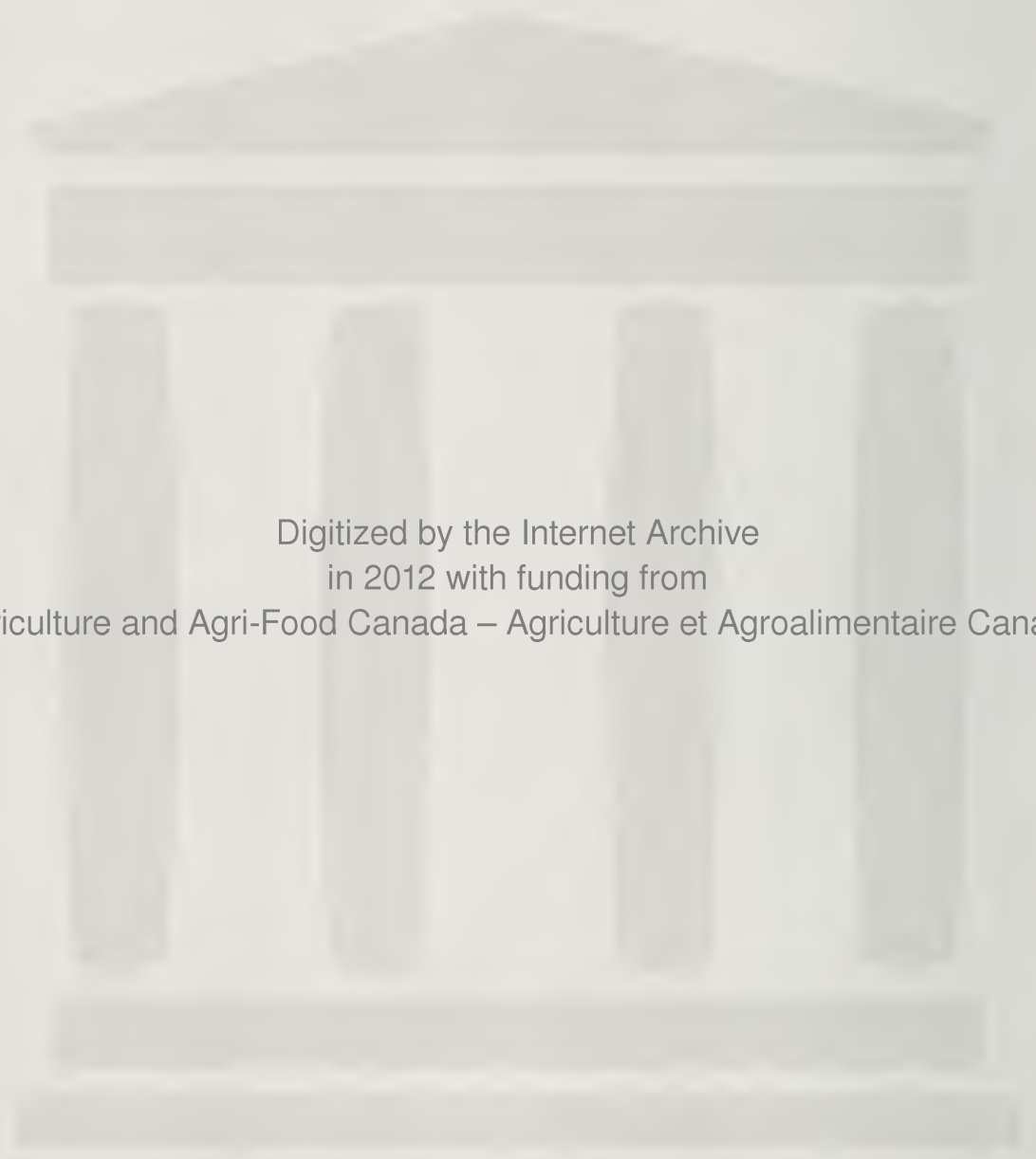

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# PRUNING, THINNING *and* UTILIZING TREES

## With Special Reference to PRAIRIE FARM SHELTERBELTS

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# PRUNING, THINNING AND UTILIZING TREES WITH SPECIAL REFERENCE TO PRAIRIE FARM SHELTERBELTS

### *When to Prune and Why*

With few exceptions, trees are best pruned at the beginnnig of the growing season. One exception is the maple (box elder) which bleeds or loses sap freely through recently made cuts or wounds when the first movement of sap takes place in the spring. Pruning of maple is best carried out in autumn before leaf-fall, or in late spring after new growth from buds is well started.

