

## Use of Rippers as alternative to Clark Plough.

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### *Background :*

IT has long been accepted that ploughing as a preparation for planting is a necessity. There has been little or no problem with the ploughing of peats and normal marginal land but the dry podsols which are so prevalent in the O.R.S. areas in the south have been causing some anxiety as to the best method of treatment. In 1959 the Hard Pan plough or Clarke plough was introduced and this has been the common method of preparation of the dry peat areas. At that time a double mould board type was used. This consisted of the usual long tyne 15" to 21" to which were attached two wings. These wings removed only a very light skin which was not suitable for planting on. The single mould board turns a sod somewhat similar to the Cuthbertson, this sod has been planted on, although from my more recent observations, I am of the opinion that planting on the side and more in the furrow is giving better results. The use of the rippers was prompted by observations made when shale was being ripped for road making and from information obtained from the 1st planting in 1959 on ground treated by the double board Clarke plough. Planting of P.C. 2+1 was done into the fracture, the spacing was 5'×10'. The trees have maintained a very even growth and are now up to 9½ ft. The vegetation has of course improved but never to the extent as to be in competition with the P.C.

### *Object :*

By using the rippers to determine the extent of fracture in O.R.S. and to observe the conditions for planting. The rippers used were 26 ins. long mounted on a D7 crawler. Ploughing of the area was prohibited because of the danger of run off into the adjoining reservoir. No drainage was required the area being dry to very dry with pan conditions varying from 12" to 18" over the whole area.

### *Method of treatment :*

The area carried a heavy cover of Calluna and Ulex Gallii 14" to 20" high. This had to be removed and it was decided to do this by two methods, (1) by burning; (2) by rotary slasher. It was found that the material left after the rotary slasher interfered with and slowed down the subsequent ripping because of the gathering or rolling of the material under the cross bar of the ripper. The cutting or burning of the material did, however, help the operation

of the machine because hazards were readily seen and could therefore be avoided. Burning of the material seemed to be the best method of pre-ripping preparation. Ripping through the uncut material proved to be almost impossible as it was inclined to tear along with the rippers and form into large packs. Burning therefore before ripping is recommended.

#### *Operation :*

The operation of ripping was carried out up and down hill. The gradient varied from flat to 1.6 to 1.8 but no difficulty with regard to operating the machine was experienced and up and down hill was decided on as there was a question of water conservation for the adjoining reservoir. The rippers were set at 3 ft. spacing and gave an operational depth of 26 ins. Complete fracture of the soil was obtained and this was proved subsequently by opening a large soil pit and observing the soil condition. The soil between the fractures was easily dug with a spade. Stones were not a hazard as they were either pulled out of the ground or spun around in the soil so assisting in further fracture.

#### *Cost :*

During the course of the ripping programme a cost comparison trial was undertaken i.e. to compare the cost of ripping against the cost of Clarke ploughing on a similar site type. To get a cost an area of 20 acres was chosen, which had previously been burned over. The machine worked up and down the hill. The time taken to rip the area was 13 machine hours @ £3 per hour i.e. £1 19s. 0d. per acre. A similar site ploughed by Clarke plough would cost £10 per acre (taken from Work Study records).

#### *Conclusion :*

In conclusion it may be appreciated that on such a dry site, ploughing by normal Clarke plough would add considerable unnecessary drainage to already dry conditions. This does not happen with ripping. There is no excessive drainage and no drying out of upturned soil with this method. It is possible as a result of ripping to dig between the fractures with a spade, this would indicate that thorough and complete breakage of pan and aeration of soil has taken place allowing free movement of moisture and roots through the fractured medium without exposing the soil to the elements as would be case with Clarke ploughing.