

Planting the Standard Windbreak

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Protection for the Farmstead
A windbreak that will add to the comfort and contentment of the
family and the livestock

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PLANTING THE STANDARD WINDBREAK

For the last few years only standard windbreak plans have been used in the Minnesota windbreak project now being promoted through the co-operation of the county agents, the Agricultural Extension Division, and the Division of Forestry, at University Farm, St. Paul, Minnesota.

The standard windbreak project calls for a very substantial planting, one that will furnish adequate protection to the farmstead, and, if properly managed, will yield fuelwood, repair material, fence posts, and, in time, lumber that will find a ready market locally.

Many farmers today are not enjoying the fullest benefits possible from their shelterbelts because they have only a fringe of timber, too close to the main buildings and consisting of species that are ill suited to the permanent needs and requirements of the farm.

Preparation of the Land

The land should be in some cultivated crop such as corn or potatoes for at least one year before the trees are planted. This is to provide for the proper pulverizing of the soil and the killing of competing grasses and weeds. It should also conserve moisture, so necessary to successful tree-growth. New or sod ground is usually broken two years in advance of planting. For land not recently in a cultivated crop, the following is the procedure to follow:

Two years before the trees are to be planted, the ground, except in very sandy soil, is plowed deep in the fall or spring. It is then disked and harrowed through the summer to keep it free from grass and weeds. This amounts to clean summer fallow, which is the best means of conserving soil moisture, so essential for young trees in their first year. One year before the trees are to be planted, the ground is again plowed deep in the fall and allowed to remain rough over winter. The following spring it should be disked and harrowed thoroly and worked until the soil is mellow. The ground is then in fine condition to receive the trees.

A one-horse cultivator and a hoe are the best tools for cultivating a young plantation. Frequent cultivation saves moisture for dry periods which are sure to come later in the summer.

Do not pile the dirt up along the rows or around the trees, especially around evergreens. The roots as well as the leaves need air. Piling dirt high will start a new or extra set of roots, causing the lower, more important roots to die. Do not cultivate deep enough to cut off roots immediately below the surface.

For the first two or three years corn or some other similar crop should be drilled in between rows of evergreens. The dry stalks left over winter will help to catch and hold snow around the evergreens, thus preventing or reducing the possibilities of winter-killing.

Cultivation after the middle of August is not necessary. Late cultivation tends to stimulate late growth, when the trees should be getting ready to "harden-up" for winter. Late weeds may be pulled or hoed.

Cultivation should be continued each year until the trees shade all the ground. Until the trees take possession of the ground, grass and weeds will come in and crowd the trees.

Size of Trees

Small trees are preferred because they are more certain to grow when planted. The development of a good root system is more important than a big top. Trees with long tops and insufficient root systems will die from starvation because the tops demand more food and water than the reduced root system can supply. For this reason, evergreens about four years of age, not over 10 to 14 inches high, are desirable, if they have well-developed root systems. Trees this size are also easier and less expensive to ship, cheaper to plant, and much easier to handle. Hardwood trees two years old are large enough to give satisfactory results. For some species, rooted cuttings are desirable.

Location of Windbreak

A windbreak to afford protection against prevailing storm winds in Minnesota should be placed to the northward and westward of the farmstead, extending about 400 feet in each direction. It should not be closer to the main buildings or the farmstead than 100 feet. The main part should be at least 80 feet wide. Outside should be a space 40 to 60 feet wide, to serve as a "snow-trap," and beyond that should be a secondary break or "snow-catch" of low growers, in a space about 15 feet in width.

If the windbreak is too close to the main buildings the snow will pile in the yard. Setting the trees back 100 feet from the buildings leaves room for an orchard and garden between the windbreak and the house; also room for a small barnyard feedlot or pasture in which to turn cattle in winter, when icy winds blow.

Every farm should have an orchard of some kind, particularly for home needs, but without the protection of a shelterbelt, fruit trees are frequently broken down by winter storms.

