

2013, First Edition

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The Cities of Hailey and Ketchum Elected officials and Staff

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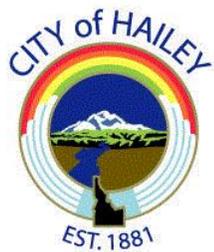


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Introduction

The Wood River Valley is a land of many contrasts. Compare the native vegetation of the high desert plains, evergreen-studded hills, and lush floodplains to the cultured "forest" of city trees, some established near the turn of the century. The mosaic of varied textures and colors adds to the beauty of the valley and the quality of our lifestyle.

This guide has been prepared for the purpose of helping you make better choices when preparing to select, plant and maintain trees. *It is not meant to replace the advice of professionals, only to help you define some options and better understand the ramifications of your choices.*

Benefits of Trees

Most trees in cities or communities are planted to provide beauty or shade. Trees also serve many other purposes, and it often is helpful to consider these other functions when selecting a tree for the landscape. They beautify our surroundings, purify our air, act as visual/sound barriers, manufacture oxygen, and help us save energy through their cooling shade in summer and their wind reduction in winter. Trees also provide many social and communal benefits such as providing functional areas like parks and green spaces for residents to enjoy.

Value of Trees

Trees and other plant life are valuable and increase property value. They have monetary value that can be measured by competent plant appraisers.

Property Line Considerations

There are a few things to consider when planting a tree in relation to property lines. First, trees are not approved to be planted in Rights of Way (ROW) or easements without a permit from the City. Call your City Hall for permits and conditions to plant or perform any work on trees in the public Right of Way. Secondly, when planting near adjoining private property, it is important to know the rights of the adjoining landowner with regard to the tree. Currently, if the tree is located on the common boundary line of adjoining landowners, it is owned by both landowners as tenants in common. This means that any maintenance or removal of the tree will need to be approved by both property owners. If the tree is setback from the property line, but branches or roots extend into the adjoining landowner's yard, the landowner is entitled to trim the branches or roots back to the property line (provided that it's not detrimental to the health of the tree).

Another important thing to remember when considering property lines is the location of utilities. Many of the utilities to service our homes and businesses are now installed underground. Water, sewer, natural gas, power, telephone, cable TV, and fiber optic lines can be easily cut by digging equipment. You do have a legal and financial responsibility for damage to utility lines.

Idaho Dig Line, Inc. is a one-call center that will notify the member utilities in your area prior to working near underground utility lines and overhead power lines. (Please call Dig Line at 811

two business days in advance.) The member utilities in turn, will mark their lines with paint marks and/or stakes. This is a free service provided by your utilities.

Consult a professional if you are unsure about or need more information regarding property line considerations.

Permit Considerations

Call your City Hall for permits and conditions to plant or perform any work on trees in public Right of Way.

Site Selection

General Site Selection Guidelines

Selecting a tree that will thrive in a given set of site conditions is the key to long-term tree health. The following are the major site conditions to consider before selecting a tree for planting.

- *Soil* - The most common issues are shallow or unhealthy topsoil, compacted soils, and poor drainage.
- *Sun* - The amount of sunlight available will affect tree species selection for a particular location.
- *Wind* - Exposure to wind can cause water loss in soils and uprooted trees. Staking or more frequent irrigation may be needed to establish juvenile trees on windy sites.
- *Location & Planting Space* - Carefully consider how the tree will look fifty years from now and plan accordingly. Many different factors such as utility lines, pavement, buildings, other plants, and view corridors can limit the planting space available to the tree.

Consult a professional to determine the condition of your site and get recommendations on ways to improve potential problems.

Local Plant Hardiness Zones

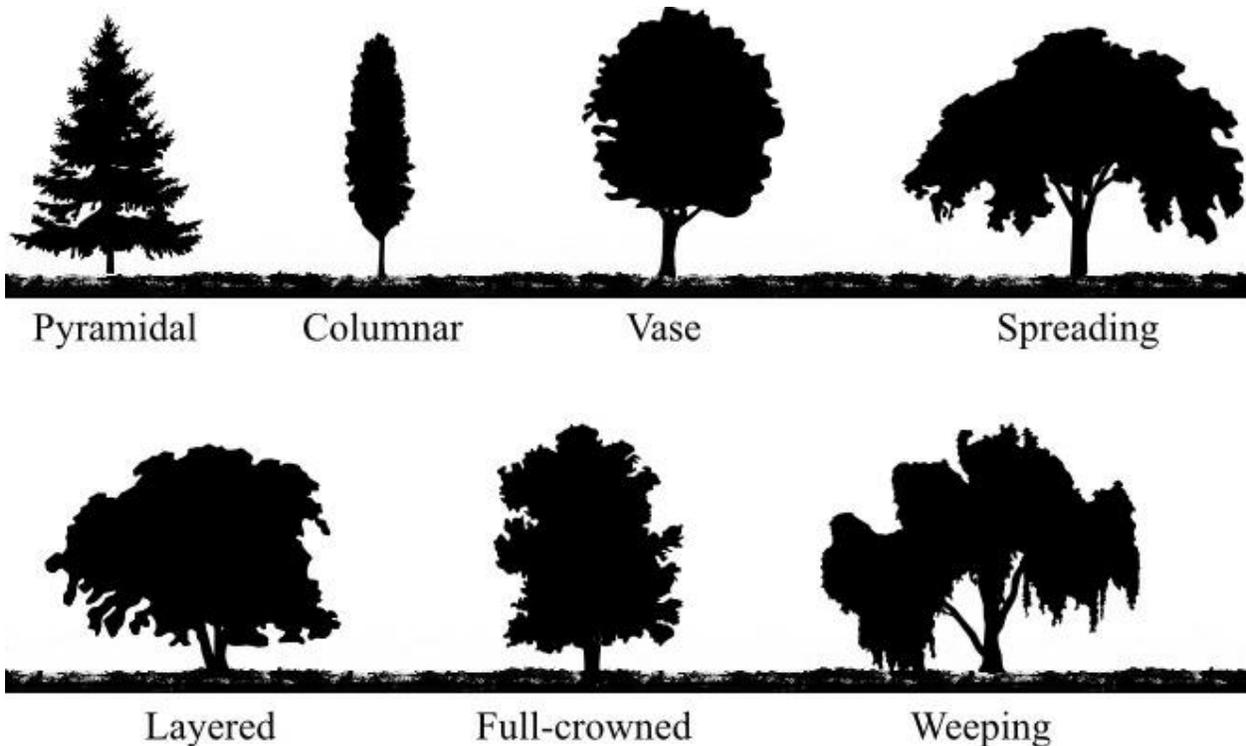
The Wood River Valley is subject to a variety of micro-climates. Hardiness zones are based on a plant's ability to withstand the minimum low temperature for that given area. This does not take into account summer temperatures, humidity, and drought tolerance. The issue is further compounded by our high solar index during the winter, (daily freeze /thaw) and depth of snow cover. The majority of zone 4 plant materials will thrive in this area. Growing seasons are unbelievably short in our valley. The primary factor in plant growth from year to year is dependent on ground temperature which is variable. Please contact your local nursery grower, landscape professional, or consult the suggested species list contained in this guide for more specific information.

