below for a discussion of staking.

To Stake or Not to Stake?

People in the business of caring for trees often disagree about the value of staking newly planted trees. Expect conflicting advice. Although the trend is away from staking, you should make the decision based on your specific situation. **Here are some facts about staking:**

- When wind blows a tree around, it sends signals to the root system. The trunks of un-staked trees grow thicker faster than staked trees. They are widest at the base and taper off as you go up the tree. They grow this way in response to moving around in the wind, which makes them stronger.

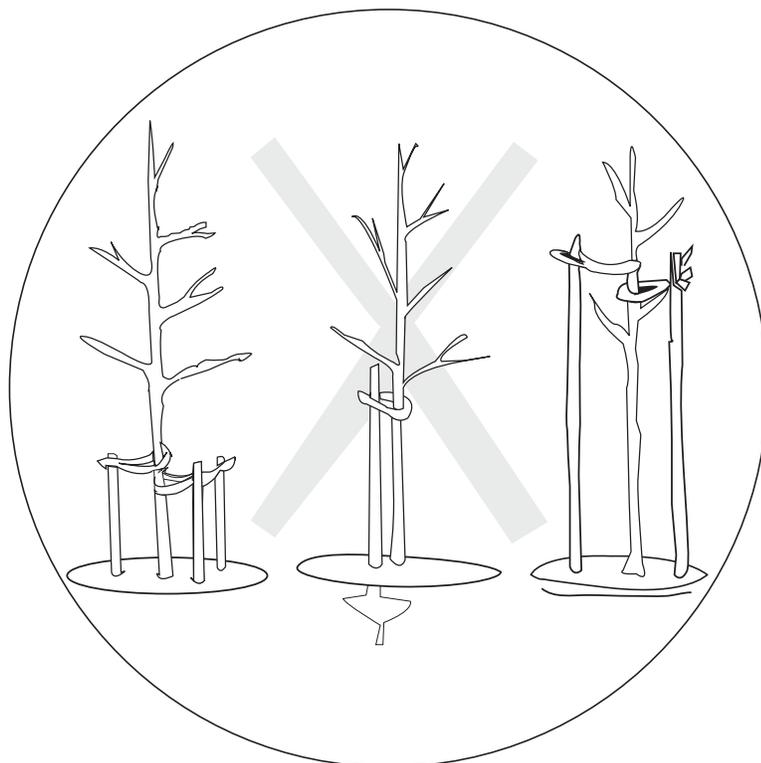


- The root system starts growing earlier in the spring on an un-staked tree than it does on a staked tree, and the root system is stronger than on a staked tree.
- During the first year, staked trees tend to grow taller than un-staked trees.
- Staked trees tend to have narrower, weaker trunks with less taper. Sometimes the trunk becomes wider above the ties, where the tree moves around in the wind, than the sections below the ties. Minimize this problem by tying the tree loosely enough that it can move around in the wind.

- Ties can girdle trees if they are put on too tight and are left on for more than one season. Wire run through a hose is often to blame. Trees can also be girdled with twine.
- Trees can be "wounded" when they are allowed to blow around in the wind and hit the top of the stakes. To avoid this problem, set the stakes more than a foot away from the tree, and put the ties at the top of the stakes.

If you have decided to stake your new trees, do it the best way possible. We recommend the following method:

- Use two (2) to three (3) wooden stakes. Then use ties made of a soft material like strips of rags, old nylons or webbed strap. Don't use hoses with wires or bailer twine. Put one stake on the windward (south) side of the tree.
- For most trees, use short stakes and tie the tree halfway between the ground and the first branches. Don't let the stakes stick up higher than the ties. (See the tree on the left.)
- For a tree that is tall and spindly and cannot stand on its own, use tall stakes and tie the tree above the first branches. Don't put tree ties right below the first branches. This is a vulnerable spot on a tree. Trees commonly snap off here in the wind. (See the tree on the right.)



Trees on left and right show proper staking technique

Step 7 - Water

The last, and one of the most important things to do is to water the tree. Thoroughly soak the soil around the tree. At minimum, water weekly during the spring and summer months.

Lack of water will slow a new tree's growth to a crawl. It also delays establishment and may even kill leaves, branches, roots, or the whole tree.