The actual time that pruning in general may be undertaken in spring is only relative, but the work should be attended to as early in spring as possible after the danger of severe frosts or cold weather is past. It is not advisable to prune frozen stems; the best time to prune them being just as the buds are opening or bursting. If much pruning has to be done, necessarily an early start must be made, to avoid carrying it too far into the growing season. Early spring growth is important in the life of woody plants.

Pruning in early spring, and at the start of the growing season, has two important advantages. The cut can be made where a vigorous bud is located, and from which strong growth in the direction required may be expected. Furthermore, wounds and cuts, particularly small ones, made through the removal of small branches will be well on the way to being covered over or healed by the development of new bark before the end of the growing season.

In pruning, the time factor is very important, and both the advantages mentioned contribute much to the development of healthy, well-shaped trees, with smooth branches and trunks. On the other hand, pruning should not be practised unless the pruning will serve some specific and useful purpose.

Planters should remember that severe and unnecessary pruning has a definitely weakening effect, since it removes a great deal of stored energy and food. The weakening effect is most severe on the root system. For that reason pruning should be kept at a minimum.

But judicious pruning also has a stimulating effect, as shown particularly by the strong growth that takes place where branches of more or less mature trees and bushes have been pruned or cut back. Those responsible for maintaining telephone and telegraph lines located near trees know this from experience. Pruning should therefore be practised only where necessary for the development of trees in conformity with the size and shape desired. Surplus or undesirable branches *should be removed at the point of origin on the main branch or trunk.* By following this rule little further pruning will be necessary.

Of course no stub should be left where a branch has been removed. This is because short stubs prevent smooth healing of the trunk, and because such stubs invariably die and become a source of disease and decay. It is not difficult to verify this observation.

### *Wounds and Bruises*

Trunks of trees are often injured by sunscald, canker, implements and other causes. Sometimes the bark has been damaged, or removed in a strip, right through to the wood tissue underneath. Injuries of this nature should receive attention once a year at least until they are completely healed or covered over with new bark.

Frayed edges of dead bark should be cut away with a sharp knife, the exposed wood scraped clean, and the whole injured area painted with a protective disinfectant or water-proofing material. White lead and linseed oil mixture is commonly used, bordeaux paste may be applied (bordeaux or bluestone mixture used for spraying in disease control), or an asphalt dressing may be used. For protecting any wounds on trees these materials are recommended.

Wounds caused by sunscald, canker, or implements heal most quickly and smoothly when they are trimmed to a point at each end.

### *Pruning Shelterbelts*

There should be little pruning of shelterbelt trees, other than cutting out dead or broken branches, because maximum foliage and branching from top to bottom are desired to give the best possible wind-breaking qualities, and to provide maximum ground cover.

In order to increase efficiency of caragana in reducing surface wind velocity, it should occasionally be cut back to about four or five feet in height. This treatment will cause increased branching near the ground.

When there is crowding and lack of light within a well-established shelterbelt, lower branches seldom become strong; in other words the lack of light and other conditions unfavourable for growth, cause what might be called "self-pruning." This phenomenon is more noticeable in some trees than in others; it is especially apparent on most pines and larches.

Crowding of trees as in a shelterbelt also causes height growth, or the development of trunks and branches upwards to seek light. This condition is also desirable in a shelterbelt where height as well as density is advantageous.

In mixed shelterbelts, containing both evergreen and broadleaf trees, injury to leader growths of evergreens should not be permitted by extending branches of broadleaf trees; the latter should be cut back when necessary.