Tree Selection

General Tree Selection Guidelines

Matching the tree to the site is one of the most important decisions a property owner makes when landscaping or replacing a tree lost to damage or disease. Carefully consider “the right tree for the right place.”

Selecting the right form (shape) to complement the desired function (what you want the tree to do) can significantly reduce maintenance costs and increase the tree’s value in the landscape. When making a selection about form, also consider mature tree size. Trees grow in a variety of sizes and shapes, as shown below. They can vary in height from several inches to several hundred feet. Select a form and size that will fit the planting space provided now and into the future.



Size

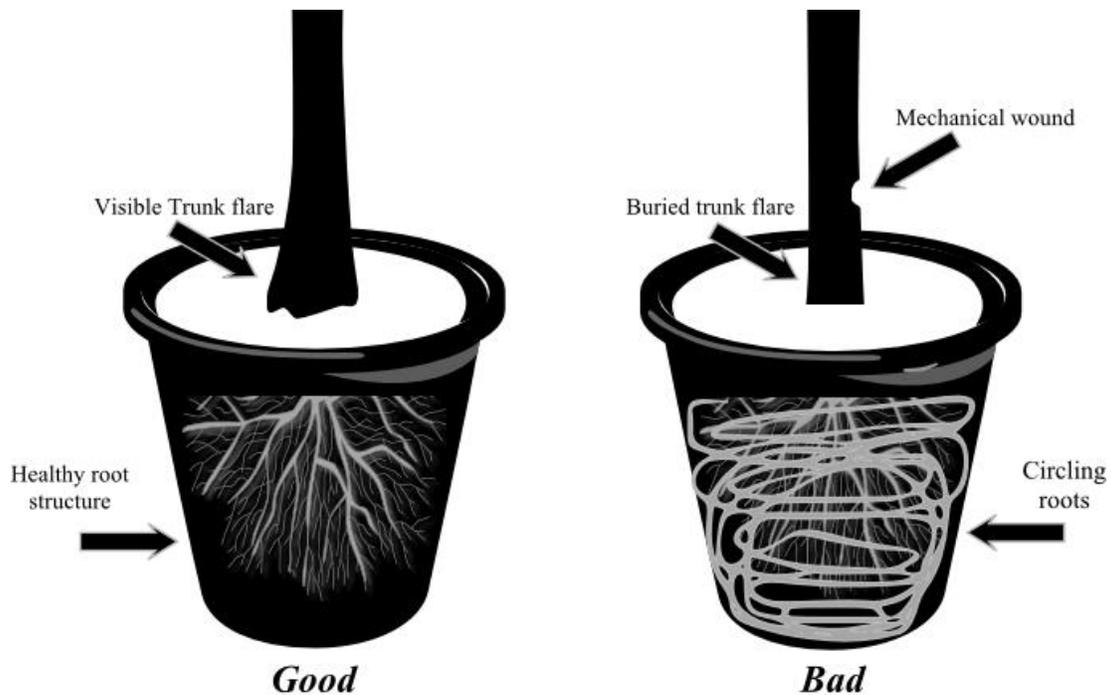
How tall (height) and how wide (spread) trees will grow is a very important factor to consider when selecting a tree. In general, small trees are less than 25 feet tall when mature, medium trees grow 25 to 50 feet tall when mature, and large trees grow over 50 feet tall when mature. A tree’s spread is a result of its growth habit and should also play a significant role when selecting for a particular site. Consult a professional or the suggested species list on pages 5-6 in this guide to insure you are choosing the proper size species for the planting location.

Purchasing High Quality Trees

A high-quality tree has enough sound roots to support healthy growth, a trunk without wounds, and a strong structure with well-spaced, firmly attached branches.

A low-quality tree has crushed or circling roots in a small root ball or small container, a trunk with wounds from mechanical impacts or incorrect pruning, and a weak structure.

Roots on trees for sale are available as one of three types: bare root (no soil), root balled (roots in soil held in place by burlap or some other fabric), and container grown (roots and soil in a container). You should be able to see the basal trunk flare. The flare is the spreading trunk base that connects with the roots. Watch out for trees planted too deeply in containers or trees buried in fabric bags. Avoid trees with many crushed or torn roots. The majority of roots should not twist or circle in the containers.



Beware of injuries beneath trunk wraps. Never buy a tree without thoroughly checking the trunk. If the tree is wrapped, remove the wrap and inspect the trunk for wounds, incorrect pruning cuts, and insect injuries.