Too often, the canopy of the tree ends up smaller than it was at the time of planting. **In this section we shed light on recent science-based prescriptions for watering newly planted trees.**

For the most part, trees can only take up water from soil that is in direct contact with roots. To make matters worse, if the roots are cut during transplanting, their ability to absorb water will be compromised. Even in the best conditions, newly transplanted trees use water from a relatively small volume of soil. Since container-grown trees grow in a small volume of soil, they need frequent watering the first few weeks after planting just like other types of stock.

Within two to three days after spring or summer planting, the soil around the roots of trees dries enough to prevent root growth. Apply 1 to 1½ gallons of water for each inch of trunk diameter. After that, water trees every 2 to 3 days. Don't overwater. Check soil moisture levels for the next 2 to 3 months and then weekly until established. The more closely you match your watering frequency to the optimum, the quicker trees become established.

Do not water or irrigate daily if the soil drains poorly (that is -soil drains less than ¼ inches per hour). Also reduce watering in cool, cloudy, or wet weather.

Reducing Water Requirements for Trees

There are two things you can do to reduce the water requirements of newly planted trees.

- **Plant smaller-sized trees.**
Small trees have less root loss and recover faster than large caliper trees.
- **Mulch over the soil after planting.**
Mulch reduces evaporation and conserves water. Frequent watering keeps trees alive and saves the expense of replanting trees.

Planting Containerized Trees

Containerized trees come in plastic or paper containers or wooden bushel baskets. They can weigh hundreds of pounds depending on their size. Do not drop!

Use care when moving trees and setting them down by picking up the bottom of the container - not the tree itself. Dollies are helpful for moving large containerized trees. This is easier on the tree and the people moving them. Improper moving can severely damage the root ball and the root structure.

Once the hole is ready, prepare the tree. Remember that the tree may be planted too deep in the pot. **Follow these steps:**

- Identify the root collar - usually just above where the roots begin. Do not plant any deeper than this.
- Determine if the tree roots hold the soil together in the pot or if the soil is loose.
- If the soil is packed or the pot is root bound (meaning roots are wound together in the pot), carefully remove the tree from the pot. Make a vertical slice 1 to 1½ inches deep, up the sides of each quarter, and make an X cut across the bottom of the soil ball.
- If the tree is too large or the root ball is loose, place the tree and container in the planting hole, and adjust for final position before removing the container
- Carefully cut around the base of the container, and then make a slice up one side of the pot before gently removing sides of the container and backfilling.
- Most containers will not break down if buried and should be removed completely, but for large trees or trees growing in loose soil, the risk of root damage is too great. In those cases, leave the bottom of the pot in the hole. Roots grow out, not down.

Planting Bare Root Trees

Bare root trees (trees with no soil on their roots) are an option for planting small to medium-size deciduous trees and shrubs in the winter. **Here are some tips:**

- Bare root trees must be kept cool and moist at all times. If the roots dry out for even a short time, they can be damaged or killed. This is especially true of the fine, hair-like feeder roots. Store bare root trees with organic mulch that completely covers the root system. Keep the roots damp. A shady location out of the wind is best.
- When moving the trees to the hole or container, keep them covered with mulch or a wet burlap sack, and move quickly. Take care to plant trees before the roots dry out.
- On a windy, sunny day, uncovered roots dry out and are damaged in as little as 30 seconds. The perfect tree-planting day is cool, calm, and damp.
- Have the planting site prepared before moving the tree so no time is wasted with the roots uncovered.
- The hole must be large enough to spread all of the roots out. Do not bend or curve the roots, as this can cause root girdling - a potentially fatal condition.
- Prune any broken roots with a sharp pruner. Do not leave torn or rough ends.
- Identify the root collar. Keep the root collar right at grade level or slightly above to allow for better settling.
- Keep the tree straight when backfilling. There is no root ball to hold the tree straight, so take extra care when packing in the soil.
- Occasionally, bare root trees need staking for the first growing season.

Planting Seedlings

Planting seedlings is an easy economical way to plant large numbers of trees. Seedlings are available from a variety of sources and can often be obtained for free. Seedlings are very small, so people of almost any age and ability can participate in planting.

Seedlings are planted essentially the same way as larger trees, but with less effort by using these steps:

1. Dig a hole large enough to spread out the root system.
2. Place the seedling in the hole. Be sure to spread out all of the roots without bending them. Be sure to place the tree at the right depth when backfilling the hole.
3. Mulch and water the seedling to finish the job.