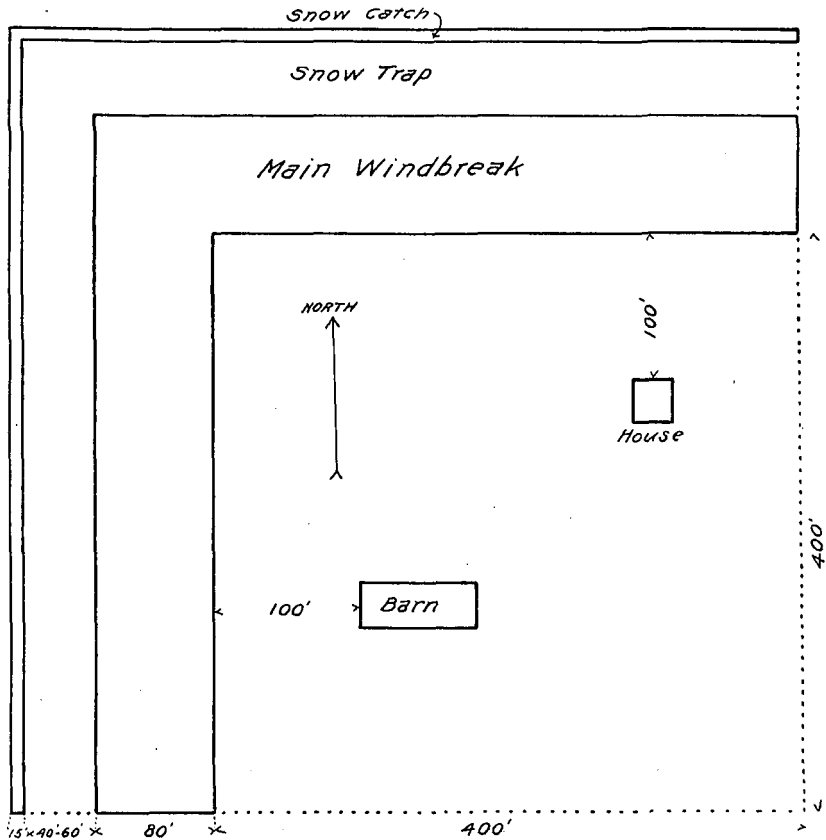


Fig. 1. Snow Catch

Planting Plan

Figure 1 shows the snow-catch and snow-trap outside of the main windbreak. These are very necessary. Without them, snow will pile up in the young plantation every year, break off limbs, smother and break down trees here and there, and result in retarded growth, unsightliness, and general deterioration. This snow-catch consists of two rows of low shrubs whose duty it is to catch the snow and pile it in the snow-trap area.

In the snow-catch, rows 1 and 2, low shrub-like trees such as caragana, Russian olive, laurel leaf willow, golden willow, and buffalo berry, are used, depending on soil and climatic conditions. These species do not grow very tall but grow quite dense from the ground up and are hardy. Willows can be kept trimmed to right height. In this area the

trees are planted four to six feet apart in the rows, and the rows eight feet apart.