Any of these problems alone or in combination with others will greatly reduce the tree's chances for a long, attractive, healthy, and productive life. Consult a professional to assist in the purchase of the highest quality tree possible.

Suggested Species for the Wood River Valley

SMALL EVERGREEN

Common Name	Scientific Name	Height	Spread	Habit	Native (Blaine County)	Features/Problems
Arborvitae*	<i>Thuja occidentalis</i>	10'-15'	6'-8'	pyramidal	no	winter damage
Juniper*	<i>Juniperus ssp.</i>	2'-20'	4'-10'	pyramidal	yes	drought tolerant, drainage
Pine - Bristlecone*	<i>Pinus aristata</i>	10'-15'	8'-10'	pyramidal	no	slow-growing, drought tolerant
Pine - Mugo*	<i>Pinus mugo</i>	10'-15'	6'-8'	pyramidal/spreading	no	elk damage
Pine - Mugo Dwarf*	<i>Pinus mugo</i>	6'-8'	5'-15'	pyramidal/spreading	no	elk damage
Pine - Scotch Dwarf*	<i>Pinus sylvestris</i>	8'-10'	6'-8'	pyramidal/spreading	no	winter damage
Spruce, Alberta Dwarf*	<i>Picea glauca 'conica'</i>	4'-10'	2'-4'	pyramidal	no	small spaces, topiary

SMALL DECIDUOUS

Common Name	Scientific Name	Height	Spread	Habit	Native (Blaine County)	Features/Problems
Alder	<i>Alnus incana</i>	15'-20'	10'-15'	pyramidal/spreading	yes	short-lived, drainage
Apple**	<i>Malus ssp.</i>	10'-15'	10'-15'	vase/spreading	no	edible fruit, fireblight
Apricot**	<i>Prunus ssp.</i>	10'-15'	10'-15'	vase/spreading	no	edible fruit
Birch, Western Red	<i>Betula occidentalis fontinalis</i>	30'-40'	20'-30'	layered	no	decorative bark, birch bore
Birdcherry/Mayday	<i>Prunus padus</i>	15'-20'	10'-15'	spreading	no	hardier in south valley
Cherry**	<i>Prunus ssp.</i>	10'-15'	10'-15'	vase/spreading	no	edible fruit
Chokecherry	<i>Prunus virginiana</i>	15'-20'+	8'-15'	pyramidal/spreading	some ssp.	few pest issues, drainage
Crabapple**	<i>Malus ssp.</i>	10'-30'	10'-20'	vase/spreading	no	fireblight, fruit litter
Elm, Camperdown*	<i>Ulmus glabra 'camperdownii'</i>	5'-10'	8'-10'	weeping	no	good for small spaces
Hawthorn	<i>Crataegus ssp.</i>	15'-20'	15'-20'	vase/spreading	no	attract birds, fireblight
Lilac, Japanese Tree	<i>Syringa reticulata</i>	15'-30'	15'-20'	vase/spreading	no	fragrant flower
Maple, Amur	<i>Acer ginnala</i>	10'-20'	10'-12'	layered	no	brilliant red leaf color
						winter damage
Maple, Bigtooth	<i>Acer grandidentatum</i>	15'-25'	10'-15'	vase/spreading	no	few pest issues
Mountainash**	<i>Sorbus aucuparia</i>	20'-30'	15'-20'	pyramidal/spreading	no	attract birds, fruit litter
						fireblight, winter damage
Oak, Burenglish	<i>Quercus macrocarpa x robur</i>	10'-30'	10'-30'	spreading	no	hardier in south valley
Oak, Swamp White	<i>Quercus bicolor</i>	15'-30'	10'-15'	full-crowned	no	hardier in south valley
Olive, Russian**	<i>Elaeagnus angustifolia</i>	15'-20'	10'-15'	layered	no	thorns, invasive
Pear**	<i>Pyrus ssp.</i>	10'-25'	8'-20'	pyramidal	no	edible fruit, fireblight
Plum**	<i>Prunus ssp.</i>	10'-15'	10'-15'	vase/spreading	no	edible fruit
Serviceberry	<i>Amelanchier alnifolia</i>	5'-15'	5'-10'	layered	yes	few pest issues, attract birds

MEDIUM EVERGREEN

Common Name	Scientific Name	Height	Spread	Habit	Native (Blaine County)	Features/Problems
Pine, Austrian*	<i>Pinus nigra</i>	25'-50'	15'-25'	spreading	no	bark beetles, elk damage
Pine, Limber*	<i>Pinus flexilis</i>	15'-30'	8'-15'	pyramidal	yes	long-lived, blister rust
Pine, Scotch*	<i>Pinus sylvestris</i>	30'-50'	20'-30'	spreading	no	winter damage, bark beetles
Spruce, Semi-dwarf*	<i>Picea ssp.</i>	5'-30'	3'-15'	pyramidal	no	small spaces

*Species not recommended for street corner locations in right-of-way plantings due to motorist visibility

