IS PLOUGHING NECESSARY ?

By D. Spriggins

Ploughing just prior to planting is an accepted practice in pine plantation establishment. Is ploughing necessary for successful pine growth? There are some who consider that the benefits are over-rated and in many cases pines can be established successfully without ploughing.

The reasons commonly advanced in favour of ploughing before planting seem to be based on one or more of the following points:-

1. The cutting action of the discs either kills or severely retards the growth of any native vegetation, thus relieving the young pine crop from outside competition for soil, water and nutrients. Also if killing of the native vegetation is a success, the pine crop is not likely to be overtopped by scrub.

2. The top few inches of ground is churned up, thus allowing the roots of the young pine to penetrate the sub-soil more easily. It is also sometimes claimed that by breaking the hard pan on the surface, more water will soak into the soil than on unploughed ground.

Comments

The first point lists probably the major benefit of ploughing, i.e. the killing of scrub, etc., so as to reduce water losses from the soil. The fact that scrub etc. removes a large amount of moisture from the soil was first strikingly shown by Veihmeyer, an early botanist, who demonstrated that a tubof moist soil lost twice as much water in three weeks through the growth of a single plant as it did in two years through exposure to the sun.

With regard to point 2., this may be true on poorer soils where a hard pan in the upper surface is quite common, but in the better soils sufficient loosening is usually achieved by the bulldozer during heaping up operations. It may be true that if a hard pan is present the soil is too poor for pine planting anyway.

Arguments against ploughing are:-

A. Cost. Ploughing costs are influenced to some extent by the type of soil and steepness of the country and range from £2. per acre upwards. In addition to the actual cost of ploughing there is the cost of cleaning the ground so that a plough can operate successfully.

B. In better soils the valuable "crumb structure" is partly destroyed by ploughing, thus making the soil poorer in physical properties, i.e. aeration and drainge, and thus less suited for pine growth.

C. When ploughing is done on steeper ground, even if on the contour, run off and erosion can be serious. On catchment areas where it is necessary that water purity and soil stability be ensured, this is an important point.

Comments

With regard to costs, if ploughing was not to be done the cost of picking up and cleaning the ground could possibly be cut by half. The area should then be clean enough for hand planting and the amount of debris left behind should not interfere with extraction of the first thinning.

If it is then possible for less than £2. per acre to kill the native vegetation by means of herbicides such as 245T instead of by ploughing, there should be a distinct financial advantage. This will be because the costs of picking up should be reduced if ploughing is not to be done. Using 2% 245T solutions in dieseline and at the rate of 10 - 15 gallons per acre, it is quite likely that an acre could be thoroughly treated for less than £2. These remarks apply, of course, to land previously carrying eucalypt forest. On reclaimed agriculture land where grass growth is prolific, ploughing may be the cheapest method of removing the effects of outside competition.

The idea of using herbicides instead of ploughing is not new and is practiced in some North American pine forests where scrub competition is a problem and the costs of cleaning the ground suitable for ploughing would be prohibitive. Total weed killers are also used in this State for control of grass on plantation firebreaks.

It is intended to start some trials at Harvey next year to test the possibilities of the use of herbicides instead of ploughing.