

# Pruning trees and shrubs



Agriculture and  
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The rule of thumb to follow when pruning trees and shrubs is: "If you have no good reason to prune, don't". Most trees and shrubs have a natural form to them and may do better and look better if left alone. Each kind of tree has its own characteristic shape or growth habit and when pruning, you should try to maintain that habit. There are times, though, when pruning must be done and proper procedures should be followed.

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## How pruning affects plant growth

Pruning trees in late winter and early spring before growth starts reduces the number of leaves produced the coming year. Less water and nutrients will be required because there is reduced top growth. The strong root system below supplying a reduced top, results in strong, succulent, rapidly growing shoots. This invigorating effect is present throughout the tree, but is most noticeable on those limbs which have been most severely pruned.

When a branch is pruned back, new shoots arise near the cut. The new shoots generally grow in the same direction that the buds were pointing. Thus, a bud on the inside of a branch will grow towards the centre of the tree and an outward facing bud will grow away from the centre of the tree.

## Reasons for pruning

- **Pruning at planting time:**
  - just after transplanting, the tops should be pruned back to compensate for the loss of roots and to begin training the tree. This should not exceed one-third of the plants total top growth.
- **Training:**
  - to develop a strong framework to withstand winds, a tree should be pruned to a few strong limbs spaced well apart, up, down and around the trunk.
  - to develop a shade tree with limbs coming off the trunk at a height greater than 1.6 to 2.4 metres, lower branches should be pruned off. Ideally pruning should be done over an extended period of time as the tree grows in height. If done all at once this can result in a weak, spindly tree that needs staking. If you are going to prune all at once it is best to prune those lower branches to short stubs. These stubs will eventually be

removed. The short stubs act as sap drawers, putting out leafy shoots which manufacture food and draw up water and minerals resulting in a stouter, stronger trunk. These stubbed branches must be kept pruned back and can be removed completely after permanent scaffold branches (main crown) have been established.

- **Tree health:**

- prune to eliminate limbs with weak crotches that arise from the trunk at acute angles.
- prune to eliminate limbs that cross each other or compete for the same space in the trees crown.
- prune to eliminate dead and diseased branches to improve the appearance of the tree and prevent entrance and spread of diseases and insects.
- prune to revitalize older trees by pruning out part of the crown of the tree, reducing the leaf area that the root system has to supply. More vigorous growth results in the remaining branches.
- prune to increase air circulation through the tree both for the trees benefit and to increase air flow into the landscape. More sunlight gets through the tree which is beneficial for lawn growth below.

- **Safety:**

- dead, broken, weak or split branches, or low hanging branches which might be a hazard to people, vehicles or buildings should be removed.

## Pruning tools

Good quality pruning tools make a difference when pruning trees and shrubs. When buying tools, usually you get what you pay for, so cheaper tools....usually are! Hand or pole mounted versions of secateurs and pruning saws are available. For large limbs, a bucksaw can be used.

Chainsaws are fast and efficient but do not make clean cuts which results in slow wound healing.

- Scissor action secateurs are the best type for small branches and make cleaner cuts than anvil action types.
- Pruning saws are compact and specially designed for heavy duty pruning in tight spaces.
- Lopping shears are used for larger branches and come with different handle lengths. Try to buy scissor action loppers rather than anvil action ones.

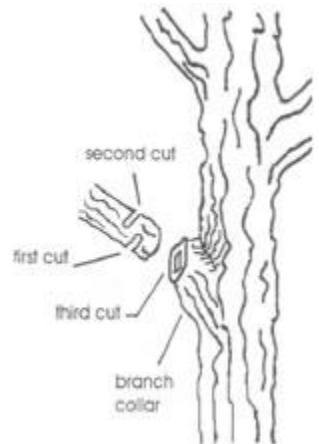
## Pruning deciduous trees

In general, deciduous trees and shrubs should be pruned when they are dormant, preferably in early spring just before growth starts. At this time, wound healing will begin almost at once and it will be most rapid. Dormant pruning will have less effect on the growth of trees than pruning when the tree is in active growth. Another advantage of dormant pruning with deciduous trees is that it is easier to select branches which should be removed when the leaves are gone.

Dead limbs and those lacking in vigour can be pruned in mid-summer when they are easier to locate.

Exceptions to the dormant pruning rule are maple, birch and elm which should be pruned when actively growing in mid-summer. When pruned in early spring, these species may lose excessive amounts of sap. Pruning of Maple and Birch should not be done too late in the fall either, as wounds will not have a chance to heal before winter. Elm trees should not be pruned between April 15 and August 30, to prevent the spread of Dutch Elm Disease.