**Species not recommended for right-of-way plantings due to seed & fruit litter, invasive roots/sprouts, or safety

MEDIUM DECIDUOUS

Common Name	Scientific Name	Height	Spread	Habit	Native (Blaine County)	Features/Problems
Ash, Green	<i>Fraxinus pennsylvanica</i>	25'-50'	20'-25'	full-crowned	no	shade tree
Ash, Mancana	<i>Fraxinus mandshurica</i>	25'-50'	20'-25'	full-crowned	no	shade tree
Aspen, Quaking**	<i>Populus tremuloides</i>	25'-50'	10'-15'	columnar	yes	fast-growing, short-lived
						pest issues, invasive
Aspen, Swedish	<i>Populus tremula erecta</i>	25'-50'	10'-15'	columnar	no	winter damage
Birch, European White	<i>Betula pendula</i>	40'-50'	20'-30'	pyramidal	no	decorative bark, birch bore
Boxelder**	<i>Acer negundo</i>	30'-50'	20'-40'	spreading	yes	boxelder bugs, invasive
Horsechestnut	<i>Aesculus hippocastanum</i>	25'-50'	20'-30'	full-crowned	no	hardier in south valley
Linden, Littleleaf	<i>Tilia cordata</i>	40'-50'	20'-40'	pyramidal	no	attract aphids, ants, bees
Linden, American	<i>Tilia americana</i>	40'-80'	20'-40'	full-crowned	no	attract aphids, ants, bees
Locust, Black	<i>Robinia pseudoacacia</i>	30'-50'	20'-30'	full-crowned	no	hardier in south valley
Maple, Norway	<i>Acer platanoides</i>	30'-60'	20'-40'	full-crowned	no	hardy, shade tree
Maple, Red	<i>Acer rubrum</i>	30'-60'	20'-40'	full-crowned	no	hardier in south valley
Maple, Autumn Blaze	<i>Acer x freemanii</i>	50'-60'	30'-40'	full-crowned	no	brilliant red leaf color

LARGE EVERGREEN

Common Name	Scientific Name	Height	Spread	Habit	Native (Blaine County)	Features/Problems
Fir, Concolor*	<i>Abies concolor</i>	30'-60'	20'-30'	pyramidal	yes	soft needles, few pest issues
Fir, Douglas*	<i>Pseudotsuga menziesii</i>	50'-100'	20'-30'	pyramidal	yes	hardy
Fir, Sub-alpine*	<i>Abies lasiocarpa</i>	50'-100'	10'-20'	pyramidal	yes	drainage
Larch, Western	<i>Larix occidentalis</i>	50'-100'	20'-30'	pyramidal	yes	deciduous conifer
Pine, Lodgepole*	<i>Pinus contorta</i>	50'-100'	20'-30'	pyramidal	yes	bark beetles, elk damage
Pine, Ponderosa*	<i>Pinus ponderosa</i>	50'-100'	20'-30'	pyramidal	no	elk damage
Spruce, Colorado Blue*	<i>Picea pungens</i>	50'-80'	20'-30'	pyramidal	no	pest issues
Spruce, Engelmann*	<i>Picea engelmannii</i>	50'-100'	20'-30'	pyramidal	yes	hardy
Spruce, Norway*	<i>Picea abies</i>	50'-80'	20'-30'	pyramidal	no	large decorative cones

LARGE DECIDUOUS

Common Name	Scientific Name	Height	Spread	Habit	Native (Blaine County)	Features/Problems
Buckeye	<i>Aesculus glabra</i>	30'-60'	20'-30'	full-crowned	no	hardier in south valley
Cottonwood, Black**	<i>Populus trichocarpa</i>	60'-110'	20'-30'	columnar	yes	short-lived, invasive
						structural safety issues
Elm, Siberian**	<i>Ulmus pumila</i>	30'-60'	20'-40'	vase/spreading	no	messy, invasive
Maple, Silver	<i>Acer saccharinum</i>	30'-60'	20'-30'	full-crowned	no	prone to decay
Poplar, Silver**	<i>Populus alba</i>	30'-60'	20'-40'	full-crowned	no	fast-growing, short-lived
Willow**	<i>Salix alba</i>	30'-60'	20'-40'	full-crowned/weeping	some ssp.	messy, invasive

*Species not recommended for street corner locations in right-of-way plantings due to motorist visibility

**Species not recommended for right-of-way plantings due to seed & fruit litter, invasive roots/sprouts, or safety

Planting

General Planting Guidelines

After locating a good site and selecting an appropriate species, it is time to plant your tree. In general a tree about 2 inch caliper (diameter of tree near the base) or smaller is the best size for long term health. Larger trees can be successfully planted by professionals using heavy equipment, but they typically take longer to establish and aren't as healthy over time.

Planting a Tree

The ideal time to plant trees is during the dormant season. In the fall after leaf drop or early spring before bud-break when weather conditions are cool and allow plants to establish roots. Conversely, given the appropriate care during all phase of the process, planting is possible throughout the growing season. Careful handling during transport and planting is essential to ensure a healthy future for new trees.

If the tree you are planting is balled and burlapped or bare root, it is important to understand that its root system has been reduced by 90 percent of its original size during transplanting. As a result of the trauma caused by the digging process, trees commonly exhibit what is known as transplant shock. Containerized trees may also experience transplant shock, particularly if they have circling roots that must be cut. Transplant shock is indicated by slow growth and reduced vigor and can be evident for up to 5 years after transplanting. Proper site preparation before and during planting combined with good follow-up care reduces the amount of time the tree experiences transplant shock and allows the tree to quickly establish in its new location.

