

BRÄCKE B290 SPOT SCARIFIER MOUNDER

INTRODUCTION

Concerns about cost and high levels of soil disturbance associated with tractor or excavator based site preparation operations, prompted a BRÄCKE B290 spot scarifier moulder to be imported (from Sweden) for trial by Tasman Forestry Limited.

The BRÄCKE (Figure 1) was mounted on a Clark 668B grapple skidder and was controlled from a computer and keypad mounted in the cab. The operator could change the spacing between rows and spots, the size of spots and mounds and the downward pressure on the cultivator wheels during operation.



Figure 1 - BRÄCKE working in radiata cutover

As the skidder moves forward, the cultivator wheels go through a cycle of locking in position to dig into the ground to build up a scoop of soil, then turning over to release the soil in a mound.

RESULTS

Cost

The BRÄCKE and skidder costed together, based on the new price of the BRÄCKE and the second hand price of the skidder, gave an hourly rate of \$170 (Riddle, 1994).

The BRÄCKE was time studied working in two adjacent blocks in Tahurokuri Forest. Different work patterns were used by the operator in the two studies. The first block was flat to rolling with a maximum slope of 7°. The second was broken rolling terrain with a maximum slope of 18°.

The work pattern in block 1 was long runs (400 to 600m) across the block with few breaks in forward progress. Production was 3.4 ha/hour at a cost of \$50/ha.

In the second block the operator had changed to frequently reworking sections where slash was dense. Using the first run to clear slash and the second to make the mounds. The broken nature of the second block resulted in shorter runs (100 to 200m). Production was 1.3 ha/hour at a cost of \$130/ha.

Slash volumes were similar for both blocks, at around 55m³ per hectare of branches and stem waste. The distribution was uneven with occasional dense patches. Stump stocking was approximately 300 per hectare.

The reasons for the differences in production and cost were that in block 2 the machine spent more time turning, reversing and walking without the moulder working.

Job Quality

The specifications set for these sites were; 800 spots per ha, at a spacing of 4m (rows) by 3.1m (spots), with each spot having a plantable mound of 25cm height.

Quality Results

	Block 1	Block 2
Stocking, (stems/ha)	750	775
Spacing (m)	3.9*3.4	3.9*3.3
Average mound height	25 cm	23 cm
Unplantable, (excess slash)	26 %	25 %
Mound < 25 cm height.	38 %	37 %
Acceptable spots	55 %	48 %

It may be that the specification was set with to high an expectation of the machine's abilities. A mound height of 15 to 20 cm is achievable.

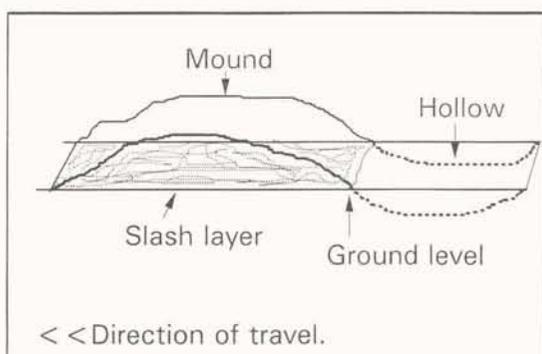


Figure 2 - Diagram of slash under the mound

However, there is also the problem of excess slash in the mounds. This will not be easily overcome as it is a function of the way the machine works (Figure 2).

CONCLUSIONS

The BRÄCKE is capable of very high rates of production with associated low per hectare costs.

The unit does no deep cultivation (ripping) and builds small mounds in comparison to tractor or excavator based operations (Hall, 1995).

It has problems working in heavy slash requiring a double pass to clear slash then make mounds.

It would be suitable for flat to rolling terrain (<15°) with light slash (<50m³ per ha).

Some of the problems with inadequate mound height were related to the speed at which the skidder was moving. A different prime mover capable of lower speeds may improve the results.

REFERENCES

Riddle A. C. (1994) : "Business Management for Logging". New Zealand Logging Industry Research Organisation.

Hall P. (1995) : "A Comparison of Continuous Ripping Mounding with Spot Ripping Mounding". LIRO Report Vol. 20 No. 5.

The costs stated here were derived using the procedure shown in LIRO Business Management for Logging Handbook They are indicative only and do not necessarily represent the actual costs for this operation.

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April, 1995.