You can maintain seedlings simply by watering and weeding. A seedling's smaller root system will dry out faster than larger trees, so water more frequently. Be careful not to over-water.

Tree seedlings are also more likely to be affected from the competition of weeds and grasses; so weed planting areas and replenish wood chips frequently.

Tree tubes help increase the survival rates of deciduous seedlings by encouraging growth and reducing damage caused by animals. Tubes can be essential in areas with a high deer population.

Although tubes can substantially increase the success of seedling plantings, they will also add significantly to the cost.

Planting Balled and Burlapped (B&B) Trees

Balled and burlapped (B&B) trees are trees that have the root ball held together by burlap encased in a wire basket. B&B trees are generally larger than containerized trees and can weigh hundreds of pounds.

It is important to handle B&B trees carefully. Do not drop! Lifting these trees, especially larger ones, is difficult, but it is important that they are lifted properly to avoid severely damaging the root ball and the root structure.

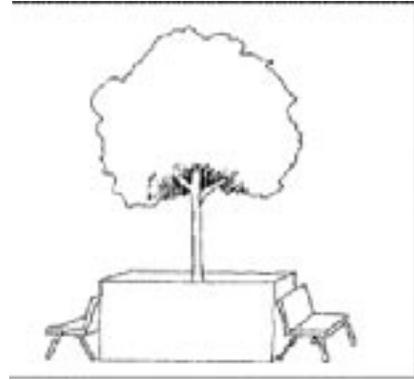
B&B trees can be moved using hooks, such as hay bale hooks on the wire basket, or by using tree dollies- large two-wheeled carts. Moving them using one of these methods is easier on the trees and the people moving them. Do not try to move trees using the twine or the trunk.

1. Do not remove the basket or burlap until the tree is positioned in the hole. This keeps the root ball intact.
2. Carefully loosen the top of the burlap.
3. Probe with a wire or remove soil to determine where the root collar is located - right above where the large roots begin.
4. Dig the hole just deep enough that the root collar is 1 to 3 inches higher than the surrounding ground.
5. Carefully place the tree in the hole and cut away as much of the wire basket as you can without disturbing the soil ball.
6. Cut and remove all twine and rope from around the ball.
7. Remove the nails holding the burlap together and gently fold the burlap back.
8. Gently cut away loose burlap without damaging the root ball. Leave the remaining burlap and wire under the root ball. Most roots grow out, not down.

Planting Trees in Above-Ground Planters

Planting trees in above-ground planters offers a possibility for landscaping in urban areas with limited space and/or poor soil. Advantages of using above ground planters are:

- Ability to avoid pollutant run-off.
- Ability to landscape areas where soil is marginal or non-existent.
- Plants can be moved or elevated if needed.



The urban environment is stressful for trees planted at ground level, but trees in above-ground planters have the added stress of restricted root space and exposure to excessive heat or root freezing. These plants require special planting, maintenance and selection.

Plant Life Expectancy

The life expectancy of an urban tree in an above-ground planter is probably less than 10 years. However, carefully selecting the species to be planted can increase the life expectancy.

Planting trees that are small to medium-size and slow growing may increase the length of time that a tree can survive in an above ground planter. Smaller trees need less soil, and slower growing trees don't outgrow their planting spaces as quickly. Contact local help for names of tree species that grow well in containers. See "Sources" for contacts.