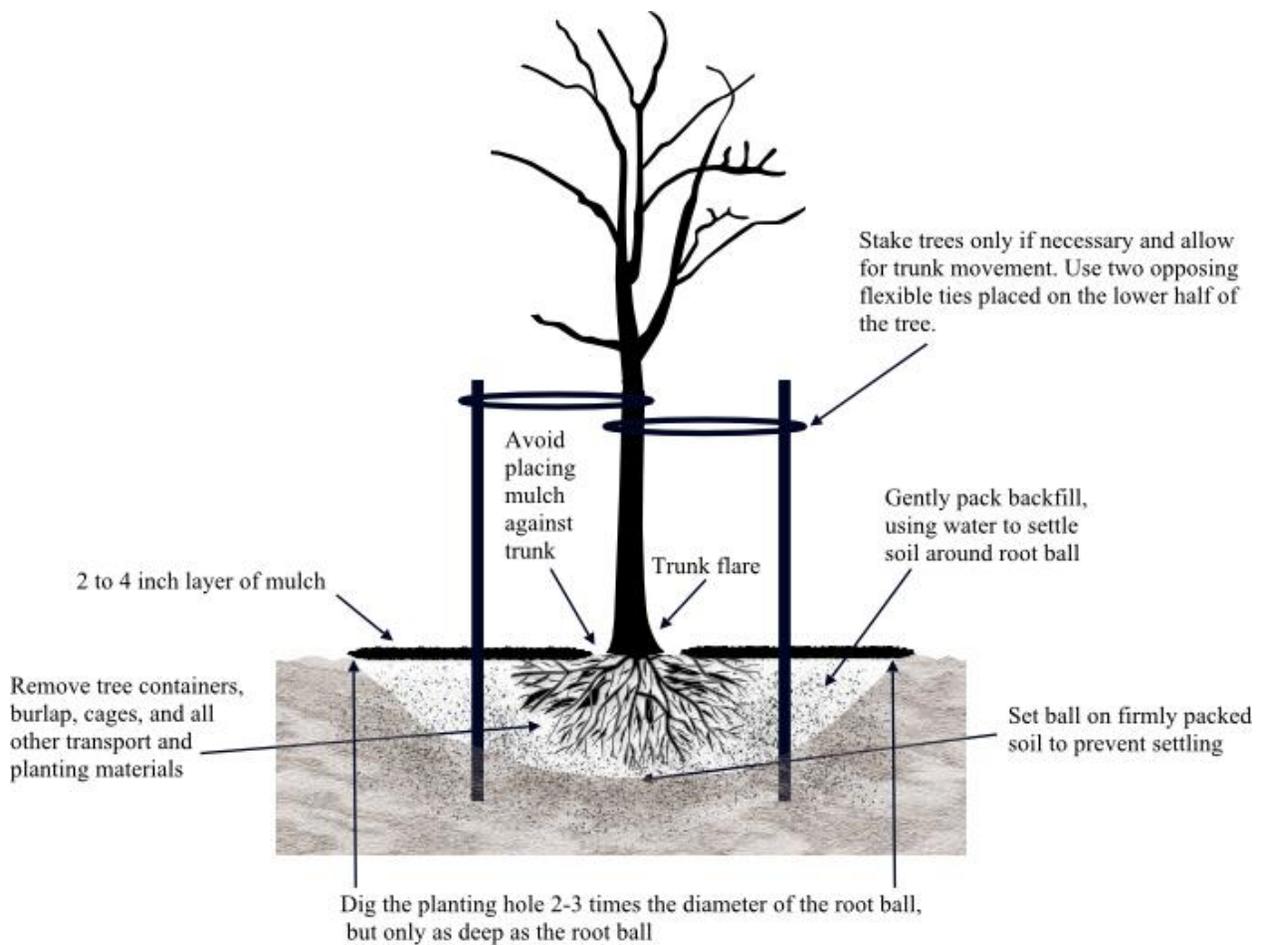
Carefully follow these simple steps, and you can significantly reduce the stress placed on the tree at the time of planting:

- *Dig a shallow, broad planting hole* - Make the hole wide, as much as three times the diameter of the root ball but only as deep as the root ball. Breaking up the soil in a large area around the tree provides the newly emerging roots room to expand into loose soil to encourage establishment.
- *Identify the trunk flare* - The trunk flare is where the roots spread at the base of the tree. This point should be partially visible after the tree has been planted. If the trunk flare is not partially visible, you may have to remove some soil from the top of the root ball.
- *Remove the tree container and other planting materials* - Carefully remove the tree out of the container. Inspect the root ball for circling roots and cut or remove them. Expose the trunk flare, if necessary. With balled and burlapped trees, cut and remove the burlap and strings meant to hold the root ball intact during transport. If the ball is in a wire basket, cut and remove the entire basket if possible, or at minimum the top two tiers of wire.
- *Place the tree at the proper height* - Before placing the tree in the hole, check to see that the hole has been dug to the proper depth and no more. The majority of the roots on the newly

planted tree will develop in the top 12 inches of soil. It is better to plant the tree a little high than to plant it at or below the original growing level. This higher planting level will allow for some settling of soil. To avoid damage when setting the tree in the hole, always lift the tree by the root ball and never by the trunk.

1. Straighten the tree in the hole. Before you begin backfilling, have someone view the tree from several directions to confirm that the tree is straight.
2. Fill the hole about one-third full and gently but firmly pack the soil around the base of the root ball. Fill the remainder of the hole, taking care to firmly pack soil to eliminate air pockets that may cause roots to dry out. It is not recommended to apply fertilizer at the time of planting.

● *Mulch around the base of the tree* - Mulch acts as a barrier to hold moisture, moderates soil temperature extremes, and reduces competition from grass and weeds. A layer of 2-4 inches is ideal. More than 4 inches may cause problems with oxygen and moisture levels. Avoid placing mulch against the trunk by pulling it back several inches so as not to cause decay of the living bark at the base of the tree.



● *Provide follow up care* - Keep the soil moist but not soaked; overwatering causes leaves to turn yellow or fall off. When the soil is dry below the surface of the mulch, it is time to water. Trees

need deep watering at least once a week and more frequently during hot weather. Continue until mid-fall, tapering off for lower temperatures that require less-frequent watering. Watch for signs of insect and disease damage and consult a professional if problems are detected.

Staking Guidelines

Stake trees only if necessary and allow for the natural sway of the tree. Staking increases the amount of time it takes for a tree to stabilize itself and therefore should only be done on windy or steep planting areas that require the extra support. Staking materials can do harm to trees by girdling stems or branches and should be adjusted as needed and left on for a maximum of 1 year after planting.

Maintenance

Proper Watering Practices

During our local dry summers, trees must be watered regularly. Irrigation systems designed to water turf do not sufficiently water your trees because the turf uses most of the surface water. Caring for trees requires more direct watering methods than your lawn. Letting your hose flood irrigate, or installing drip irrigation around trees are two acceptable methods of deep watering.