When pruning deciduous trees, make all cuts close to, and parallel to, the trunk or crotch of the tree. In order to avoid damage to the main limb or trunk when cutting large branches, use the 3-step method illustrated below:



- The first cut is made part way through the branch on the underside, a short distance from the trunk to which it is attached.
- A second cut is made from the top down, five to eight centimetres further out the branch from the 1st cut. The weight of the branch will cause it to break free and fall outward without tearing any bark.
- The third and final cut is made close to the trunk so as not to leave a stub. When removing live or dead branches, avoid cutting into the callus tissue which has formed at the base of the branch. The tree will not be able to heal properly without this growing tissue intact.

## Pruning evergreens

Evergreens require little pruning in most cases. For pruning purposes, two types of evergreens are recognized: a) those that produce their branches in whorls such as spruce, pine and fir (conifers), and b) those such as juniper and cedar that do not exhibit the whorled habit.

Most trees in the first group are grown as single trunk trees giving them a pyramidal form. In this case the removal of entire branches will leave gaps and should only be done if the branch is dead or diseased. Pruning of these evergreens should be confined to trimming back new growth at the tips of the branches.

When this pattern of pruning is practiced annually, the result can be a noticeable increase in the density of the tree.

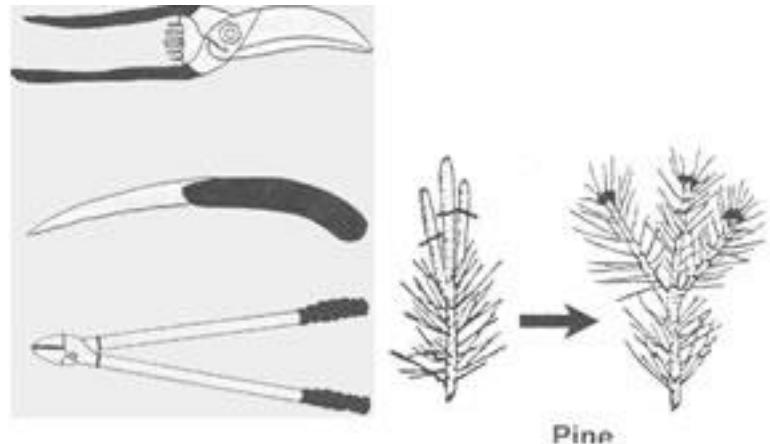
- **Pines:** Most pines are best pruned in mid-June before the needles start to unfold. At this time, the new growth looks like candles. \*It should be noted that the date of pruning will depend on the year and could be different each year. When these terminal shoots are soft they may be cut back to one-half to one-third of their length. This will control the length of subsequent growth for that season. New terminal buds will form at the cut ends by the end of the growing season and growth the following year will spread out from those points. (see below).
- **Spruce and Fir:** If it is a matter of shortening shoot growth, spruce can be pruned by cutting the shoot back to a lateral bud in early spring before growth starts. (Pruning should be done

in mid-May to early June, before new buds for next year's growth have been formed.) Growth will continue on from that bud as the season progresses. Density pruning of spruce and fir is best carried out after the growing points have elongated (see below). To control growth, prune half of the new growth early in the spring when the new growth has extended. This will increase the density of the tree much the same way as with the pines.

- **Cedar and Juniper:** Evergreens with soft growth such as Junipers and Cedars may be pruned by clipping back new growth preferably in early spring to mid-June. Clipping back the most vigorous branches once or twice a season will keep the plant dense without destroying the natural appearance.
- **Damaged Terminal Leaders:** If a terminal branch of spruce, pine or fir is damaged in some way and must be removed, a lateral branch should be trained upwards to replace it. A strong branch from the uppermost whorl should be selected and carefully tied up to a stake like a splint. About 17 centimetres (cm) should be cut off the remaining branches of the whorl to direct more growth to the new leader. When two or more leaders are present, all but the strongest should be removed when the tree is relatively young.

**Diseased Branches:** When removing diseased material, tools should be disinfected in a five per cent Javex or alcohol solution between each cut. Always cut back to healthy wood.

**Wound Dressing:** The treatment of tree wounds with dressings is a controversial subject. While dressings do protect against the invasion of water, disease and insects, they also slow down the healing process. It is recommended that dressings only be used on cuts with a diameter over 15 cm. Be sure to use only dressings that are recommended for trees. Do not use ordinary paints!



