



City of Berwyn


Pruning Guidelines

Introduction

The City of Berwyn is committed to natural resource stewardship and a healthy and sustainable urban forest. Trees and vegetation provide a multitude of benefits, which include clean water, clean air, enhanced quality of life, and improved property values. For these and many other reasons, the preservation and care of trees is addressed in the city's *Comprehensive Plan* as well as in its codes and regulations.

This guide is intended to inform residents, business owners, and city staff of tree pruning techniques that reflect industry standards and acceptable best management practices for trees in the city. This guide represents acceptable guidelines for pruning of trees and should be used. This guide can facilitate effective communication when the expertise of a competent tree care professional is required. For questions regarding permit requirements, call 708-749-4700.

The practices set forth in this guide are consistent with the pruning guidelines and Best Management Practices adopted by the International Society of Arboriculture, the American National Standard for Tree Care Operations – Tree, Shrub, and Other Woody Plant Maintenance-Standard Practices (ANSI A300-1995), the U.S. Forest Service, and the National Arbor Day Foundation. This guide was prepared by the City of Berwyn with technical expertise from Natural Path Forestry.

Throughout this document key terms are in **bold** with their definition found in the Glossary of Terms (Appendix A). In addition, critical information and important rules of thumb are designated by this symbol .

Why Prune Trees?

Trees, having evolved in forests where they must compete for available light, developed a natural ability to shed limbs. As this natural process occurs, the tissue around the **branch** attachment in the stem develops wound-wood as it heals and protects against **decay**. For trees in an urban or suburban landscape setting, this natural process of branch development and shedding can pose a risk to people and property. These trees may require pruning. Pruning branches can be

one of the most beneficial practices **arborists** do to trees, significantly improving their health, structure and beauty. Conversely, improper pruning can hasten the demise of a tree and cause damage, which can continue for the life of the tree.

There are three primary reasons trees should be pruned.



Figure 1. Reasons to Prune

Pruning for health involves removing diseased or insect-infested wood, thinning the **crowns** to increase airflow and reduce some pest problems, and removing crossing and rubbing branches. Pruning can best be used to encourage trees to develop a strong structure and reduce the likelihood of damage during severe weather. Removing broken or damaged limbs encourages **wound** closure.

Pruning for safety involves removing branches that could fail and cause injury or property damage, trimming branches that interfere with lines of sight on streets or driveways, and removing branches that grow into utility lines. Safety pruning can be largely avoided by carefully choosing species that will not grow beyond the space available to them and have strength and form characteristics that are suited to the site.

Pruning for aesthetics involves enhancing the natural form and character of trees or stimulating flower and fruit production. Pruning for form can be especially important on open-grown trees that do very little self-pruning. In some cases, tree pruning can be conducted to enhance views beyond the tree itself. This is a reasonable option when the tree's structure and health can be preserved, allowing it to continue to provide benefits that would be lost if the tree were removed altogether.

Pruning Goals

As indicated, pruning should only be done with a specific goal in mind. Before any tree pruning project is undertaken, the goal or outcome should be identified. In many cases, different goals require different pruning approaches.

The following matrix (Table 1) will guide property owners and arborists in choosing the best prescription for the desired goal. If your desired goal or tactic is not listed as an option, it is likely that pruning is not necessary for your situation.

| Table 1. Pruning Goal/Method Matrix | | | | | | | |
|---|-------------------|-----------------------|-----------------------|----------------------|------------------------|----------------------------|---------------------|
| Pruning Techniques | | | | | | | |
| GOAL | Structural | Crown Cleaning | Crown Thinning | Crown Raising | Crown Reduction | Restoration Pruning | Root Pruning |
| | | | | | | | |
| Reduce Risk of Failure (Safety) | | X | X | X | X | X | |
| Provide Clearance | | | | X | X | | |
| Reduce Shade and Wind Resistance | | | X | | X | | |
| Maintain Health | X | X | | | | X | |
| Influence Flower or Fruit Production | X | | X | | X | X | |
| Improve View | | | X | X | X | | |
| Improve Aesthetics | X | X | X | | | X | |
| Tree Planting | X | | | | | X | |
| Sidewalk/ Driveway Repair | | | | | | X | |

WARNING: Only Qualified Line Clearance Tree Trimmers can prune within ten (10) feet of any electrical conductor. Contact your local utility if your trees are growing near the power lines. Assume all overhead wires are energized!