How much water your tree should receive depends upon the tree size. A general rule of thumb is to use approximately 10 gallons of water per inch of trunk diameter for each watering. Measure the tree trunk's diameter at knee height.

- All size trees should be deep watered once a week - April through September.
- Water should be distributed evenly under the drip-line of the tree.
- Water should be penetrating 10 to 12 inches below the soil surface inside the dripline.

Proper Fertilization/Soil Health

Soil fertility and health vary greatly at different locations. Consult a landscape professional to perform a soil test, assess potential problems of your site, and get recommendations on ways to improve poor soil conditions. Recommendation may include adding fertilizers or soil amendments (sand, compost, or manure) and cultural methods that break up compacted areas or improve drainage.

Pest and Disease Management

Insects and diseases can threaten tree health. As soon as you notice any abnormality in your tree's appearance, you should begin a careful assessment of the problem. By identifying the specific symptoms of damage and understanding their causes, you may be able to diagnose the problem and select an appropriate treatment. Seek the advice of a professional if you have any doubt about the nature of the problem or proper treatment.

Correct diagnosis of plant health problems requires an investigation of the situation as follows:

- *Accurately identify the plant* - Because many insects and diseases are plant-specific, this information can quickly limit the number of suspected diseases and disorders.
- *Look for a pattern of abnormality* - It may be helpful to compare the affected plant with other plants on the site, especially those of the same species.
- *Carefully examine the landscape* - The history of the property and adjacent land may reveal many problems. The number of species affected may also help distinguish between infectious pathogens that are more plant-specific as compared to chemical or environmental factors that affect many different species.
- *Examine the roots* – Discolored, broken, decaying roots, or the presence of mushrooms may indicate serious issues involving root health.
- *Check the trunk and branches* - Examine the trunk thoroughly for wounds that may provide entrances for pathogens and wood-rotting organisms. Large defects may indicate a potentially hazardous tree.
- *Note the position and appearance of affected leaves* - The size and color of the foliage may tell a great deal about the plant's condition. Make note of these and any other abnormalities.

The treatment method used for a particular insect or disease problem will depend on the species involved, the extent of the problem, and a variety of other factors specific to the situation and local regulations. Always consult a professional if you have any doubt about the nature of the problem or proper treatment.

Benefits of Mulching Trees

Mulch refers to the placement of any material on the ground around plants. Mulch is a protective covering of various organic and inorganic materials that is spread over the soil surface to regulate moisture and improve soil conditions.

- Helps maintain soil moisture. Evaporation is reduced, and the need for watering can be minimized.
- Helps control weeds. A layer 2-4 inches thick of mulch will reduce the germination and growth of weeds.
- Serves as nature's insulating blanket. Mulch keeps soils warmer in the winter and cooler in the summer.
- Improves soil aeration, soil structure, and drainage over time.
- Improves soil fertility and increase organic matter.
- Can inhibit certain plant diseases.
- Reduces the likelihood of damage from weed whackers or the dreaded lawn mower blight.
- Gives planting beds a uniform, well-cared-for look.

Proper Pruning Techniques

Keep these few simple principles in mind before pruning a tree:

- Proper technique is essential. Poor pruning can cause damage that lasts for the life of the tree. Learn where and how to make the cuts before picking up the pruning tool.
- Each cut has the potential to change the growth of the tree. Always have a purpose in mind before making a cut.
- Trees do not heal the way people do. When a tree is wounded, it must grow over and compartmentalize the wound. As a result, the wound is contained within the tree forever.
- Small cuts do less damage to the tree than large cuts. For that reason, proper pruning (training) of young trees is critical.



Pruning cuts should be made just outside the branch collar



Proper Pruning Cut



Tree healing from a proper pruning cut

Where you make a pruning cut is critical to a tree's response in growth and wound closure. Make pruning cuts just outside the branch collar. Because the branch collar contains trunk or parent branch tissues, the tree will be damaged unnecessarily if you remove or damage it.

Most species can be pruned during any season, but the best time to prune is fall/winter. Fruit trees are very susceptible to fire blight in our valley and should only be pruned when dormant to reduce infection.

If a permanent branch is to be shortened, it should be cut to a lateral branch or bud. Cuts made between buds or branches, may lead to stem decay, sprout production, and misdirected growth.

Be realistic about each particular species's natural form and prune accordingly. Right tree, Right place!

Pruning Young Trees

Proper pruning is essential in developing a tree with a strong structure and desirable form. Trees that receive the appropriate pruning measures while they are young will require less corrective pruning when they mature.

A good structure of primary scaffold branches should be established while the tree is young. The scaffold branches provide the framework of the mature tree.

The goal in training young trees is to establish a strong trunk with sturdy, well-spaced branches. The strength of the branch structure depends on the relative sizes of the branches, the branch angles, and the spacing of the limbs.

Naturally, those factors vary with the growth habit of the tree. *Good pruning techniques remove structurally weak branches while maintaining the natural form of the tree.*

Pruning of newly planted trees should be limited to corrective pruning. Remove torn or broken branches, and save other pruning measures for the second or third year.

Pruning Mature Trees

Pruning is a common tree maintenance procedure. Although forest trees grow quite well with only nature's pruning, landscape trees require a higher level of care to maintain their safety and aesthetics. Pruning should be done with an understanding of how the tree responds to each cut. Improper pruning can cause damage that will last for the life of the tree, or worse, shorten the tree's life.

If people and trees are to coexist in an urban or suburban environment, then we sometimes have to modify the trees. City environments do not mimic natural forest conditions. Safety is a major concern. Also, we want trees to complement other landscape plantings and lawns. Proper pruning, with an understanding of tree biology, can maintain good tree health and structure while enhancing the aesthetic and economic values of our landscapes.

