

CANTERBURY CHAMBER OF COMMERCE
AGRICULTURAL BULLETIN

FARM TREES—SHELTER AND TIMBER

(Replacing Bulletin No. 36, which is out of print)

Prepared by the Canterbury Agricultural College, Lincoln

Bulletin

CHRISTCHURCH, MAY, 1939

No. 118

A serious defect on many farms of this country is the inadequate or inefficient provision of farm shelter and timber. Shelter belts and timber groves on the farm are almost indispensable. Trees provide not only protection for homestead and farm buildings, but a future source of timber for firewood, posts, stakes, and rails. The pioneers fully realised the aesthetic value of trees. Today we can see the results of their foresight and planting — the beautiful trees which surround many Canterbury homesteads. This should be an example and encouragement to us to go and do likewise. The benefits of shelter to cropping land often tend to be overlooked. Unchecked winds on cultivated areas remove valuable surface soil, withdraw soil moisture, "shake" ripening grain and directly injure maturing crops. The effect of shelter in conserving moisture and increasing humidity is readily illustrated by the quicker growth of grass or the more speedy germination of seed on the sheltered sides of any field. It should be observed that a belt 66ft. high affords direct protection for a distance of 5 chains (or 5 times its height), and partial protection for 15 times the height.

Tree planting will prove worthy of adoption as a means of utilising waste or scrub infested country. In certain areas schemes are being developed to plant thousands of acres of otherwise waste land in quick growing trees. Areas which have reverted to gorse, fern, manuka, and blackberry can be improved by developing the only economic "crop" which will compete successfully with weed growth. The value of provision of shelter for stock, both for protection from wind, rain, cold and for shade purposes, should be much more generally appreciated. Timber for farm purposes is also an immediate need. The purpose of this

bulletin is to consider ways and means whereby these amenities may be provided.

Hedge Shelter

Hedge shelter alone is insufficient, but good hedges are valuable apart from their boundary or sub-division function. In districts where they thrive, *Cupressus lawsoniana* and *Cupressus macrocarpa* are in high favour as permanent evergreen shelter hedges. Single lines are planted with the trees 3ft. apart, the hedges being kept trimmed at about 10ft. Boxthorn, hawthorn, barberry, prickly acacia and hakea planted one to two feet apart are also useful on a wide range of soils, particularly in permanent grassland. In some dairy country pampas grass growing 10ft high is unsurpassed as a type of hedge shelter, and even the value of clumps of flax is recognised. In cropping areas gorse has become widespread. It is satisfactory if well cared for and kept under strict control, but in view of the deterioration of old gorse hedges the trend now is to remove many of these, replacing them by permanent wire and standard fences, at the same time making shelter provision in the form of short lines of low growing trees.

For ornamental hedges there is a wide range in which many native species are recommended: *Taupata* (*Coprosma Baueri*), *Tarata* (*Pittosporum eugenioides*), *Kohuhu* (*Pittosporum tenuifolium*), *Silver Ake Ake* (*Olearia Traversii*), *Golden Ake Ake* (*Olearia Forsteri*); introduced hedge plants suitable for homestead gardens include *Privet*, *Laurel*, *Escallonia*, *Eleagnus*, *Lonicera*, *Irish Yew*.

High Shelter Belts

These should be established across the prevailing winds on the farm boundaries or well away from build-

ings. In the past many tall growing trees were planted too near buildings which are now unduly shaded, especially during winter. High shelter belts should be at least 5 chains away from buildings on the North, East and West sides. They can be closer on the South side. What is required is a combination of Pines and Cupresses, the former to give height to the belt and break the face of the wind, the latter to provide density at the base and prevent cold ground draughts through the trunks. The following high shelter belts are recommended:—

(I.) For warmer district deep fertile soil:—

Pinus Radiata (Insignis Pine), 2 rows, 6ft. apart each way.

1 row *Pinus laricio* (Corsican pine), 4ft apart each way on the windward side.

1 inner row *Cupressus lawsoniana* or *Benthamii*, 18ft from the pines and 3ft. apart in the row.

(II.) Coastal Districts, sandy soil:

1 row *Pinus Pinaster* (Maritime pine), 4ft apart each way.

2 rows *Pinus Muricata* (Prickly pine), 4ft apart each way.

1 row *Cupressus Macrocarpa*, 6ft apart each way and 18ft from pines.