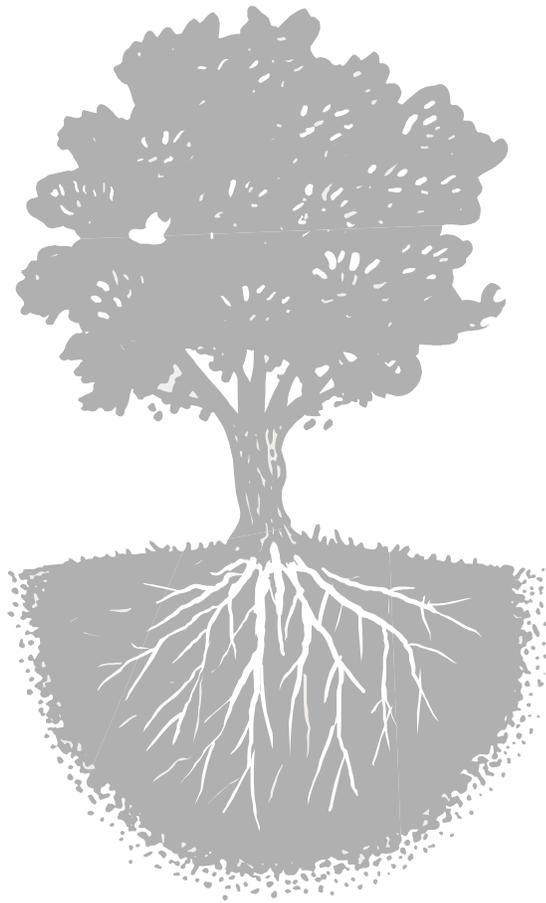
About Planters

Planting in above-ground planters has inherent limitations and problems. Here are a few things to consider:

- **Planter Size.** A minimum size for a planter is 5-feet wide by 2-feet deep. Roots confined to a planter that is too small for the species planted are less likely to develop properly and sustain growth. Because small planters are prone to excessive heat or cold, planters are commonly lined with two inches of closed-cell foam insulation to minimize the problem.
- **Soil.** An adequate soil volume is needed for the root system to develop and function, to maintain moisture, and to limit temperature fluctuations.
- **Water.** Plants will need the equivalent of 1 inch of water per week. Small planters cannot hold enough moisture to keep up with the transpiration of urban trees in the summer; therefore, they will require more water. The smaller the planter, the more likely it is to dry out.
- **Increasing the size of planters.** One way to increase the size, life span and variety of trees in planters is to plant groups of trees, shrubs, and perennials in larger above-ground planting spaces. Sharing root space increases the volume available to individual trees. The larger planter size also helps protect tree roots from extreme heat and cold.

The microclimate created when plants grow together lessens transpiration by lowering leaf temperature and wind speed. Using clump forms, shrubs, and perennials of varied form and height also results in a more natural look.

IV. After the Trees Are Planted



Maintenance for the first Few Years

Once new trees are planted, there is maintenance involved. Watering, mulching, and weed control are the most important tasks for the first 2 to 3 years until the plants get established.

- **Watering**—Water is a limiting factor for plant growth and establishment. A newly planted tree needs frequent watering. At minimum, water weekly during the spring and summer months. Trees that are less than 2 inches in caliper at the time of planting need the least watering. Trees over 4 inches in caliper need the most.

Each time you water, give the tree at least a gallon of water for each inch of caliper. An easy way to water new trees is to lay a hose on the ground near the plant and let it run slowly for up to an hour. Let it run slowly enough that if you stuck it in your mouth (like you did when you were a kid), you could drink it as fast as water runs out. A soaker hose that lets water ooze and drip out is handy for rows or masses of shrubs or trees transplanted with a spade.

Be generous with water, especially on well drained soil. A tree transplanted with a tree spade may need up to 100 gallons of water at a time. Adjust the amount of water applied depending on plant size, soil type and the amount of rainfall received. If water puddles around the tree and doesn't drain away in an hour or two, you've watered too much.

- **Mulching**—Apply 4 inches of wood chips or other degradable mulch over the root zone of the plant. This improves soil structure and aeration, keeps roots cool and moist, controls weeds, and keeps lawn mowers and weed whips away from the base of the plant. Keep mulch several inches away from the trunk of the tree to prevent bark rotting and rodent feeding.
- **Weed Control**—The mulch you added will prevent most weed growth, but a few are bound to grow around your new plants, anyway. Pull weeds out by hand. Use care not to mix soil with the mulch as you pull, or you'll find that weeds multiply there. Weed whips injure bark and kill trees--don't use them!

Avoid using weed-killers (herbicide) around young trees--your new plant doesn't know that it's not a weed! Carefully use herbicides, if you must, to spot spray weeds in large areas or to keep grass from spreading into the chipped area--use with care!

- **Pruning**—At planting time, prune only dead, diseased, broken, or rubbing branches. Start pruning to improve plant form or direct growth during the first or second winter after planting. Most pruning is best done during the winter when trees are dormant. But if you must prune during the summer, choose a dry day to reduce the spread of canker diseases.

