February 1989

# WURC NEWS

## LOOKING TO THE FUTURE

Conservation and
Land Management
Western Australia

*Developing methods to process small eucalypt regrowth logs commercially is the central thrust of an important study currently being undertaken by CALM.*

This research is critical. The available sawlogs of mature eucalypts in Western Australia (mainly jarrah and karri) will be depleted in about 50 years. In the future all hardwood will come from regrowth forests. Eucalypts native to eastern Australia are also being grown. Pine, particularly radiata pine, will provide an increasing proportion of the State's timber resources.

A Wood Utilisation Research Centre (WURC) was set up in late 1984 by the former Forests Department on the site of a former commercial softwood sawmill in Harvey. It is now run by the Department of Conservation and Land Management (CALM).

In 1985 the Forest Production Council (an advisory body to CALM) initiated the Small Eucalypt Processing Study. Funding totalling $4.63 million was obtained for this project from the Federal Government, the State Government, and from arrangements between the State and the timber industry. Each contributed one third of the funding. The project is well underway and is due to be completed by June 1990.

Phil Shedley, CALM's Senior Utilisation Officer, manages the Project. He reports to a Commonwealth Review Group, which includes representatives from CSIRO, the Curtin University of Technology, and the Australian Timber Research Institute.

The research seeks to integrate forest growers, producers, manufacturers and users, to ensure the most efficient use of available timber resources. Industry participation in technical advisory groups is essential.

It is vital that this research complements work being done by other organisations. The Small Eucalypt Processing study co-operates with the CSIRO and several universities, forest services, trade organisations and private contractors throughout Australia.

The program includes research into stockpiling, sawmilling, seasoning, wood properties assessment, product development (e.g. furniture panels), and management marketing (e.g. "GUMTREE" model).

Individual trials will be described in detail in later editions.

### *WURC NOW A REGISTERED RESEARCH AGENCY!*

The Wood Ulitisation Research Centre (WURC), is now a Registered Research Agency (RRA).

The industry Research Development Board of the Commonwealth Department of Industry, Technology and Commerce approves registration. Eligible companies can claim 150% tax deduction for R & D performed by WURC in any of the following fields:

- Timber sawmilling technology
- Timber seasoning and treatment processes
- Forest resource studies
- Application of timber residues
- Development of value added wood products

Details are available from the Manager, Mr Phil Shedley at (09) 367 0333 or (09) 367 0410 (direct).

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## WURC REPORTS

Several WURC reports have been published since April 1988. They cover aspects of the Small Eucalypt Processing study and of WURC research in other species.

## JARRAH THINNINGS

Thinning of the jarrah (*Eucalyptus marginata*) forest increases wood production on retained trees and is likely to increase water yield in active catchments.

This report reviews the possible uses of jarrah thinnings, which include suppressed trees and overmature veteran trees. Leaving this volume of wood on the forest floor creates access problems for future harvesting, is a fire hazard, and wastes a potentially useful resource.

Jarrah thinnings could possibly be used for small sawlogs, charcoal, domestic fuelwood, reconstituted and timber jointed products, chemicals and energy, woodchips to manufacture pulp and paper, and minor forest produce.

(WURC Report No. 1, by G.K. Brennan).

## SAWING PERFORMANCE

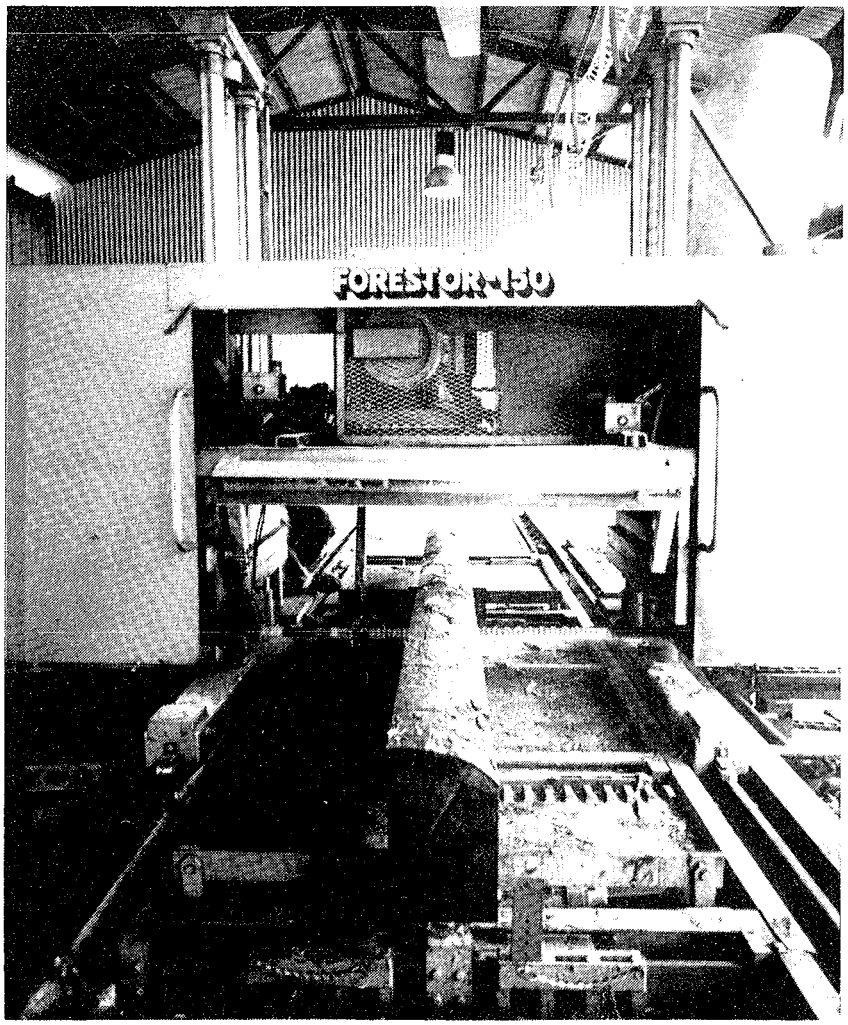
Dr Bill McKenzie, a former CSIRO scientist, and a sawmilling consultant, assessed sawing performance in Western Australian sawmills. He was bought to Western Australia through the Small Eucalypt Processing Study, to appraise the state-of-the-art in several Western Australian sawmills, and recommend possible improvements in machinery and sawmilling performance. The scope for research projects was included in this assessment.

