

SPOT RIPPING OF CUTOVER

INTRODUCTION

As a means of addressing the problem of juvenile tree instability, spot ripping of the cutover was trialled in a heavy soil on rolling terrain in the South Island.

The machine used for the ripping was a Cat 320 excavator fitted with a winged ripper (Figure 1).



Figure 1 - Cat 320 Excavator fitted with a 1.0 metre winged ripper

This machine is normally used for windrowing and has had modifications made to its tracks to improve its traction and slope ability. These machines have a greater capacity to work on steep terrain than tractors (Hall, 1992).

Excavators are becoming much more popular for site preparation operations both in New Zealand and overseas (Clark, 1992).

A growth trial was established in the area treated during the trial.

RESULTS

A time study of the operation was carried out which showed that the excavator was capable of producing 300 spots per productive machine hour (PMH).

If the excavator works for 7.5 PMH per day at 1000 spots per hectare, the area treated would be 2.25 hectares per day at a cost of \$420 per hectare (Wells, 1981).

The cutover in this case had already been windrowed. However, this would not always be necessary as the excavator is capable of traversing the cutover and doing the ripping without prior treatment.

Due to the heavy nature of the soils, it was necessary to create two parallel rips in order to have the soil shatter. The rips were approximately 600mm apart and 1.5m long. Prior to ripping, the soil was very dense and impenetrable to tree roots below 400mm. The ripping shattered the soil to a depth of 800mm, greatly increasing the volume of soil available to the tree (Figures 2 and 3).

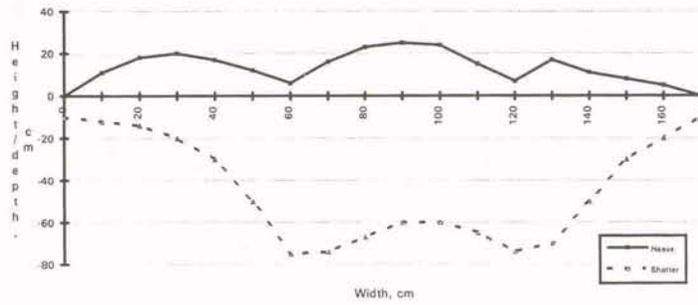


Figure 2 - Rip profile, width

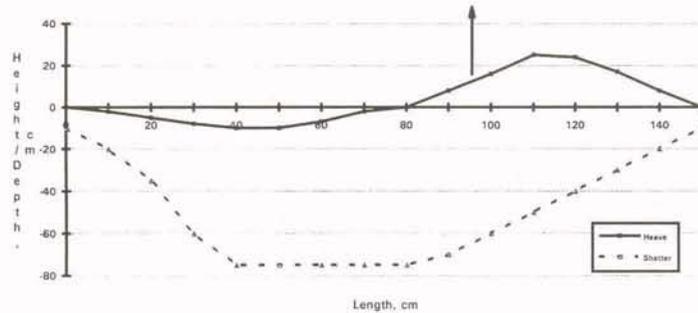


Figure 3 - Rip profile, length

There is a small mound of loose soil over the rip. Mounding was not one of the aims of the treatment but as the soil is broken up its volume increases causing a small mound.

The excavator used a work pattern that allowed it to create seven spots from each position then move forward to create another set of spots (Figure 4).

The final spacing was 5m by 2m to give a stocking of 1000 per hectare.

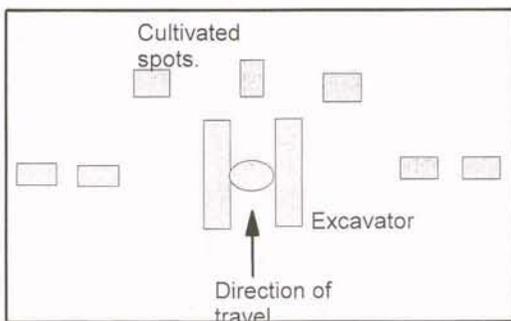


Figure 4 - Excavator work pattern

CONCLUSIONS

The spot ripping treatment was quick and effective. It is anticipated that this

treatment would only be used on those areas where the trees are at risk of toppling. That is, exposed ridge tops which have probably been used by extraction machines for access and would have some soil compaction.

REFERENCES

Clark C. (1992) : "Excavators For Site Preparation". Video. British Columbia, Ministry of Forests.

Hall P. (1992) : "Logging Residue Handling - A Study of Two Cutover Preparation Techniques. LIRO Report Vol. 17 No. 14.

Wells G. (1981) : "Costing Handbook for Logging Contractors". LIRA Handbook,

The costs stated in this Technical Note have been derived using the procedure shown in the LIRA Costing Handbook for Logging Contractors. They are an indicative estimate only and do not necessarily represent the actual costs for this operation.

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