Make pruning cuts at a branch union. Most wounds are best left open to the air. Do not use tree wound dressing except in these special situations: *Oak trees wounded between April 15 and July 1 and Elm trees wounded in summer.*

- **Fertilization**— Generally, trees do not need fertilization at the time of planting. When a soil test shows the need for fertilizer, choose one with slow-release nitrogen. Mix it into the back-fill soil. Fertilize your new tree the **second autumn after planting** as the leaves change color.

Apply a complete fertilizer containing nitrogen, phosphorus and potassium. Choose a granular product with slow release nitrogen and broadcast it over the ground under the branch spread of the tree. The fertilizer can also be placed directly into the root zone

of the tree by using a root feeder or by putting fertilizer granules into pre-drilled holes in the soil. Do not apply fertilizer more than once each year. Fertilize in spring (before or while leaves emerge) or in autumn (after leaves change color). Remember to follow label instructions

- **Staking**— Trees rarely need staking. If yours has a small root ball, spindly growth, is in very wet soil, exposed to very high winds, or is at risk for vandalism, you may need to stake. Use a wide, flexible band to attach the tree to the stakes. Tie loosely to allow the tree to move in wind. Remove stakes and ties within 1 year.
- **Rodent Protection**— To protect the trunks of flowering and fruit-bearing trees from gnawing rodents during the winter, place a cage of $\frac{1}{4}$ inch mesh hardware cloth around the trunk from just below the soil line up to the lowest branches. This cage can remain on the tree year-round. Be sure that it is large enough not to constrict the trunk as the tree grows.
- **Insect and Disease Control**— Check your new trees each week. Look for problems. If you find one that you don't recognize, consult a professional for a diagnosis. Many problems are best left untreated, but some can cause real problems. Follow your tree professional's advice exactly when you treat an insect or disease problem. Avoid wounding new trees, especially during the growing season. Wounds invite insect and disease problems.
- **Preventing Mechanical Injury**— Trees in lawn areas are particularly prone to human damage. **Lawn mowers and weed whips are at the top of the danger list.** If you cannot keep these deadly machines away from new trees, protect them with a guard. Cut a slit down the side of a foot long cylinder of large diameter (greater than 4 inches) plastic drain tube and set it around the base of the tree trunk. An ice cream pail without its bottom works, too.

Rx for Trees

Transplant Stress or 'Shock' and How to Reduce It

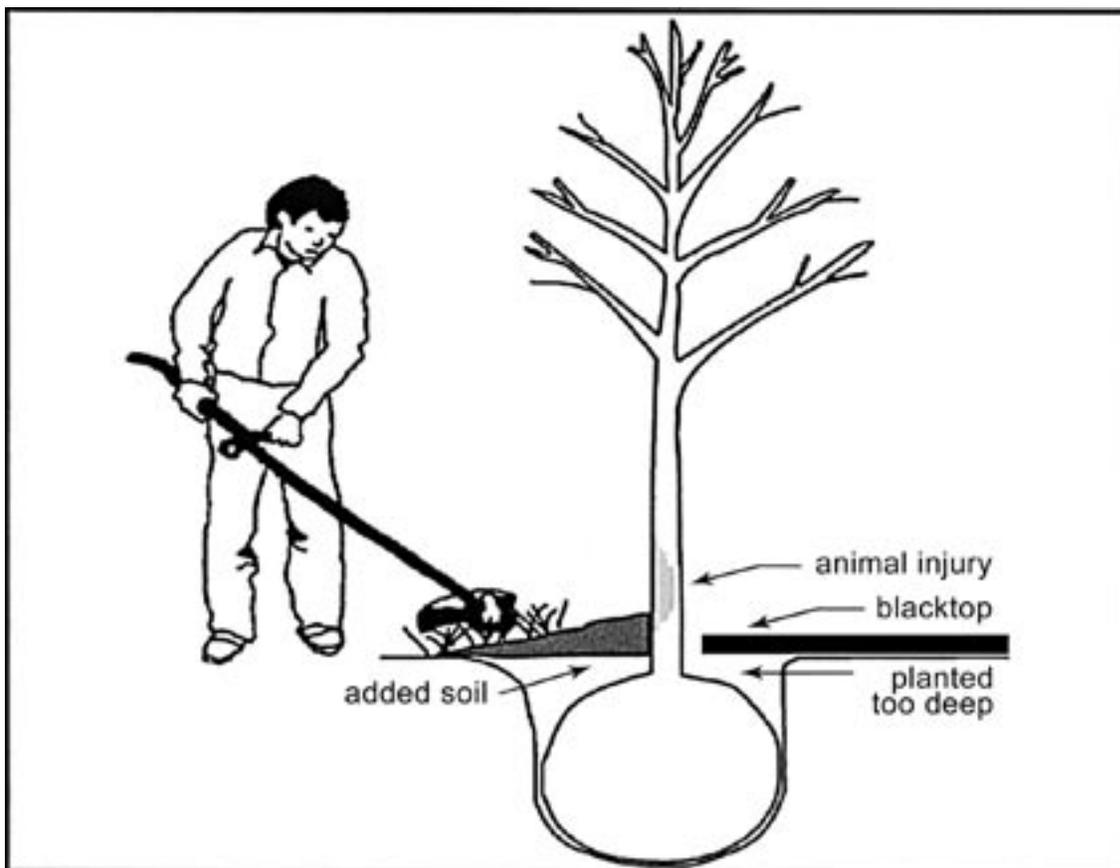
Trees suffer from stress, too! During transplanting, trees lose a significant part of their root system. An 18-foot tall tree, moved with a tree spade loses up to 95 percent of its roots in the process. Growth is normally in balance, but once a portion of the root system is lost, the tree suffers. When the balance of growth is restored, plants are able to grow and reproduce without maintenance and are considered established.