(WURC Report No. 2, by W.M. McKenzie)

## MOISTURE CONTENT OF JARRAH

The lower the moisture content of residue logs of jarrah, the lower the energy that is needed to remove that moisture before the wood is used as an energy source, such as for

**Positioning log for milling with a Forestor 150 horizontal band saw (below).**



charcoal or firewood. It is important to get data on this subject.

Moisture contents of jarrah logging residues were assessed from five different sites around Harvey. They were dried for varying periods, up to six summers, and within each site four log diameter classes were assessed.

Moisture content decreased with increasing summers of drying. In general the moisture loss decreased with increasing log size. Drying time had more effect on moisture loss than differences in log diameter. Loss of weight and increase in calorific value is associated with decrease in moisture content.

It was found that the average moisture content of all logs would be about 20 per cent after 10 summers.

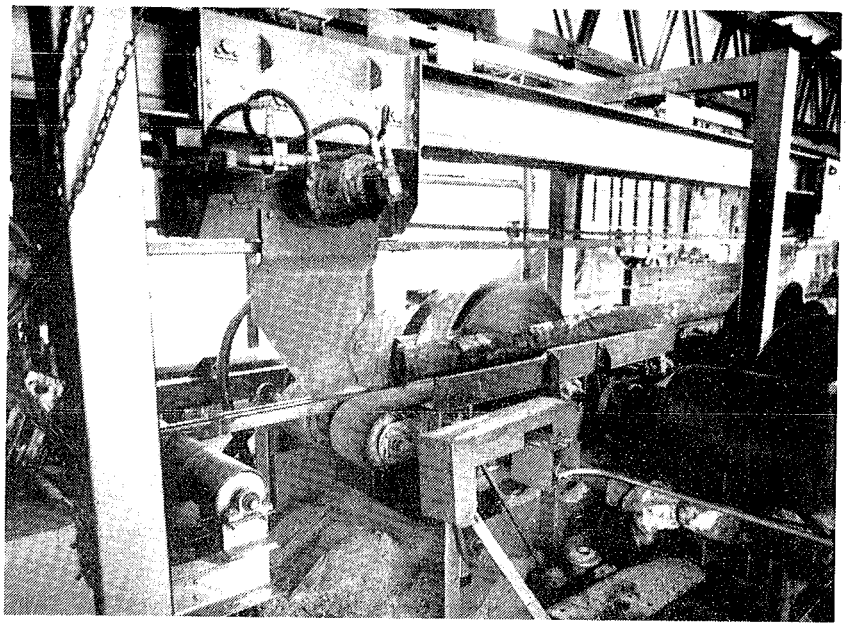
Thus debarking and/or mechanical splitting of residue logs would greatly increase the drying rate in the field, but increase the overall costs of harvesting and transport.

(WURC Report No. 3 by GK Brennan and BR Doust).

## LOGGING REGROWTH EUCALYPTS

Because most hardwood logging equipment is geared towards logging mature trees a trial into more efficient harvesting systems in regrowth eucalypts was organized.

Small sawlogs and residue jarrah logs were harvested in the Harvey area.



**Twin circular saws with overhead beam feed - an effective way to mill small eucalypt logs.**

Conventional hardwood logging equipment currently used in W.A. was shown to effectively harvest small jarrah sawlogs without excessive crop tree damage. Current pine harvesting equipment (OSA forwarder and Case buncher) is also effective, but costs may be higher until operators gain experience with hardwood.

