

## Letters to the Editor

Dear Editor,

I joined the NI Forest Service in October 1954. During my time, I have seen trees grow to produce fine crops on good dry soil, but fall down on the shallow soils, due to the wet ground conditions and the lack of rooting depth.

During my time in Harvesting, I noticed that the start of 'windthrow' could usually be traced back to blocked drains in contour ploughing or turfing. Also, the necessity to cross cut-off main drains to extract timber during thinning operations caused irreparable damage to the remaining crop, often leading to windthrow.

From this I deduced that we should be trying to dry the ground to provide a deeper rooting medium for our tree crops. This can only be done by lowering the water table, and in the long-term, giving our trees access to more nutrients in the subsoil, which are often present in abundance but unavailable, due to the shallow water table.

To attempt to dry the ground, we must put in deep drains. To avoid foreseeable problems, such as the above difficulty during extraction, these drains must run up or down the slope to give unimpeded access across the site. I am advocating that these drains should be put in at least 1 m deep and between 16-18 m apart.

Regardless of the lie of the ground, if we are to put in 1 m deep drains at 16 m spacing, we are immediately creating a fall of 1 in 8 from the center of the area between drains to the drain bottom. In the long term, this lowering of the water table will cause a change in the whole structure of the soil, and more importantly, the subsoil.

Another benefit of these deep drains is that they should never need any maintenance and will probably be adequate for at least two rotations of timber crops. Through natural climatic conditions, the edges of the drains will dry out, stones and grit will fall out of the drain edge, and the bottom of the drains will be colonised with grasses, etc., until the tree canopy is formed and light excluded, although whether this is desirable is debatable.

A third and perhaps the greatest benefit is the fact that there should never be as great a run-off after heavy rainfall as is sometimes created by contour drains catching surface water and speeding it to main drains and streams, thus avoiding rapid erosion and the contamination of rivers and lakes. In the situation that I am envisaging, the area would act as a natural sponge, and heavy rainfall would gradually soak into the main drains over two or three days, rather than two or three hours, as is currently often the case.

It is my considered opinion that any investment in drainage, like that in roading, is an investment in the land, and should not be charged solely against the first crop produced. If our forefathers on this island had not dug ditches and drained their fields, we would not have inherited all the good land we have today. If we are to grow trees on marginal land, it is up to us to improve the whole soil structure and depth, so as to enable it to support crops of trees for future generations. Too often when windthrow occurs, we hear the excuse being made that we are subjected to severe gales off the Atlantic. Yet, if we go to these sites, we very often find trees growing quite happily on the skyline. An examination of these will often show that they are standing on an old field ditch, with a good depth of soil for anchorage.

When transferred to Antrim Harvesting in 1982, I found myself having to fell second rotation crops in Ballycastle and Tardree Forests which I had seen planted in the early 1960s. I convinced the late Jim Caithness that we should be using a digger to introduce

deep drainage to improve ground conditions. This was done in a very irregular pattern which will make the area difficult to manage as far as harvesting is concerned, but the improvement in ground conditions has led to some fantastic growth. One particular tree which I have marked in Tardree Compartment 38 P84 measured 12 m tall, with a dbh of 18 cm, at 12 years of age.

When transferred to Slemish in 1990, I laid out the P91 and P92 areas of Woodburn in Compartments 18, 42 and 43. Drains and mounds were spaced at 17 m and 2 m respectively, running up and down the slope to and from the road, to allow unimpeded access for extraction in future years, and hopefully, greater stability. Both of these areas had old watercourses running diagonally across the sites, together with old field ditches which I completely ignored by putting in the new drainage system deep enough to cut them off. To date, there has been nothing exceptional about the growth on these sites. The factors described above, however, have occurred, i.e. stones and grasses in the bottom of the drains, general 'falling-in' and shrinkage of the drain sides, and no rapid run-off after heavy rainfall.

Unfortunately I may not be around to see the final results of this work. I have, however, been granted permission by the Chief Forest Officer in the NI Forest Service to have these areas recorded as the Toppings Trials, and have written this article as an explanation of my vision of how forests must be established.

Yours etc.,

F.I. Topping