

## **EFFECT ON FALLER PRODUCTIVITY AND SAFETY OF USING SPIKED BOOTS**

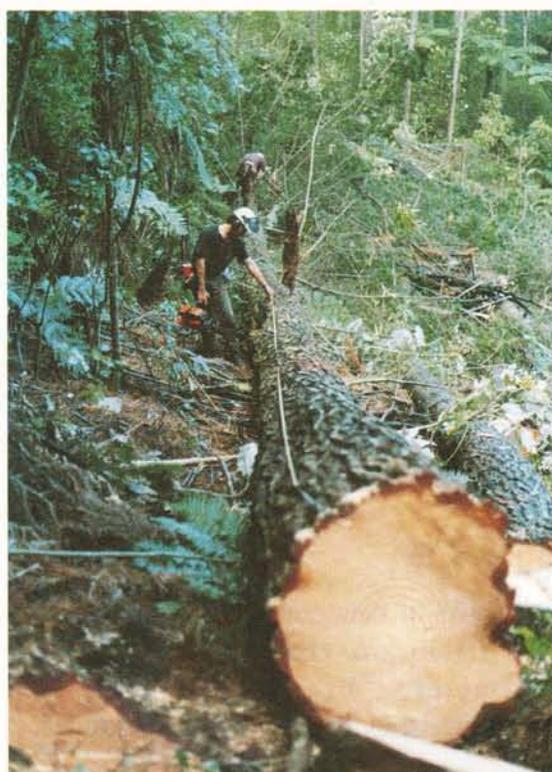
### **INTRODUCTION**

As forest harvesting expands on to steeper, more environmentally sensitive areas, the economic and environmental constraints associated with landing construction will continue to increase.

One option to reduce these constraints is partial processing at the stump, i.e. cutting the stem into multiple log lengths before extraction. By extracting smaller, partially processed log lengths, landing size requirements and congestion problems associated with tree length processing can be reduced. The landing's smaller size in turn reduces the environmental and cost problems.

Previous studies have looked at the productivity and feasibility of partial processing at the stump (Twaddle 1987, Hemphill 1988). No study has looked at the effect of such an operation on faller safety and productivity, and the benefits of introducing new equipment to assist fallers carrying out processing at the felling face.

A study at Tairua Forest was initiated to investigate how a faller's safety and productivity were affected by the wearing of spiked boots, compared with standard boots, while undertaking partial stem processing.



*Figure 1 - Partial processing in  
Tairua Forest*

### **ACKNOWLEDGEMENTS**

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### **DESCRIPTION OF AREA**

The study was undertaken in 35 year old radiata pine with a mean piece size of 1.85 m<sup>3</sup>. The terrain was easy to steep with ground slopes varying between 2° and 47°.

The processed wood was extracted using a Madill 171 hauler. The faller holds both Logger 3 and Logger 1 certification.

## STUDY METHOD

The working activities of the faller were broken down into 24 separate elements, such as walk, select, scarf, backcut, etc. The number of times the faller slipped, tripped or fell was recorded along with what the faller was doing when the hazard occurred.

This procedure was initially carried out with the faller wearing standard forestry boots, being his typical footwear since beginning partial processing. The faller was then supplied with a pair of spiked forestry boots and given four weeks to get accustomed to wearing them.

The study was then repeated using the same work method, in the same stand, and with similar terrain. The major change being the introduction of the spiked boots.

## RESULTS

Analysis of data confirmed that there was no significant change in terrain, tree diameter, branching and lean characteristics between the two studies.

Trimming and walking along the stem, two critical aspects affecting the faller's processing time, were both significantly quicker when wearing spiked boots. The average time required to process a tree was 1 minute 52 seconds/stem quicker when the faller wore spiked boots.

The study recorded 186 stems with the faller wearing standard boots and 132 stems wearing spiked boots. Slipping on slash, and when trimming on the stem, both reduced significantly. The occurrence of slipping on slash reduced from 25 to 4, and slipping on the stem while trimming reduced from 33 to 1, between study one (normal boots) and two (spiked boots).

Previous studies have shown that approximately 10% of all lost time accidents occur as a result of operators slipping off logs while trimming (Parker, 1991). A significant reduction in such hazards represents a major gain in operator safety.

## CONCLUSIONS

- Spiked boots significantly reduced the occurrence of slipping related hazards.
- Spiked boots significantly reduced cycle time by 1 minute 52 seconds per stem.
- Trimming and travel along stem were significantly faster when spiked boots were worn.

## REFERENCES

Hemphill, D.C. (1988) : "Log Processing on Steep Slopes U.S. Pacific Northwest Practices". LIRA Technical Release, Vol.10 No.5.

Parker, P. (1991) : "Loggers' Ranking of Felling and Trimming Hazards". LIRA Report, Vol.16 No.4.

Twaddle, A.A. (1987): " Long Log Cutting in the Bush for Hauler Extraction: Cutting Strategies to Minimise Value Loss". LIRA Technical Release, Vol.9 No.7.

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