(III.) Exposed Dry Plains:—

2 rows *Pinus Radiata*, 6ft apart each way.

1 row *Pinus Muricata*, 4ft apart each way.

1 row *Cupressus Arizona*, 18ft. from the pines, 6ft apart in the row.

(IV.) Cold high country areas:—

1 row *Pinus Murrayana* (Lodgepole pine), 6ft apart each way.

1 row *Pinus larico*, 6ft apart each way.

1 row *Pseudotsuga taxifolia* (Oregon Pine; Douglas fir), 6ft. apart each way.

1 row *Cryptomeria japonica* (Japanese cedar), 12ft from the pines, 4ft apart in the row.

In wetter districts where the soil is deep and moist Lombardy poplars may be used for high shelter—3 rows of cuttings with the trees alternating in the rows and 4ft apart each way. When the trees have attained a fair height a good plan is to cut one of the side rows down to a few feet and allow it to grow up again from the stumps. This keeps the belt furnished at the base, thereby covering the gaps between the other lines. If a single row or a double row of poplars is established a hedge should also be

planted close to the trees. *Eleagnus* cuttings 4ft apart are recommended.

Low Shelter

It is considered that the greatest need throughout New Zealand is for low shelter as distinct from that already mentioned. This is required within the boundaries of the high shelter and should be in the form of isolated clumps, short lines of low growing trees, or lines of trees kept topped at about 20 feet. The ideal would be for each field of any property to be so provided for a few chains along one or two of the fence lines. There is no need to plant the whole length of the subdivisions, but rather aim to establish short breaks of a few chains across the prevailing winds. Such low shelter belts are of immense value to stock under conditions of rain, wind, or excessive heat. These inner belts need not be high nor should they occupy as much space as does high shelter.

Single or double rows of any of the Cypress — *Lawsoniana*, *Benthamii*, *torulosa*, *macrocarpa*, or *Arizona* are recommended, the first two for North Island plantings, the latter for Southern districts. Young trees should be planted 4ft apart with 6ft between any two rows. It is necessary to top *macrocarpa*. The others are not tall growing in habit but greater density near the ground will result if such lines are also kept topped at about 20-25ft. Pines may be used for the same purpose in double rows 6ft apart each way. For low shelter it is essential to keep them topped and trimmed along the side. Single or double rows of Lombardy poplars with the cuttings 4ft apart and kept topped at 20ft may also be used. Low shelter may be provided by single lines of willows, by untrimmed lines of hawthorn or boxthorn, in fact, by any of the so-called hedge plants which are tall growing in habit.

Farm Timber

This should be established in suitable corners of fields, in shingle pits or in patches of otherwise waste land. In such situations shelter and shade will be obtained, but these trees must be regarded as a source of farm timber rather than as shelter belts. The timber trees recommended for South Island plantings include chiefly the *Eucalyptus* or Gum—*Eucalyptus Gunnii* (Cider Gum), *E. Macarthurii* (Woollybutt), *E. viminalis* (Manna gum), *E. gi-*

gantea (Red Mountain Ash), and in the colder southern districts only, *E. globulus* (Blue gum), which in other areas is particularly disease susceptible. Other timber trees which will prove valuable are the larch, Oregon pine, and macrocarpa. For North Island timber plantings the same trees are recommended and in addition other of the more frost susceptible but good timber Eucalypts such as *E. eugenioides* (White Stringybark), *E. obliqua* (Stringybark), *E. ptilularis* (Blackbutt).

Ornamentals

A very wide choice is available for shelter or ornamental planting in the homestead grounds. European trees are most attractive, including the evergreen, scarlet, and European oaks, elm, ash, sycamore, silver and black poplars, maples, birch, beech, cedars, silver firs, redwoods, and cypress. Native trees should be encouraged, particularly some of the smaller species such as titoki, matipos, kowhais, lacebarks, and ribbonwoods.

Raising Seedling Trees

Pines and cypress can be raised on the farms as follows:—

(a) Sowing in the open.—Sow the seed under garden conditions during October. Before sowing, moisten the seed and dust with red lead powder.

Sow in shallow broad trenches, covering with no more than $\frac{1}{4}$ in. of fine good soil. Cover with cotton and keep birds off. When the seedlings are 6 in high, thin them out into other rows. In the second autumn after a good rain and when the ground is wet, "wrench" the trees by passing a sharp spade down either side to cut off long fangy roots and stimulate the development of bunched fibrous roots. Transplant the trees during the winter.