## Field shelterbelt pruning

Maintenance pruning of shelterbelts is practiced for three main reasons. Dead, diseased or storm damaged branches are removed for reasons of safety, appearance, and disease control. Secondly, branches that interfere with powerlines, machinery operations or pose a threat to property need to be removed.

Finally pruning is carried out to improve the appearance of the shelterbelt by removing suckers and interfering or wide-spreading branches. However, unlike shade trees which are pruned up to accent their form, in shelterbelts the removal of lower branches should be done only if there is a need to change the density of the windbreak.

The recommended time for pruning is during the winter or early spring in order to lessen the damage of infection. However, in practice it may be more desirable to prune in mid-summer when the trees are in full leaf in order to easily locate dead limbs or branches lacking in vigour.

Mid-summer is also the best time to prune trees such as maple and birch. When pruned in spring these species may lose excessive amounts of sap. However, pruning should not be done too late in the fall as wounds will not have a chance to heal before winter. Pruning of dead branches can be done at any time of the year since no living tissue is affected.

In pruning, appraise the tree before cutting in order to select the branches that will serve as the main structure of the tree. Make all cuts close to and parallel to the trunk or crotch.

When pruning diseased parts, remove 15 cm or more below any evidence of the disease which usually means going back to a living lateral branch or to the trunk of the tree. In order to avoid damage to the main limb or trunk when cutting large branches, use the 3-step cutting method.

The first cut is made part way through the branch on the underside a short distance from the limb or trunk to which it is attached.

The second cut is then made from the top down 2-3 inches further out on the branch. The weight of the branch will cause it to break free and fall outwards without tearing any bark.

The third and final cut is then made reasonably flush with the limb or trunk in order to avoid leaving a stub. At the same time it is important to avoid cutting into the limb or trunk. Leaving a minimum of exposed surface will allow the cut to heal over in time.

When removing dead branches avoid cutting into the callus tissue which has formed at the base of the branch so that living tissue is not exposed.

In order to make sharp, clean cuts, ensure that tools are in good condition. When removing diseased material, tools should be disinfected in a javex or alcohol solution between each cut.

The treatment of tree wounds with dressings is a contested subject. While dressings protect against invasion of water, diseases and insects, they also impede the healing process. If they are used, obtain one of several commercial products. Do not use ordinary paints.

Maintenance pruning should be done such that the natural form of the tree is followed or restored while removing all dead, diseased, broken and crossed branches. In order to maintain shelterbelt density at all levels, remove only what is required. In any case, never remove more than 25 per cent of the producing potential of the tree in any one season.

## **Caragana pruning in shelterbelts**

Side-trimming a caragana shelterbelt encourages new growth and prolongs its lifespan. Mature caragana stands should not be trimmed to less than three metres in width.

Top-trimming a caragana shelterbelt reduces windthrow of old, weak branches and encourages new growth.

Trimming and pruning must be done during the dormant period (October-April) and is best done during cold weather since cleaner cutting results.

Cutting a caragana shelterbelt back to ground level encourages new growth and prolongs shelterbelt life. Special caution should be taken on erosive soils to protect the soil with other conservation measures during the period of shelterbelt regrowth.

Control of perennial grass in shelterbelts by cultivation or herbicides revitalizes belts by reducing root-binding of trees and shrubs.

Replacement of any shelterbelts is recommended only if the shelterbelt has seriously deteriorated. Caragana shelterbelts will seldom need to be replaced while old shelterbelts containing short-lived tree species such as Manitoba maple and Siberian elm are more likely to need replacements.

The replacement shelterbelt should be planted leeward of the existing shelterbelt prior to the removal of the old belt. The new belt should be at least six metres from the edge of an existing caragana shelterbelt and at least 10 metres from the edge of an existing tree shelterbelt. Regrowth from the old shelterbelt is minimized when removal is done during the summer.

Thinning and pruning of deadwood is encouraged if an effective shelterbelt can be maintained. Removal of live, healthy material is not renovation since it reduces shelterbelt protection and damages the shelterbelt.