Pruning Technique: Structural Pruning of Young Trees

Structural pruning principles are primarily used when pruning young or newly planted trees. Properly trained young trees will develop into structurally strong trees that should require little corrective pruning as they mature. One of the best ways to prevent potential tree hazards and increased maintenance costs in the future is to choose quality tree stock for new plantings, perform proper structural pruning at an early age (go to <http://www.ufe.org/Standards&Specs.html#purchase> for choosing quality nursery stock), and be sure the right species is chosen for the right situation.

Trees that will be large at maturity should have a sturdy, tapered trunk with well-spaced branches smaller in diameter than the trunk.

When to Prune

The best time to prune trees depends on your goal and pruning technique employed.



Growth after pruning is maximized if pruning is done just before the period of rapid growth, which is in early spring.

Plant growth can be reduced if pruning takes place soon after growth is complete for the season. Most routine removal of weak, diseased, undesirable, or dead limbs can be accomplished at any time with little effect on the tree.

Flowering can be enhanced or prevented by pruning at the appropriate time of the year. Trees that bloom on the current season's growth, such as crepe myrtle or linden, are best pruned in winter, prior to leaf emergence, or in late summer after bloom has occurred. Plants that bloom on last season's wood, such as fruit trees, should be pruned just after bloom or after leaf fall.

Conifers may be pruned any time of year, but pruning during the dormant season may minimize sap and resin flow from cut branches. However, some species of pine are more susceptible to pest infestation when pruned during the growing season. Recent wounds and the chemical scents they emit can actually attract insects that spread tree disease.

Table 3 demonstrates some suggested pruning times of certain tree types.

*Table 3. Suggested Pruning Periods by Tree Types**

| WINTER | | |
|-----------------------------|-----------------------------|-----------------------------|
| December | January | February |
| conifers | conifers | conifers |
| summer/fall flowering trees | summer/fall flowering trees | summer/fall flowering trees |
| elms, oaks, ash, maple | elms, oaks, ash, maple | elms, oaks, ash, maple |
| fruit trees | fruit trees | fruit trees |
| SPRING | | |
| March | April | May |
| broadleaf evergreens | broadleaf evergreens | broadleaf evergreens |
| SUMMER | | |
| June | July | August |
| broadleaf evergreens | broadleaf evergreens | broadleaf evergreens |
| spring flowering trees | spring flowering trees | summer/fall flowering trees |
| FALL | | |
| September | October | November |
| | elms, oaks, ash, maple | elms, oaks, ash, maple |
| | | conifers |
| summer/fall flowering trees | | |
| | | fruit trees |

**Check with your county extension agent or a horticulturist for additional information.*

Pruning Tools

The proper pruning equipment is almost as important as knowing and practicing correct pruning. Pruning operations progress more smoothly and safely if the right tools are selected for the job and if the equipment is well maintained.