During the establishment period, most of the tree's energy reserves are used to produce new roots. The tree may be particularly vulnerable to attack by secondary insect and disease organisms, such as borers and canker fungi. Take care of trees before, during, and after planting to reduce the effects of transplant stress.

The Top 11 Causes of Young Tree Failure During the First 5 Years

- 1. Improper Species Selection:**
Selecting the wrong species for the site.
- 2. Poor site preparation and drainage:**
Poor soil management often leads to poor soil drainage.
- 3. Planting too deep:**
This can kill trees in all soils, but especially in heavy soils.
- 4. Lack of watering:**
Water is the most important ingredient in tree survival. Too much or too little causes tree problems.
- 5. Planting non-hardy plant stock:**
Non-hardy stock will die or suffer crown and trunk injury in cold winters.
- 6. Poor care in a nursery and in shipping and handling:**
Trees are a perishable product when out of the ground. Digging, storage, transportation, and temporary holding areas are all potential failure points.
- 7. Planting too late in spring:**
Bare root and B&B plantings often fail if planted during hot, dry periods in late spring and early summer.
- 8. Weather:**
Extremely dry, hot, windy or wet weather can severely damage young trees. Hard spring freezes after leaf-out or cold snaps before trees harden off, can be devastating.
- 9. Insects and Diseases:**
Recently planted trees are vulnerable to defoliating insects and trunk borers. Canker and wilt diseases commonly cause failure.
- 10. Herbicide Injury:**
Soil sterilants in fence lines, herbicide runoff from farm fields, herbicide carryover and spray drift are known killers of young and old trees.
- 11. Mechanical Injury:**
Weed whips, lawn mowers, construction activities, vehicles, vandalism and improper pruning can kill trees or cause slow deaths by severely limiting the transport of water and food in the tree trunk.

Diagram: Tree Killers



V. Sources



The following sources were used to compile this manual:

- The National Arbor Day Foundation
- National Tree Trust
- American Forests
- Texas Forest Service
- City of Houston Parks and Recreation Department - Urban Forestry Division

The following organizations can be used as resources:

- City of Houston Urban Forestry Division 713-867-0378 or 311
- Texas Forest Service Bayou Region 713-688-8931
- TreeScape 713-942-0587
- The Park People 713-942-7275
- Trees For Houston 713-840-8733
- Scenic Houston 713-629-0481
- Keep Houston Beautiful 713-839-8855

This manual was reviewed by the Texas Forest Service and City of Houston Parks and Recreation Department - Urban Forestry Division.

To download or print a copy of this manual, visit:

http://www.ci.houston.tx.us/departme/planning/planning_dev_web/publications/treeManual_F.pdf
(Please note: This is a very large file and may take several minutes to print.)

Feel free to share this link with other interested community volunteers.