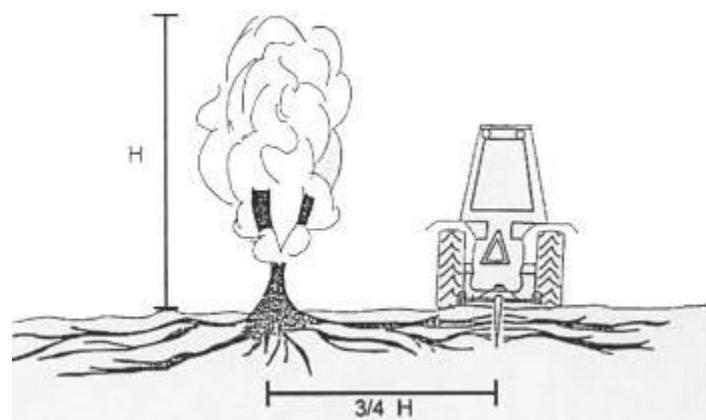
Root-pruning is not a renovation measure as it increases stress to the shelterbelt and does not contribute to the protection value of the shelterbelt.

## Root Pruning of Siberian elms

Field shelterbelts play an important role in protecting farmland from wind erosion. They also increase snow catch, moderate air temperatures, reduce evaporation and increase overall crop yield. Although generally beneficial, shelterbelts do compete with adjacent crops for moisture and nutrients. Siberian elm can rob moisture needed by crops due to its extensive lateral root system. Root pruning, the practice of severing lateral roots, can reduce the effects of Siberian elm root competition on nearby crops.

Root pruning can be done using a subsoiler. The subsoiler is pulled through the ground parallel to the shelterbelt, cutting the roots. To reduce stress on the trees, only one side of the shelterbelt should be pruned each year. This should be done during the spring or fall while the trees are dormant.

Root pruning should be done no closer than three-quarters of the height of the trees away from the shelterbelt, as illustrated below, to a depth of 60 cm. It should be repeated every two to three years to control new root growth. Pruning too close or too often could harm or kill the shelterbelt, especially if it is an older belt or under drought stress. During drought periods, root pruning should be discontinued completely.



While root pruning does not completely eliminate competition between field shelterbelts and crops, it reduces the competition and is one method which can be used by farmers to increase the effectiveness of their shelterbelts.

## **Repair of snow and ice damage to trees**

Excessive amounts of snow and ice can cause injury to farmstead trees and shrubs. Unfortunately, before storms occur little can be done to prevent damage. Often, however, with proper care damaged trees can be restored.

Several tree species are generally more susceptible to ice and snow damage than others. Deciduous trees with soft brittle wood such as Manitoba maple, Siberian elm, poplar, birch and willow may be seriously damaged by ice and snow. Coniferous trees are not as prone to damage, however, multi-stemmed low growing evergreens such as junipers tend to break or spread under a load of snow.

When large quantities of snow and ice are present on tree limbs, several steps can be taken to prevent damage. As ice coatings may increase the weight of a branch up to 40 times, improper removal of ice or snow often increases damage. Ice laden branches should be propped up with suitable materials and knocking ice off branches where breakage may occur should be avoided. Snow may be gently brushed away if it has not frozen to the branches.

Once damage has occurred trees should be examined carefully to determine the extent of the injury. If damage is not too extensive and the tree is worth saving, proper pruning and/or repair of affected trees should be employed. If damage is extensive the tree should be removed and replaced with an appropriate species. When large branches or the entire tree is damaged severely enough to endanger human life and property, the pruning should be done as quickly as possible, otherwise pruning and/or repair can be delayed until spring.

When breakage has occurred but the branch has not split to any great extent, remedial action can be taken to avoid further splitting and the entry of moisture and disease organisms. The split crotch can be brought together and retained in position by a cable extending from the trunk to the limb. To further reinforce the repair, bolts with washers, should be inserted through the split area every six to eight inches down the length of the split.

Severely damaged branches should be pruned back to the next lower crotch in early spring. Trees which bleed readily (birch, maple) should not be pruned until leaves appear. It is important to make a smooth cut in sound wood so proper healing can be initiated.

All cuts should be made flush to the trunk, although retention of a small lip as illustrated (E), will speed healing. Never leave a stub as they lead to proliferation of water sprouts or suckers. When the main stem or leader has been damaged, it should be cut off flush with a smaller branch that is growing in the desired direction. Following pruning, saw cuts should be treated, and although not essential, paring the ragged surface of a saw cut will accelerate healing.

Generally, healing will occur quicker if no tree wound dressing is applied. However, if disease and insects are a problem in the area, all cuts with diameters of one inch or more should be sealed by painting with a tree wound compound. There is some evidence that the application of a complete fertilizer in late April or May will help stimulate new growth and speed recovery.

If ice and snow damage is a common occurrence in your area, it may be worth considering some preventative pruning of high value specimen trees. Branches with weak crotches or those which are weakened by disease or insects should be.