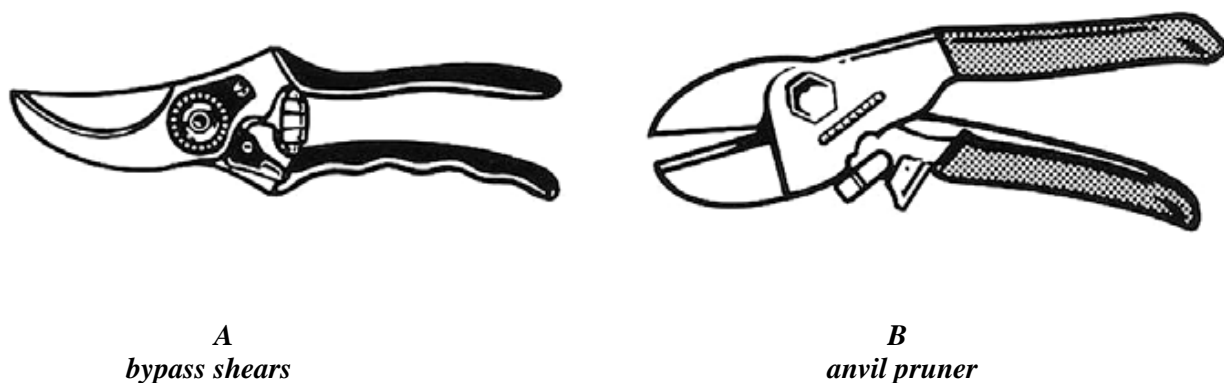


Figure 18. Hand Pruning Shears

Hand pruning shears—the smallest shears—are made for cutting branches up to about a one-half-inch in diameter. Bypass shears (Figure 18A) are the recommended type. They should make a shearing cut—the cutting blade passes the anvil as it cuts through the branch. A close cut can be made with less effort by placing the cutting blade against the branch or trunk from which the limb is to be removed. Bypass shears are especially useful to give shrubs a natural appearance. The anvil pruner (Figure 18B), where the cutting blade presses against the anvil as the cut is completed, is not recommended for pruning trees because they tend to crush branches instead of slicing.



Figure 19. Lopping Shears

Lopping shears (Figure 19) have long handles to exert great cutting power when pruning branches up to two inches in diameter. As with hand pruning shears, the bypass type is preferred over the anvil type.

A pole pruner (Figure 20) is a specially designed pruning shear adapted for use on the end of a pole. The anvil is more strongly “hooked” than in hand pruners or lopping shears to grasp the branch more securely as the cut is made. Because tree experts often work close to energized lines, the only metal in professional pole pruners is in the cutting parts.

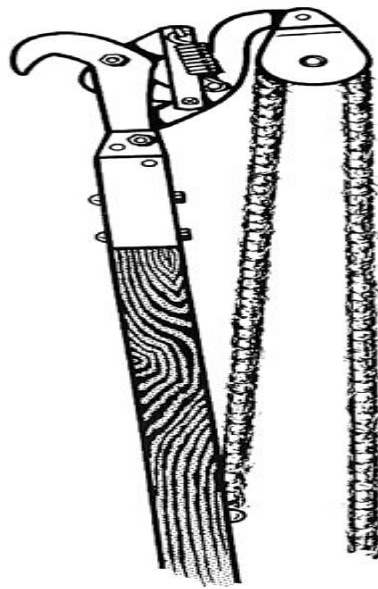


Figure 20. Pole Pruner



To avoid serious electrical shock, never use aluminum poles.

The operator exerts cutting power through a rope from the end of the handle to a compound lever arrangement at the cutting head. Pruning poles vary in length and some have a connecting sleeve and an additional 10-foot pole so that the operator’s reach is extended to 20 feet.

The basic saw available at most arborist supply outlets is the 24-inch curved “speed saw” (Figure 21A). This saw cuts rapidly and, unlike carpenter saws, cuts when pulled rather than when pushed. This saw can cut branches with diameters ranging from too large for the hand pruner to several inches in diameter. There are smaller, curved pruning saws that cut on

the pull and have finer teeth than the large speed saws (Figure 21B). These smaller saws are useful where there are many small cuts to be made that are too large in diameter for hand pruners. Pole saws (Figure 21C) are smaller versions of the fine-toothed, curved speed saws. They cut on the pull and are mounted on ten-foot lightweight poles, extending the operator's reach by the length of the pole.

