

NOTES ON THE DISPOSAL OF WEEDS IN THE FOREST NURSERY

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Weeding in the forest nursery is an expensive operation and is a considerable part of the cost of production of plants. Unlike agricultural crops young trees have little effect in suppressing weed growth, and, moreover, the system of spacing considered best for plants in beds and lines does not lend itself to the employment of horse labour for hoeing. Consequently, for seven months of the year (April to October inclusive) the weeders are engaged in a tooth and nail struggle with those "plants out of place."

Certain factors influence weed growth, e.g., climate, type of soil and control measures employed. In this note I propose to discuss one aspect of the last mentioned, i.e., the disposal of weeds when collected so that their propagation can best be prevented.

It is a fact that although the foresters concerned aim at preventing weeds growing to any size, it is often found in dealing with large nursery areas that weeds get out of hand despite the best efforts of the staff. This occurs during summers with a high rainfall, particularly on heavy soils. In showery weather the weeds torn up by the hoe or pulled by hand often start growing again, and if not immediately removed will form flowers and seeds prematurely.

The regular way of disposing of weeds when collected is to convert them into compost. By composting, a supply of humus is made available, and in the ideal compost heap a temperature is reached which destroys all seeds. Various methods are employed notably the "Indore" method. For the successful employment of any method it is necessary to have at hand a large quantity of suitable organic refuse so that the building of the heap may be completed in one day. A supply of farmyard manure or liquid manure is also necessary to assist activity of certain necessary organisms.

In the forest nursery, however, the building of the compost heap is a protracted business and, by the addition of small quantities at intervals, may continue over a period of several months. It has always been difficult to purchase farmyard or liquid manure, and most foresters found them impossible to procure since the advent of compulsory tillage. Consequently, the conditions in the nursery compost heaps are not all that could be desired for the destruction of weed seeds. There is also the point that there are perennial weeds which propagate themselves vegetatively as well as by seed: e.g., Scutch Grass and Dock. No forester would deliberately include these in a compost heap but if they occur in small quantities they may be included through an oversight.

The shortcomings of composting in the forest nursery were recently brought home to me in a nursery where the making of compost has been practised over a number of years. It happened that as a result of the employment at lining out operations of more

than one group of men in a nursery break, furrows were formed where the end of the piece of ground worked by one group joined with that worked by the next. The furrows were filled with well rotted compost. All during the growing season the furrows thus filled had to get special attention from the weeder. There was a thick crop of rank weeds which had to be pulled frequently or dug over, while the weed growth on the adjoining ground was comparatively light. It was clear that the composting of weeds as practised in the nursery was not satisfactory as regards killing their seeds. The alternative was to burn them.

The burning of fresh green weeds in an open fire is not an easy matter, so kilns were erected at central points in the nursery, which made possible the burning of weeds with comparative ease. Two kilns serve an area of twenty acres.

The construction of these was carried out by the regular nursery staff, each kiln costing three man-days. The materials used for each were approximately 120 second-hand bricks, 1 cwt. cement, 4 cwt. sand and a few worn-out iron fence stakes. The base of each kiln, which is in the form of a square, is 2' 3" x 2' 3" inside measurements, and the walls, which rise to a height of 4' 6", are one brick in thickness. They are perpendicular for the height of four bricks and are then drawn in, the two rows of bricks on top being again laid plumb. The opening at the top is 1' 6" x 1' 6". There is an air inlet 9" x 9" at the base of each wall; these also serve for the removal of ash. Lengths of 1" angle iron, or iron fence stakes 2' 3" long, are laid in a horizontal position 2" apart, the ends being embedded in concrete hobs which are 10" high and 2" thick. At each air inlet an iron plate is laid across to serve instead of the hob. The stakes act as a support for the fire while allowing of a free supply of air.

The fire is started by burning some inflammable material such as furze or dry withered grass until a supply of red ash is produced. The weeds are then shaken out and fed from the top until the kiln is full. The material can be left to burn until the mass of weeds sinks to the bottom. Generally the kilns can be filled three times a day; morning, noon, and evening or more often if necessary. The air inlets opposite the side from which the wind is blowing are closed; this increases the draught. If weeds, through lack of attention before being brought to the kiln, have turned into a soggy mass, it will be difficult to burn them. In such cases it was found that a mixture of furze or other inflammable material helped considerably, and it is also better in such cases if the material is fed in small quantities. Weeds which burst into flames while burning are mixed with material that will slow up combustion and produce a smouldering mass. In this way a greater quantity of ash is produced.

The ash is very valuable as a manure and can be applied to the soil when green cropping at the rate of about $\frac{1}{2}$ ton per statute acre, or hoed in between lines of plants in Spring at the same rate. If it has to be stored it should be protected from the weather as rain washes out the potash which is soluble. Potash is the only important mineral it contains.

The burning of weeds means that a supply of humus is cut off, but this can be made up by green manuring now that artificials are again available. Apart from the value of the ash produced, I have no doubt that the over-all saving in costs of weed control will more than offset any losses occasioned by the cutting off of supplies of humus.