### *Thinning Closely-Planted Shelterbelts*

It should be realized that in closely-planted shelterbelts a good deal of thinning takes place naturally. This natural thinning may take the form of (1) branches broken or damaged by wind, hail, snow, cold or general weakness, (2) failure of a particular kind of tree to hold its own against its neighbours, and (3) natural weakness of certain individual trees and their inability to keep pace with the remainder as seasons go by.

The first type of natural pruning is more or less beyond the control of the tree planter, and under prairie conditions must be expected occasionally from one cause or another. The chief concern of the tree planter is to repair such damage as best he can, without undue delay, for the future welfare of his trees. The treatment of wounds has already been dealt with.

As to the suitability of various trees for planting in shelterbelts the most favourable associations to give the most efficient protection are being studied and adopted by the Indian Head Forest Nursery Station. For instance, it is no longer recommended to mix broadleaf and evergreen trees; short-lived, quick-growing poplars are distributed in limited numbers; growth of maple may with advantage be systematically restricted by frequent pruning to prevent undue suppression of other kinds and ash, which is rather intolerant of shade, is usually planted in the marginal row or rows of a shelterbelt rather than in centre rows.

The third type of natural pruning, namely, the suppression of naturally weak trees, which may appear in any population, operates throughout each season. As time passes the difference between vigorous and weak trees becomes more pronounced, until the latter make little growth and in many cases die.

Because of this latter condition chiefly, and because it is not possible to pick out when young, trees which are likely to do best, thinning of closely-planted shelterbelts should not be practised too hastily. Nevertheless, it is folly to allow trees to die in a shelterbelt because of overcrowding. The better plan is to cut out a sufficient number of the short-lived trees as soon as the wood obtained from them will make a significant contribution towards fuel, fence post or other lumber needs.

When thinning is done there should be no question about the remaining trees continuing to make vigorous growth. Certainly little pruning will be needed during the first five years after planting a shelterbelt, except perhaps some heading back of maple. Even after cultivation or hoeing cannot be continued among the trees (when branches intermingle), it is not wise to prune or thin out the trees because they provide mutual protection, and close planting permits the building up of a natural mulch of leaves and branches among the trees.

Thinning should be done cautiously for two other main reasons, namely: (1) to avoid exposure and drying out of the forest floor and (2) too early thinning may stimulate strongly competitive weed and sprout growth.

In the matter of increased feeding areas for individual trees through thinning, it should be remembered that by doubling the space between trees on all sides the feeding area for the individual trees will be increased four times. Growth of remaining trees, after thinning has been practised, should in most cases be stimulated.

### *Pruning for other Purposes*

If the farm woodlot was not designed and planted to fulfil the dual role of woodlot and shelterbelt, pruning should be practised to permit the development of trees with clean trunks of maximum size and without many branches, suitable for lumber, logs, poles and cordwood.

Double tops and excess branches should be completely cut off but not so early or so severely as to retard or interfere with the growth of the trees. Here again there must be judicious thinning out of the weak and poor type trees, if maximum returns in fuel wood and timber are to be realized during the expected lifetime of the woodlot.

Judicious pruning of individual trees may result in certain benefits—namely, the development of symmetrical specimens with well-placed and well-spaced branches, uniform growth over the entire tree, and the elimination of weak branches and undesirable crotches.

In the first place, such trees to be developed as attractive, mature specimens, must have sufficient space in which to grow. If planted when small, the area which each is expected to occupy eventually will seem to be excessively large. Nevertheless, other conditions being favourable, the advantage of ample living space will be manifested in rapid annual growth.

Some trees require less pruning than others. For example, spruce trees require practically no pruning apart from the removal of double tops. Except under unusual conditions, or to satisfy a personal fancy, the lower branches of spruce trees should not be cut off.

On the other hand white elm should have fairly severe annual pruning if poor crotches and top-heavy limbs are to be avoided. This habit of growth of the elm is well known, and it is a condition which planters should learn to deal with rather than condemn the tree because of its habit of growth. The elm has many valuable characteristics.

With a view to developing smooth trunks free from branches and unhealed wounds, pruning of basswood, ash, maple (box elder), elm and other kinds intended for boulevard planting should begin when the trees are thin saplings.