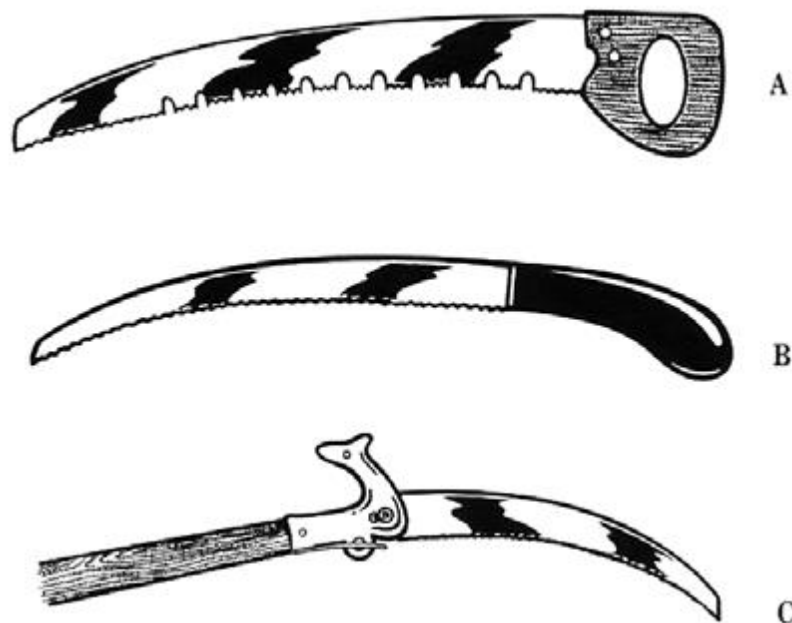


Figure 21. Types of Saws

The chain saw (Figure 22) is probably the most often used and most dangerous pruning equipment an arborist handles. The user must respect the power and speed with which they cut. Chain saws are especially useful in removing large limbs or cutting up fallen limbs and trees.

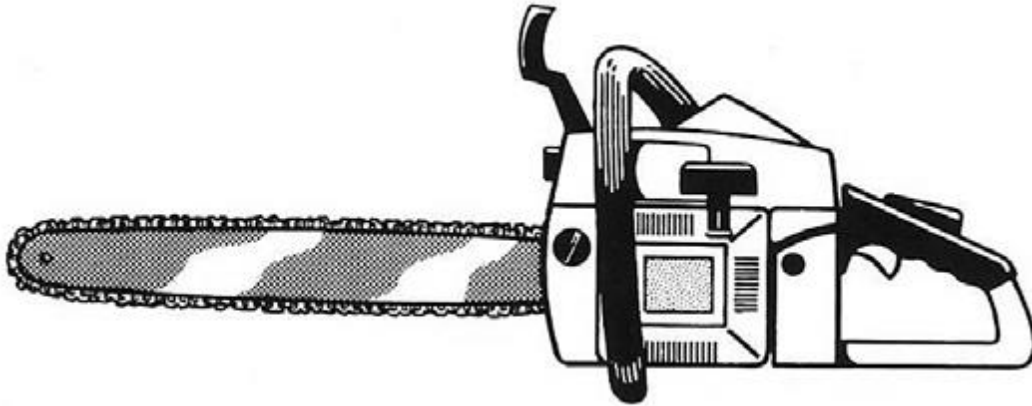


Figure 22. Chain Saw

Professional tree care personnel will also have a variety of climbing gear to safely ascend into a tree to perform pruning operations (Figure 23). Properly trained climbers can easily work in the tree while being securely tied in and can safely move around the branches.

The use of **climbing spurs** can assist climbers in safely moving about a wet or moss-covered tree, but spurs can cause damage to trees by wounding the wood and should only be used when a tree is to be removed.

The practice of climbing trees with ropes should only be performed by qualified persons and should not be attempted by untrained individuals.

Other personal protective gear should include safety glasses, hard hat, gloves, and appropriate clothing.



Figure 23. Professional Climber

If you feel you lack the necessary skills, equipment, or understanding to perform any of the described techniques, you should contact a licensed professional arborist.



A good rule of thumb is that if you have to leave the ground, even on a ladder, to prune your tree, you should hire a professional

Conclusion

Pruning is one of the most important and visible management actions used on woody vegetation in the urban environment. Proper pruning is a wise investment that can extend the useful life of trees and shrubs, improving their safety and adding significantly to the values they provide. Conversely, improper pruning can irreparably damage a tree or shrub, significantly detracting from its value and possibly making it hazardous. This pruning guide should be used to

make informed decisions as to whether pruning is necessary based on your overall objectives and to improve understanding of tree health and maintenance needs.

The pruning practices set forth in this guide represent the current accepted standards in the industry. The City of Bellevue promotes these guidelines as the expected level of care for both city and privately owned trees. Property owners and tree care professionals are strongly encouraged to adhere to these pruning guidelines and seek additional advice from the City of Bellevue if conflicts or questions arise. When higher standards of care are put into practice by all stakeholders, the multiple benefits of the urban forest can be realized.

Appendix A: Glossary of Terms

Air Spade: A pneumatic soil probe that delivers sudden bursts of air to crack, loosen, or expand the soil to improve the root growing environment or for trench excavation to preserve root tissue.

Apical buds: The terminal bud, or tip, of a stem of a main leader that maintains dominance. Removing the apical bud can promote lateral buds to grow.

Arborist: A professional who possesses the technical competence through experience and related training to provide for or supervise the management of trees and other woody plants in the residential, commercial, and public landscape.

