







DOMINION OF CANADA, DEPARTMENT OF AGRICULTURE

## CONDITIONS AS TO THE PREPARATION OF SOIL FOR TREE PLANTING

UNDER THE DOMINION GOVERNMENT'S SYSTEM OF FREE DISTRIBUTION

The failure which at one time frequently attended attempts to plant trees in the prairie districts may, for the most part, be attributed directly to the lack of preparation of the soil previous to the planting. In comparing the texture of the soil on the open prairie with that of the forest a vast difference is found. In the former case the ground is covered by a tough, compact sod, and the soil beneath this is so hard as to be almost impenetrable for the roots of plants. In the forest, however, we find on the surface several inches of loose, decaying, vegetable matter, and a subsoil rendered comparatively open and porous, owing to the action of the tree roots; under such conditions as these there need be no difficulty at all in planting and successfully raising young trees. Unfortunately, however, these are not the conditions which have to be dealt with on the open prairie, as in most places where planting is resorted to the soil is more or less compact and not naturally suited to the growth of deep-rooted plants.

In raising trees as well as other crops it is always advisable to follow nature as closely as possible. If this is done a very fair measure of success may be confidently expected. In nature trees require an open, porous soil; where it is proposed to plant trees it is, therefore, necessary to have the soil moderately loose and porous to a considerable depth. It would be absolutely foolish to plant trees on the freshly broken sod of the prairie and expect them to live under ordinary circumstances.

**Summer-fallow.—Deep summer-fallow is the only reliable preparation: Summer-fallowing should be done late in May or before the 15th of June. Late summer-fallowing is of very little use. The ploughs should be run, if possible, 8 to 10 inches deep and the land harrowed immediately after ploughing. All weed-growth should be kept down and the moisture conserved by the constant use of the drag harrow and broad-tooth cultivator.**

As in a dry season no other method of cultivation can be relied upon, the Department will in future insist upon all ground for planting being summer-fallowed.



For some years after the Forest Service commenced distributing trees in 1901, stock was granted for planting on garden land, on especially well prepared backsetting, and on summer-fallow. Most of the trees set out on garden land and backsetting have not given the desired results. Many failures of plantations have been directly traceable to the insufficient preparation of the soil.

As it is as much in the interest of the planter as in that of the Department that the plantation should be ultimately successful, no reasonable effort should be spared to ensure the best results; and as any preparation other than a thorough summer-fallow cannot be absolutely relied upon, it has been decided that *summer-fallowing must have been done before trees can be granted.*

The true worth of a properly prepared summer-fallow has been clearly demonstrated throughout the Prairie Provinces. Such preparation, undertaken at the right time, compared with other methods has at least two distinct advantages which are of vital importance in the matter of tree culture. Moisture is stored against a possible dry planting season the following spring, and the growth of native grasses and weeds is reduced to a minimum.

Ordinarily backsetting is not considered suitable preparation for tree planting under average conditions. The great danger in setting out trees on backsetting is when the roots of the native grasses are not entirely killed out by a thorough rotting of the sod, and in most cases either couch grass or sweet grass comes up in the plantation here and there and quickly spreads all over. If this becomes at all bad the plantation is practically ruined. For new land, backsetting treated as a summer-fallow in the following season is the only preparation that can be relied upon. A successful plantation in a few years will more than compensate for the amount of time and labour in making satisfactory preparation before planting.

**STUBBLE LAND.**—Planting trees on stubble land is not recommended, for two reasons: first, the grain crop takes a considerable amount of moisture out of the soil instead of conserving it; and, second, when the stubble is ploughed under, it leaves the soil so open that when the season is hot and windy it rapidly dries out around the roots of the young trees soon after planting.

Manuring is usually not necessary; if practised at all it should be done at least a year previous to planting. The soil on the prairie is as a rule extremely rich. What the trees desire most is a good supply of moisture; thorough cultivation is the only way to bring about this condition. On very heavy gumbo or clay soil, such as is found in the Regina district, manuring may advantageously improve the mechanical texture of the soil by making it more porous and increasing its capacity for holding water; but even on these soils it is not advisable to apply the manure at the time of planting.

**SPRING PLANTING.**—Planting in the spring should commence as soon as the ground has thawed out to the required depth, as then the greatest advantage may be gained from the moisture left in the soil from the melting of the snow and the young plants are able to get a firm foothold before the approach of the dry months of summer.

In connection with the preparation for the proposed belts, it is most important to consider the arrangement of these belts in relation to the buildings, keeping in view, of course, the probable future development of the farm.

In order to ensure a reasonable amount of room inside any proposed belts, and to avoid as far as possible any subsequent inconvenience due to snowdrifts collected in the lee of the belts, *the Department will grant no trees to be planted closer than 30 yards to any permanent buildings.*

The site for a proposed plantation should be carefully selected with a view to the requirements of the species which it is intended to plant. As a general rule it may be taken that slopes facing towards the north are best adapted to tree-growth. They are usually moister because they do not receive the direct rays of the sun, and are less liable to sudden changes of temperature than are southern slopes. Certain trees, as willow, ash, balsam poplar (also called black poplar, or balm of Gilead), cotton wood, and elm, thrive best on moist soil in the neighbourhood of streams and ponds, and will often prove a failure if planted on high lands where the supply of moisture is somewhat scanty.

Other trees, as Manitoba maple, birch, Russian poplar, white spruce, and Scotch pine, are adapted to grow on higher and drier soils, although they might perhaps thrive better if they were in positions where they could be supplied with more moisture. Such natural conditions as these must be taken into account in planning tree-planting operations, and a man who plants willows or balsam poplar on dry soils must not be surprised if they do not thrive; but he should be careful not to blame the country or climate as being the cause of failure.

**NECESSITY FOR CULTIVATION.**—The main feature of tree-planting in the West is that cultivation, both before and after planting, is the keynote of success, and too much stress cannot be laid on this point. It must be especially borne in mind that the great obstacle to tree-growth on the prairie is lack of moisture, and any practical means of preserving soil moisture should be used to the utmost extent. Constant surface cultivation is the best means to this end.

A very common mistake in arranging for tree-belts is that the strips prepared are generally too narrow to accommodate the desired number of rows. Strips ploughed for tree-belts should allow for at least 10 feet of cultivated soil on each side of the belt.

If two rows are desired a strip at least 24 feet wide should be prepared; for three rows, 28 feet; for four rows, 32 feet; and so on, adding four feet for each additional row.



**NOTE SPECIALLY THESE TWO CONDITIONS**

1. **The ground must be summer-fallowed.**
2. **The proposed belts must be at least 30 yards away from any buildings, unless some exceptional conditions exist.**

---

Further particulars regarding the distribution, planting, and care of the trees may be obtained on application to the Chief, Tree-planting Division, Dominion Forest Nursery Station, Indian Head, Saskatchewan.