For a few years such trees must usually be staked to keep them upright. The production of upright trees with straight smooth trunks is usually less difficult with trees having opposite buds, for example ash, than with trees having alternate buds like the elm.

Then there are smaller trees including dwarf Asiatic elm, butternut, Ohio buckeye, flowering crabapple, hackberry, mountain ash, Japanese lilac, hardy apricots, laurel willow (this willow really makes an attractive small tree) which may be pruned in a manner similar to that recommended for the group mentioned in the preceding paragraph but to a lesser degree and height. Under prairie conditions many of these may succeed best if grown in bush or short-trunk form.

With the majority of these smaller trees the removal of surplus, crossing and weak branches at their points of origin is about all the pruning required. If more pruning is practised, injury to trunks by sunscald is likely to occur, and as the crowns are elevated it becomes more difficult to admire and enjoy the flowers, foliage, and fruits produced by them.

Even when the best possible precautionary measures are taken to prevent it, damage to trees by vermin and through other causes may occur. Damage to evergreen trees is almost wholly irreparable, and should be prevented if at all possible.

### *Using Shelterbelt and Woodlot Trees*

There are two main reasons why certain trees in established shelterbelts and woodlots should be cut down and made use of before they die:

(1) Wood of trees that have died has less value as fuel than wood of trees cut green and properly dried or seasoned.

(2) Nothing is to be gained by leaving in established shelterbelts and woodlots trees which are at a standstill so far as further development is concerned. In the case of shelterbelts if the efficiency of trees in providing adequate shelter is impaired, it is sound economy to arrange to set out a new shelterbelt prior to removing the old trees.

In other words farmers are urged to think of their shelterbelts and woodlots as farm crops, which should yield a harvest within more or less definite periods, and as such, new crops must be started occasionally.

It should be noted, however, that the management of any shelterbelt or woodlot planting does not call for the cutting of the whole planting at one time. The recommended plan is that only those trees in a shelterbelt or woodlot which are definitely weakest or whose reduced rate of growth renders them easy victims of attack by insects or diseases should be cut out at intervals of about five years. The expected result of this step is a stimulation of growth by the remaining trees.

This thinning out may be done at any convenient season of the year, but two specific periods are suggested, having in mind the best use of the removed material. Trees intended only for use as fuel should be removed in the fall or winter so that the wood in trunks and branches may dry out in summer and be ready for burning the following winter. Fall or winter is a slack season on many farms, and many farm shelterbelts would benefit from the type of thinning suggested. A second suitable time for thinning out farm shelterbelts and woodlots is in early spring. Poles intended for use as fence posts and which are to be treated with bluestone, or other "green-cut" treatment are best cut in spring just before the spring movement of sap begins. Cutting at this time of year is essential for best results from the treatments specified.

Instead of farmers thinking of their shelterbelt trees as fixed or permanent farm equipment, it is sounder economy to adopt an attitude towards them of greatest utility and service.

## INFORMATION ABOUT TREES

If interested you may have for the asking a copy of any of the following publications:—

1. Trees for Prairie Farm Planting. (FNS Circ. No. 1)
2. Prairie Farms Need Woodlot, (FNS Circ. No. 20)
3. Growing Caragana for Field Shelters and Hedges. (Pub. 512)
4. Conditions as to the Preparation of Soil for Tree Planting (Pub. 514)
5. Special Instructions for Planting Evergreens. (Pub. 515)
6. How to Plant Hardwood Cuttings. (Pub. 516)
7. Instructions for Planting Tree Seedlings. (Pub. 517)
8. How to Make a Sketch of the Proposed Shelterbelt. (Pub. 518)
9. Progress Report 1937-1946.
10. Tree Planting Near Dams and Dugouts. (Pub. 629)
11. Irrigating a Prairie Farm Garden. (Pub. 657)
12. Vegetables for Prairie Farms. (Pub. 663)
13. The Bluestone Treatment for Poplar Posts
14. Pruning, Thinning and Utilizing Trees. (Pub. 770)

Problems and Questions about your Trees and windbreaks are invited.

Address:

The Forest Nursery Station,
Indian Head, Saskatchwan.

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