Branch: A secondary shoot or stem arising from one of the main axes (i.e., trunk or leader) of a tree or woody plant.

Branch collar: Trunk tissue that forms around the base of a branch between the main stem and the branch or a branch and a lateral. As a branch decreases in vigor or begins to die, the branch collar becomes more pronounced.

Branch bark ridge: Raised area of bark in the branch crotch that marks where the branch wood and trunk wood meet.

Cambium: Dividing layer of cells that forms sapwood (xylem) to the inside and bark (phloem) to the outside.

Climbing spurs: Sharp, pointed devices affixed to the climber's leg used to assist in climbing trees (also known as *gaffs*, *hooks*, *spurs*, *spikes*, *climbers*).

Co-dominant: Two main branches that originate at the same point on the main trunk. These create a weak union that is more prone to failure than normal branch development.

Compartmentalization: The process within woody plants of building cell walls around decay to prevent the spread.

Conifers: Cone bearing trees such as pines, firs, and redwoods.

Crotch: The angle formed at the attachment between a branch and another branch, leader, or trunk of a woody plant.

Crown: The leaves and branches of a tree or shrub; the upper portion of a tree from the lowest branch on the trunk to the top.

Decay: Degradation of woody tissue caused by biological organisms.

Epicormic branches: A branch that arises from latent or adventitious buds; also known as water sprouts that occur on stems and branches and suckers that are produced from the base of trees. In older wood, epicormic shoots often result from severe defoliation, excessive pruning, or topping.

Girdling roots: Roots located above or below ground whose circular growth around the base of the trunk or over individual roots applies pressure to the bark area, ultimately restricting sap flow and trunk/root growth, frequently resulting in reduced vitality or stability of the plant.

Heading: Cutting a currently growing or one-year-old shoot back to a bud, or cutting an older branch or stem back to a stub or lateral branch not sufficiently large enough to assume the terminal role. Heading should rarely be used on mature trees.

Included bark: Bark enclosed between branches with narrow angles of attachment, forming a wedge between the branches.

Lateral: A branch or twig growing from a parent branch or stem.

Natural Target Pruning: Utilizing natural markers on the tree to ensure pruning occurs without injuring the branch bark ridge or collar.

Nodes: Point along a branch where leaf or lateral shoot growth originates. Just above a node is also the correct place to make a pruning cut.

Parent branch or stem: The tree trunk; or a large limb from which lateral branches grow.

Qualified line clearance tree trimmer: A tree worker who, through related training and on-the-job experience, is familiar with the techniques in line clearance and has demonstrated his/her ability in the performance of the special techniques involved. This qualified person may or may not be currently employed by a line clearance contractor.

Topping: An inappropriate technique to reduce tree size that cuts through a stem more than two years old at an indiscriminant location.

Wound: The opening that is created any time the tree's protective bark covering is penetrated, cut, or removed, injuring or destroying living tissue. Pruning a live branch creates a wound, even when the cut is properly made.

Appendix B: Additional Resources

ANSI Z133.1. 1994. Safety standards. American national standard for tree care operators. Washington, DC: American National Standards Institute.

ANSI A300. 1995. Standard practices for tree, shrub, and other woody plant maintenance. Washington, DC: American National Standards Institute.

Fare, D. 1999, Pruning landscape trees, shrubs and ground covers. University of Tennessee, Agricultural Extension Service.

Gilman, E. F. An illustrated guide to pruning, 2nd Edition - 2002, DelMar.

Fazio, J. R. ed. 1992. Don't top trees. Tree City USA Bulletin No. 8. Nebraska City, NE: The National Arbor Day Foundation.

Harris, R.W. 1994. Clarifying certain pruning terminology: thinning, heading, pollarding. *Journal of Arboriculture* 20:50-54.

ISA Performance Guidelines Committee. 1994. Tree-pruning guidelines. Savoy, IL: International Society of Arboriculture.

OSHA Regulations for Electric Power Generation, Transmission, and Distribution. — 1910.269.

Ryan, H.D.P. III. 1994. Arboricultural pruning methodologies. *Arborist News* Volume 3(4):33-38.

Shigo, A. 1991. *Modern arboriculture*. Durham, NH: Shigo & Trees, Associates.

Shigo, A. 1989. *Tree pruning: a worldwide photo guide*. Durham, NH: Shigo & Trees, Associates.

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