Cross Section of Windbreak

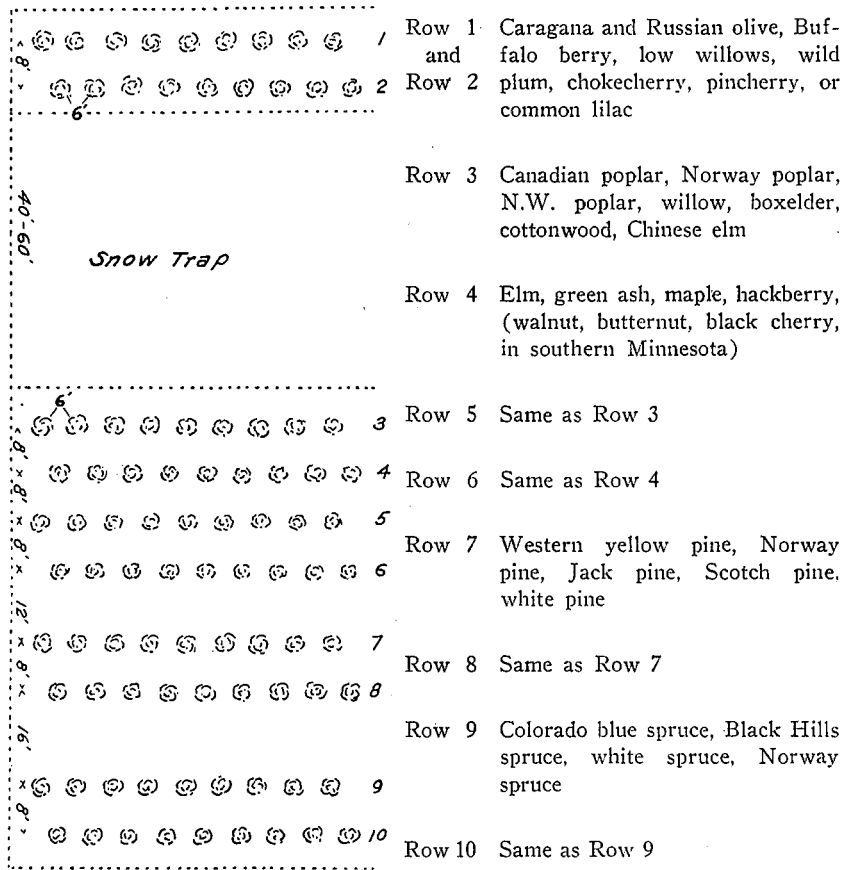


Fig. 2. Planting Plan

The snow-trap for best results should be 50 to 60 feet wide, altho 40 feet is not too narrow. Experience has proved that a tree of a certain length will cause snow to pile back a certain distance in proportion to its height. For the trees mentioned in the snow-catch, 55 feet will give the best results. In summer the open snow-trap area may be used for a calf pasture, or for alfalfa, sweet clover, potatoes, or corn.

The main windbreak of 80 feet consists of eight rows of trees, both hardwoods and softwoods. There should be some fast-growing species that will give quick results and act as a nurse crop, while the longer-lived, more valuable trees are coming on. Rows 3 and 5, therefore, consist of such fast-growing trees as boxelder, cottonwood, Norway poplar, northwest poplar, and Canadian poplar. Hardy, desirable wil-

lows may also be placed in these rows. These trees are planted six feet apart in the rows, and the rows eight feet apart. Most of these trees may be started from cuttings taken locally. All trees are alternated, or staggered, in planting.

Rows 4 and 6 should consist of the more permanent, longer-lived trees such as ash, elm, hackberry, and maple (walnut, butternut, and black cherry in southern, central, and eastern Minnesota). These trees will not only make a more permanent windbreak but will grow material for farm needs, such as repair material, fence posts, fuel, and lumber that may find a ready market with wood-using industries. These trees are also planted six feet apart in the rows, and the rows eight feet apart. When rows 4 and 6 begin to crowd for room and furnish the protection required, rows 3 and 5 may be cut out, leaving rows 4 and 6, 16 feet apart. Rows 3 and 5 are merely "nurse-crop" trees anyway, and are used to give quick results while the longer-lived and more valuable trees are coming on.

Leave a space of 12 feet between the hardwoods in row 6 and the first row of pines, row 7. If the hardwoods are too close they will "side-shade" the pine too much, resulting in open spots in the pine rows or stunted and deformed trees. Rows 7 and 8 should consist of pine such as western yellow pine, Norway pine, Jack pine, Scotch pine, or white pine, depending on soil, climatic and general conditions. These trees also are planted six feet apart in the rows, and the rows eight feet apart. The conifers have foliage all the year around, affording protection in winter when it is most needed. They also add to the aesthetic value of the plantation.

A space of 16 feet should be left between the pines and the first row of spruces. Spruce is tolerant of shade, grows dense, and spreads out. If too close they are likely to side-shade the pine too much.

The spruce, rows 9 and 10, should be planted six feet apart in the rows, and the rows six feet apart, to make an impenetrable wind or storm barrier. The spruce has dense foliage from the ground up, 12 months of the year, and is thus the proper tree for the inside.

The spacing of the trees as given tends to force the trees upward in a shorter time, so that they shade the ground more quickly, killing off competing vegetation and giving the results expected—a dense growth through which winds will not penetrate easily.

