

POST EXTRACTION FROM RADIATA THINNINGS

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INTRODUCTION

Post and pole extraction being a high value produce are one of the few areas of exotic forest harvesting in which a helicopter could be justifiably used and still expect to show a reasonable profit.

For some time now farmers have used helicopters to fly posts in for fencing jobs in remote areas. So it was only a matter of time till someone tried to fly posts out using a helicopter. The extraction of posts however is a relatively new concept. The first major effort being carried out only as recently as 1979. This first lift involved some 1,000 posts which were lifted out of the Masterton area after weather prevented conventional methods being used.

Two further trials have been recently made in the ARA's Hunua Forest near Auckland. This was in an area which couldn't be logged conventionally due to lack of roads, lack of required specialist extraction machines in the area, i.e. hauler, and a lack of experienced labour to operate one of these machines if it had been available. These trials were closely monitored and many lessons for subsequent trials have been learnt.

ARA POST EXTRACTION

The area had several restrictions as previously mentioned, plus being part of the catchment area in the Auckland City water supply. The stand required silvicultural treatment, i.e. thinning, and as there was a sound market for post material at the time it was decided to try the feasibility of helicopter extraction rather than just waste thinning.

The stand data is illustrated in Table 1 below.

Compartment 6/5 Stand Data

Total stems per hectare	1650
Residual stems per hectare	400
Thinned stems per hectare	1250
Predominant mean height	15.63 metres
Stand volume	210 m <sup>3</sup> per hectare
Thinned volume to 10 cm s.e.d.	102.2 m <sup>3</sup> per hectare

Further information required was the number of posts per tonne. This was gained from weighbridge dockets and further tested using a load cell weighing device.

Table 2 Weighbridge Figures

<u>Load Weight</u>	<u>No. of Posts</u>	<u>Posts per tonne</u>
42,880	1,201	28.00

It was decided that stacks should be between 25 and 28 posts. There was still a certain amount left to the individual cutters discretion, i.e. if the stack had a high number of large butts then the number of posts would obviously come down to maybe 20 or 22.

#### CUTTING AND STACKING

This proved to be no real problem even though the topography was harsh, 15° to 35° slopes. It is far easier to stack a smaller bundle of posts than if a larger (2 tonne) bundle was required for skidder extraction. Productivity of a cutter here could be expected to be around 250-300 posts per day. The critical factors here are :

- (a) Stacks are positioned in the open so there is no danger to residual crop trees during extraction,
- (b) Stacks are kept as compact as possible and raised off the ground to facilitate easy choker setting,
- (c) Thought must be given at this stage to how the breaker-outs will get clear during lifting. This is normally by going uphill, however, slash may have to be cut up to allow them to move away.
- (d) In this type of high cost extraction operation it is essential that no rejects are put in the stacks. This did happen.
- (e) Once stack size has been established then it is critical that it is strictly adhered to.

#### EXTRACTION

The first trial was extracted using a Lama with a lift capacity of 1,000 kg. Due to bad weather this trial was abandoned after only 18 cycles, or 39 minutes. Some worthwhile cycle time information was collected however.

Total time flown - 39.00 minutes

No. of cycles - 18

Average time per cycle - 2.1 minutes

Total volume extracted - 14.2 tonnes or 418 posts.

The unhook at landing in this case was taking 11% of the cycle time. This was due to a certain amount of care being taken when trying to position the posts to make loading out easier.

A second trial took place in much improved weather from the same area. This time a Hughes 500 was used. This machine has a lift capacity of 600 kg. No attempt was made to position the posts on the landing. That, combined with better weather, showed a dramatic decrease in average cycle time.

Total time flown - 68 minutes  
No. of cycle - 39  
Average time per cycle - 1.76 minutes  
Total volume extracted - 17.6 tonnes or 493 posts.

The haul distance in the second trial was slightly longer than the first of 450 metres (400 metres first). The problem of jumbled posts on the skid was as bad as expected and would require some stacking before uplifting by truck.

#### CONCLUSIONS

Due to problems with organisation, weather and the fact that both these trials only ran for a total of 1½ hours, it is not worth looking at costs except to say it was expensive. However, the fact that an alternative system of extraction exists is well worth noting.

Some of the points learnt in these two trials are extremely important. The restrictions on felling and stacking and the need for these to be strictly adhered to, require constant efficient supervision. One of the largest causes of delays was bundles which either burst apart or were too heavy to be lifted. Also important is the consideration of stack placement.

There is still room in this field of helicopter extraction for substantial development to take place. One area highlighted in these two short trials was that of drop on skids. If helicopter extraction of posts is to be seriously considered then the drop end needs to be sped up.

The other key area emphasised in these trials is the need for good tight organisation and control by one person over what, when and where things happen.