Whole tree logging was most efficient. Small sawlogs volume varied considerably, averaging 9m$^3$per hectare to 15cm s.e.d limit in this specific area near Harvey. There were 27m$^3$ per hectare of general purpose sawlogs and 2 poles/ha previously extracted.

The extraction of jarrah residue logs (suitable for charcoal production), averaging 46m$^3$ per hectare, could result in unacceptable levels of damage to crop trees in predominantly regrowth forest. However, in cut over forest affected by dieback, and in mainly mature jarrah forest, the harvesting is efficient.

(WURC Report No. 4, by J.D. Clarke and G.K. Brennan)

## SHEOAK SPLITTING

Western Australian sheoak (*Allocasuarina fraseriana*) has considerable potential as a furniture timber because of its attractive grain and low shrinkage.

End splitting, checking and insect attack, can cause major problems when logs are stored in a dry stockpile. Splitting and checking are caused largely by the release of growth stresses when a log is cross cut or sawn into timber. A trial was conducted to test the viability of water storage of W.A. sheoak before sawing it.

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Small and mature logs were stored in a dry stockpile or under water spray over summer/autumn. Logs in the dry stockpile degraded rapidly, and had moderate and major splits and checks after seven days. After 270 days four logs had split in half.

Storage under water spray resulted in minimal splitting and checking. The only insect damage occurred on four mature logs stored in the dry stockpile.

(WURC Report No. 5, by G.K. Brennan)

## PRESERVING FENCE-POSTS

Jarrah makes excellent fencing material, and use of small diameter round timber instead of split timber is becoming more common.

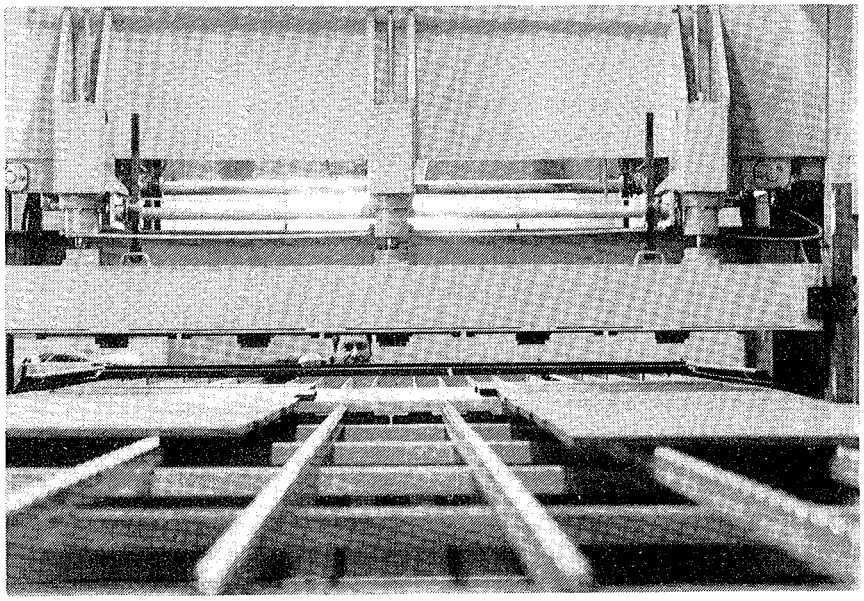
The thin sapwood zone around the outer edge of regrowth jarrah posts can contribute more than half their strength, and should be treated with copper-chrome-arsenic (C.C.A.) preservative to increase its resistance to fungal or insect attack. The preservative does not penetrate the heartwood.

A starch test was shown to be slightly more effective than visual assessment in predicting the depth of C.C.A. penetration of the sapwood band. However, the method is unlikely to have commercial application because the differences found were so small.

(WURC Report No. 6 by G.K. Brennan).

## CURRENT RESEARCH - FURNITURE PARTS

Research into furniture manufacture has indicated that major cost savings can be achieved and waste of timber significantly reduced.



**An Orma glue press is used for gluing small sections of furniture grade timber.**

The main aim of the Small Eucalypt Processing study is to get more "value-added" timber.

Furniture manufacturers using timber such as jarrah, were surveyed to find what lengths and cross-sections of timber they use, and in what proportions.

It was found that efficiency could be considerably increased and waste reduced, by edge-gluing boards together into wider sections. Some products, like chair legs, can be cut side by side in greater quantities on the wider sections than they can on smaller widths of timber.

Peter Newby, a consultant to WURC, tested six adhesives to find the most efficient in edge gluing jarrah. Urea formaldehyde gave the best results, followed by melamine formaldehyde and resorcinol. More research is planned on the effects of different moisture content in the boards being edge-glued, and on the effects of changes in moisture in the environment.

Copies of the reports are available from the Manager, WURC, Department of Conservation and Land Management, Harvey 6220 (phone 097 291913) or from Dr Graeme Siemon at Department of Conservation and Land Management, P.O. Box 104, Como, 6152 (phone 09 3670333).

*This is the first issue of a regular newsletter which will be produced by the Department of Conservation and Land Management.*



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