This windbreak as presented is the standard plan for Minnesota and will not only improve the aesthetic value of the farmstead but will reduce the fuel bill, for less wood and coal will be burned because of lessened exposure. By adequate windbreaks, storm winds outside of such a plantation raging at 30 miles per hour have been reduced to 5 and 6 miles per hour inside of the windbreak.

Where Trees Are To Be Planted

As an example, Russian olive, etc., belong in the snow-catch, rows 1 and 2; northwest poplar or willow, etc., belong in rows 3 and 5; ash or elm, etc., in rows 4 and 6; western yellow and Norway pine, etc., in rows 7 and 8; Colorado spruce and white spruce, etc., rows 9 and 10.

Follow the plan as shown in Figure 2 carefully. Stake out your proposed planting before doing actual planting, so that rows will be fairly straight, thus easier to care for and more presentable.

Cultivation after planting must be continued until the trees are large enough to care for themselves. To establish a windbreak takes perseverance, patience, and interest on the part of the home owner.

Pruning

Do not prune your windbreak trees! The denser the planting, the better the windbreak. Pruning the trees makes a sieve for the snow and wind to go through. Furthermore, it lets in light which encourages the growth of grass and weeds.

Mulching

Do not mulch unless it is absolutely impossible to cultivate. If mulching is necessary, only clean wild hay or clean straw should be used. Don't use raw manure, as it tends to burn trees if too close. Remember a dust mulch is the best. Mulching also encourages surface roots, because it holds moisture close to the surface, and the roots are not forced to go down into the ground after the necessary moisture. Surface roots are more susceptible to climatic changes of winter-killing or drought. Keep the dirt black around the trees by keeping the area free from weeds and grass. The best mulch is a dirt mulch.

Do not neglect your trees. A good watering at frequent intervals may be necessary in periods of continued drought, but in normal years, if the trees are well planted and receive regular care in weed and grass control, little else is necessary.

Protection

Protect your plantation from fire and keep all farm animals out by putting up good fences. When the trees are small even chickens kill or injure them by scratching around the roots, exposing them to dry winds and sun. Leaf-eating insects can be controlled by spraying.

How To Plant Forest Seedlings

When trees arrive for planting, soak the roots thoroly in water; then plant at once. If it is not possible to plant immediately, after

soaking the roots, "heel" the trees in a cool place and leave them until ready to plant, but plant within a few days.

Do not allow the roots to become dry. Do not allow them to be exposed to sun or drying wind. The delicate roots of the conifers, or evergreens, are easily injured or killed by exposure to sun and air. Dry roots mean dead trees.

The hole to receive a tree should be large and deep enough to take the entire root system without crowding. The roots should be well spread and packed closely with good soil. Care should be taken to leave no air spaces in the soil around the roots.

Seedlings should be planted about one inch deeper than they stood in the ground before being taken up for shipment.

Plant carefully. Hasty or slovenly planting means losses.

Planting Cuttings

Cuttings are simply pieces of branches from trees, which, if properly placed in the soil, develop their own root systems and grow into trees.

Cuttings are easily made from trees of the willow and aspen families. They are best made in the fall, when the growing season is over, or in the spring before growth starts. Cuttings from 12 to 16 inches long, and from $\frac{1}{2}$ to $\frac{3}{4}$ of an inch thick are best for easy handling. Such cuttings should be made from the younger branches of healthy, vigorous trees.

The planting of cuttings gives the best results when the cuttings are placed at an angle of from 45 to 60 degrees, with only two buds above ground, the rest below ground to start a strong root system.

Set the cuttings in the ground firmly and tamp soil tightly around the lower end. With the cuttings in a slanting position, the covered parts are always in close contact with the soil. It is good practice, also, to soak the cuttings in water for 24 hours before planting.

Do not push the cuttings into the soil. This is likely to peel the bark and to kill the cambium layer, or living tissue, resulting in failure to grow. Make a good opening with a spade, carefully insert the cutting, and then press the soil about the lower end. A furrow may also be plowed, the cuttings laid in the furrow, and the earth turned back on the cuttings at a proper depth. The earth is then tamped on the lower ends to bring the soil in close contact.

Care and protection must follow all plantings, if the best results are to be obtained.