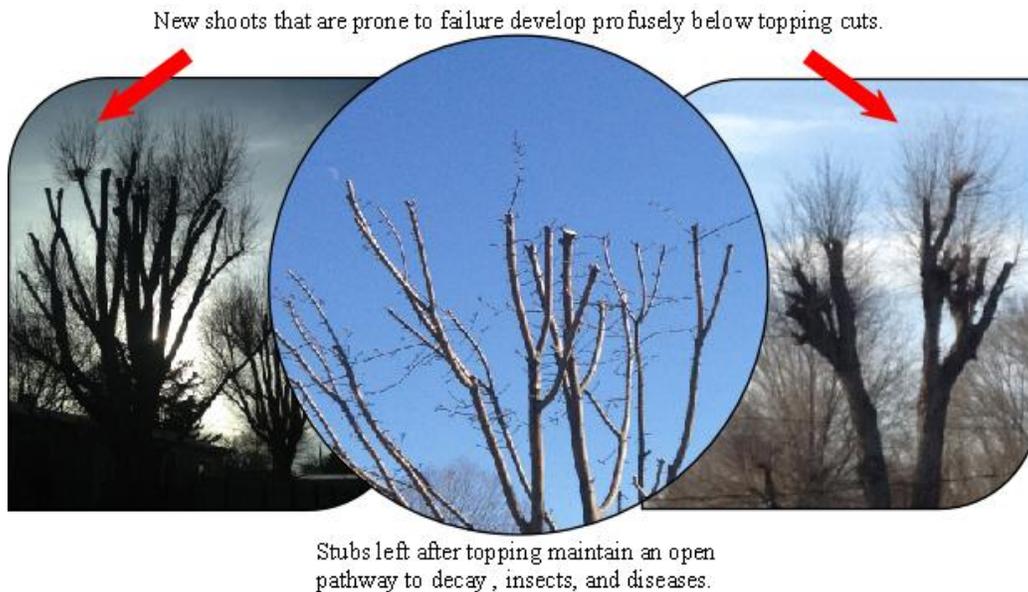
Mature trees should require little routine pruning. A widely accepted rule of thumb is never to remove more than one-quarter of a tree's leaf-bearing crown. Removing even a single, large-diameter limb can create a wound that the tree may not be able to close. The older and larger a tree becomes, the less energy it has in reserve to close wounds and defend against decay or insect attack. The pruning of large mature trees is usually limited to removal of dead or potentially hazardous limbs. Pruning large trees can be difficult and dangerous. If pruning involves working above the ground, using power equipment, or working near power lines, it is best to hire a trained and certified professional arborist.

Wound dressings were once thought to accelerate wound closure, protect against insects and diseases, and reduce decay. However research has shown that dressings do not reduce decay or speed closure and rarely prevent insect or disease infestations. Most experts recommend that wound dressing not be used. If a dressing must be used for cosmetic purposes, use a thin coating of a material that is not toxic to the plant.

Why Topping Hurts Trees

Topping is perhaps the most harmful tree pruning practice known. Yet, despite more than 25 years of literature and seminars explaining its harmful effects, topping remains a common practice.

Topping is the indiscriminate cutting of tree branches to stubs or lateral branches that are not large enough to assume the terminal role. Other names for topping include "heading," "tipping," "hat-racking," and "rounding over."



The most common reason given for topping is to reduce the size of a tree. Home owners often feel that their trees have become too large for their property. People fear that tall trees may pose a hazard. The severity of topping triggers a sort of survival mechanism. The tree activates latent buds, forcing the rapid growth of multiple shoots below each cut. These shoots develop from buds near the surface of the old branches. Unfortunately, the shoots are prone to breaking, especially during windy or winter conditions. The irony is that while the goal was to reduce the tree's height to make it safer, it has been made more hazardous than before.

Topping cuts made along a limb between lateral branches create stubs with wounds that the tree may not be able to close. The exposed wood tissues begin to decay. The decay organisms are given a free path to move down through the branches.

Topping is a high-maintenance pruning practice, with some hidden costs. One is the reduction in property value. Healthy, well-maintained trees can add 10 to 20 percent to the value of a property. Disfigured, topped trees are considered an impending expense.

Another cost of topped trees is potential liability. Because topping is considered an unacceptable pruning practice, any damage caused by branch failure of a topped tree may lead to a finding of negligence in a court of law.

Identifying Tree Hazards

Consider these questions:

- Are there large dead branches in the tree?
- Are there detached branches hanging in the tree?
- Does the tree have cavities or rotten wood along the trunk or in major branches?
- Are mushrooms present at the base of the tree?
- Are there cracks or splits in the trunk or where branches are attached?
- Have adjacent trees fallen over or died?
- Has the trunk developed a strong lean?
- Do many of the major branches arise from one point on the trunk?
- Have the roots been broken off, injured, or damaged?
- Has the site recently been changed by construction?
- Have the leaves prematurely developed an unusual color or size?
- Has the tree been topped or otherwise heavily pruned?

An arborist familiar with tree risk assessment can help you manage the trees on your property and can provide treatments that may help make your tree safer, reducing the risk associated with hazardous trees. Recommendation may be one or more of the following:

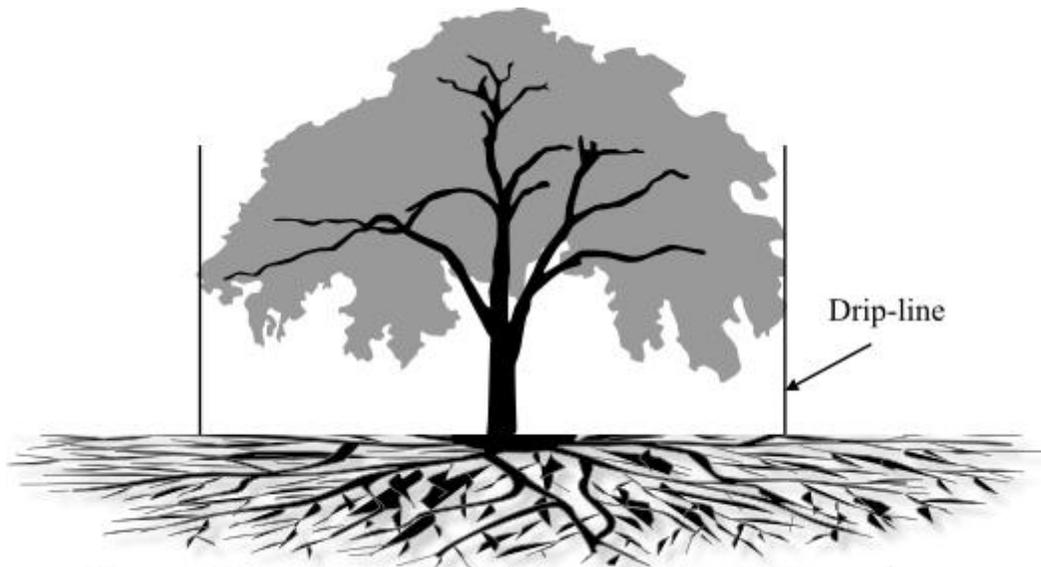
- *Remove the target* - While a home or a nearby power line cannot be moved, it is possible to move picnic tables, cars, landscape features, or other possible targets to prevent them from being hit by a falling tree.
- *Prune the tree* - Remove the defective branches of the tree. Because inappropriate pruning may weaken a tree, pruning work is best done by an ISA Certified Arborist.
- *Cable and brace the tree* - Provide physical support for weak branches and stems to increase their strength and stability.
- *Provide routine care* - Mature trees need routine care in the form of water, fertilizer (in some cases), mulch, and pruning as dictated by the season and their structure.
- *Remove the tree* - Some hazardous trees are best removed.
- *Accept the risk* - The property owner agrees to accept any loss or damage involved if the tree or a part of the tree fails.

Recognizing and reducing tree hazards not only increases the safety of your property and that of your neighbors but also improve the tree's health and may increase its longevity.

Avoiding Construction Damage to Trees

Construction equipment can injure the aboveground portion of a tree by breaking branches, tearing the bark, and wounding the trunk. These injuries are permanent and, if extensive, can be fatal.

The digging and trenching that are necessary to construct a building and install underground utilities will likely sever a portion of the roots of many trees in the area. In a mature tree, the roots extend one to three times the height of the tree. The amount of damage a tree can suffer from root loss depends, in part, on how close to the tree the cut is made.



The roots of a tree extend far from the trunk (2-3 times the distance from trunk to drip-line) and are found mostly in the top 6-12 inches of soil

The roots play a critical role in anchoring a tree. If the major support roots are cut on one side of a tree, the tree may fall or blow over.

In addition, the heavy equipment used in construction compacts the soil and can dramatically reduce the amount of space for air and water. This compaction not only inhibits root growth and penetration but also decreases oxygen in the soil that is essential to the growth and function of the roots.

The single most important preventative action you can take is to set up construction fences around all of the trees that are to remain. The fences should be placed as far out from the trunks of the trees as possible. The intent is to protect the aboveground portions of the trees and also the root systems.

Hire an ISA Certified arborist in the early planning stages of construction. Many of the trees on your property may be saved if the proper steps are taken. Your arborist and builder should work together in planning the construction. The builder may need to be educated regarding the value of the trees on your property and the importance of saving them. Instruct construction personnel

to keep the fenced area clear of building materials, waste, and excess soil. No digging, trenching, or other soil disturbance should be allowed in the fenced area.

All of the measures intended to protect your trees must be written into the construction specifications. The written specifications should detail exactly what can and cannot be done to and around the trees. Each subcontractor must be made aware of the barriers, limitations, and specified work zones. Fines and penalties for violations should be built into the specifications.

Construction damage to trees is often irreversible, damage often takes years to be visible, and the tree doesn't typically die for 5 to 6 years. This is usually long after the contractor has left the site. Despite the best intentions and most stringent tree preservation measures, your trees still might be injured from the construction process. Your arborist can suggest remedial treatments to help reduce stress and improve the growing conditions around your trees.

Hiring an Arborist

An arborist can determine the type of pruning or other care necessary to improve the health, appearance, and safety of your trees. A professional arborist can provide the services of a trained crew, with all of the required safety equipment and liability insurance.

There are a variety of things to look for when selecting an arborist:

- membership in professional organizations such as the International Society of Arboriculture (ISA), the Tree Care Industry Association (TCIA), or the American Society of Consulting Arborists (ASCA)
- certification through ISA's Certified Arborist program
- proof of insurance
- list of references (don't hesitate to check)

Avoid using the services of any tree company that:

- advertises topping as a service provided; knowledgeable arborists know that topping is harmful to trees and is not an accepted practice
- uses tree climbing spikes to climb trees that are being pruned; climbing spikes can damage trees, and their use should be limited to trees that are being removed

Other Sources for Quality Tree Care Information

- Trees Are Good - <http://www.treesaregood.com>
- International Society of Arboriculture - <http://www.isa-arbor.com>
- Tree Care Industry Association - <http://www.tcia.org>
- National Arbor Day Foundation - <http://www.arboday.org>
- Tree City USA - <http://www.arboday.org/treecityusa>
- Plant Amnesty - <http://www.plantamnesty.org>
- National Arborists - <http://www.natlarb.com>
- Friends of Trees - <http://www.friendsoftrees.org>
- Bugwood Image Database System - <http://images.bugwood.org>

Bibliography

<http://treesaregood.com>. 2011. International Society of Arboriculture. December 2011-2012.

City of Hailey, Trees for Hailey. City of Hailey Tree Selection and Planting Guide. 1994.

Dirr, Michael A. Manual of Woody Landscape Plants. Champaign, Illinois: Stipes Publishing LLC, 1998.