(b) Raising under glass.—Treat the seed as indicated above and sow in boxes of rich soil under glass. This can be done at any time of the year, even mid-winter. When the seedlings are about 2 in high, prick them out into other boxes, giving each plant a space of about 2 square inches. When the seedlings are 6 in high, sow in rows outside. This can be done in the early spring, assuming the seed was sown in boxes under glass during the autumn or winter.

Again wrench the trees in the second autumn after planting out in rows and finally transplant the trees during the succeeding winter.

(c) Raising cuttings.—Take pop-

lar cuttings from old trees which have shed their leaves. Place very short cuttings in the ground and leave them until the first autumn when "wrenching" should be performed. Planting out can take place in the following winter.

Trees can be purchased. When purchasing obtain short sturdy yearlings or two-year-olds, but avoid planting anything older. The cost will usually range from 15/- to 25/- per 100.

Planting

In Northern areas commence planting in May and continue until September. Trees planted by the end of June generally give good results. Planting in mid-winter, July, is successful only with hardy pines. Where frosts are particularly severe, planting should be held over until August.

Wherever possible it is advisable to cultivate the ground some months before planting. Trees in cultivated ground grow much more rapidly. Where cultivation is not possible it is necessary to go over the area at least three months before planting, dig out squares and loosen the soil where the trees are to be planted later.

There are several planting methods:—

(1) Pitting.—Formation of square or V-shaped pits with a spade or a planting tool.

(2) Notching.—The spade is pushed into the ground, moved backwards and forwards to form a slit, in which the tree is planted. An improved modification is to make two vertical cuts at right angles. When making the second cut at right angles to the first, push the spade handle down thus lifting a roughly triangular piece of soil, in which the young tree is planted.

(3) Line Ploughing.—With a single furrow plough turn over an exceedingly shallow furrow of turf and then pit or notch the trees along this.

(4) Grubber planting.—The use of a hand grubber particularly on very rough scrub or hill country.

In planting, the following points should be observed:—Plant small sturdy well-rooted trees. Plant the tree no deeper than it was when growing in the nursery. Distribute the roots evenly and avoid crushing. Plant the tree upright against the side of the pit away from the prevailing wind. Never allow the roots to dry out before planting. Press the tree very firmly into position when replacing the soil.

The problem of fire risk must be borne in mind during tree planting. In some districts grass fires are likely to occur regularly with a rapid spread to plantations. If this danger exists the blocks of trees may be protected by ploughing fire-breaks, by establishing farm roads or tracks or by the presence of ditches and water races. Gorse hedges should be removed from the vicinity of the plantations. Fire danger can be considered also when the cropping rotation is planned, an endeavour being made to separate blocks of trees by green crops which do not carry fire or by cultivated land.

After Care

Very few trees or shrubs are stock proof during early growth. Adequate and permanent fencing is essential and, although the heaviest item of expenditure, it must be borne if good results are expected. The mistake of placing fences too near the lines of trees should be avoided, otherwise stock will damage the lower branches and cause openness at the ground. The fence should be at least 8 feet from the tree lines, and should not be removed. Where rabbits and hares are troublesome, a practice known to minimise such injury is to brush tar or tar water on the turf at the base of the young plant and very lightly on the tips of the foliage.

During the first year twitch-like weeds and scrub growth should be kept away from the base of the

trees, which, once they have made a good start, will resist such competition. Trees which die should be replaced in the following planting season. In a dry season watering during the first summer may be necessary.

Conclusion

The initial cost of tree establishment may be considerable but those interested are urged to develop a shelter and tree planting plan. Consider the property, visualise what is needed, then aim to carry out a certain amount of this plan each winter. The programme in this way is spread over a period and may be completed within four to five years. Too long have we admired and exploited the timber and shelter legacy our predecessors left. Now is the time to do our share for posterity.

Consider the inscription on the Burke's Pass monument:—

"O ye who enter the portals of the Mackenzie to found homes, take heed to the word of a child of the misty gorges and plant trees for your lives: so shall your mountain faces and your river flats be preserved for your children's children and for evermore."

Copies of this bulletin may be obtained from the secretary, Canterbury Chamber of Commerce, P.O. Box 187, Christchurch.