February 1990

WURC NEWS

DEVELOPING VALWOOD®

Conservation and
Land Management
Western Australia

The Small Eucalypt Processing Study by CALM's Wood Utilisation Research Centre (WURC) is nearing completion.

Previous editions of WURC News have referred to the Small Eucalypt Processing Study, in which the Commonwealth Government, State Government and the WA timber industry each contribute one third of the $4.63 million funding. The completion date is 30 June 1990. The research includes stockpiling, sawmilling, drying, wood properties, product development and marketing. The last two areas emphasise the need to start at the market, not the resource, and this approach makes the SEP Study unique.

This major research study will be completed by June 1990, but the research itself will continue.

The WURC is a Registered Research Agency, and eligible companies can claim a 150 per cent tax deduction for research projects done for them by WURC. The contact person is Phil Shedley, the WURC Manager, on (09) 367 0333 or (09) 367 0410 (direct).

VALWOOD® PILOT PLANT

After calling for expressions of interest in producing VALWOOD® commercially, the Department of CALM invited four firms to officially tender. The WURC processing facilities at Harvey have been offered for three years to establish a pilot plant to prove commercial viability. Negotiations should be concluded by early March.

VALWOOD® NOMINATED FOR NATIONAL AWARD

The VALWOOD® process was nominated for the Technology in Government Awards, presented in Canberra on 26 February. A three-day display of VALWOOD® products in a Commonwealth building followed the award presentations.
Phil Shedley, WURC Manager, presented the display and attended the Award function.

TECHNOLOGY EXCHANGE

Several members of the SEPS team and the two most recent Gottstein Fellows will make presentations in the mainland capitals later in the year.

The overall theme for the Technology Exchanges will be on value-adding to small eucalypt logs, with particular emphasis on the production of quality wood for furniture manufacture.

The Gottstein Fellows are Dr Barbara Ozarska, who will present her report on the use of timber and reconstituted wood in the Australian furniture industry, and Mr Andrew Rozsa, whose report is on upgrading hardwoods on the east coast of the United States.

The itinerary and local contact people are:

Perth	*Frida[redacted]4 May*	*Terry Jones*	*(09) 367 0314*
Adelaide	*Monday 2 July*	*Peter Llewellyn*	*(08) 297 0044*
Melbourne	*Wednesday 4 July*	*Howard Browscombe*	*(03) 347 6322*
Sydney	*Monday 9 July*	*Terry Tolhurst*	*(02) 871 1722*
Brisbane	*Wednesday 11 July*	*Geoff Stringer*	*(07) 852 1344*

WURC REPORTS

Four more WURC Reports have been published since the last WURC News (August 1989).

57-Year-Old Fence Post Trial

The Wickepin fence post trial was one of three established in Western Australia in 1930 by the then CSIR, but is now the only surviving trial. The species included were wandoo, jam, brown mallet, jarrah, marri and radiata pine. Several preservative methods were tested on the last four species, using hot and cold bath methods, but the wandoo and jam were left untreated.

The 1987 assessment gave an estimation of the remaining service life, and the reason for failures prior to this assessment. The untreated wandoo and jam, and marri treated with (i) zinc chloride and arsenic trioxide or (ii) sodium fluoride and arsenic trioxide, have performed best.
(WURC Report No. 11 by R. Rule.)

Adhesives for Furniture Blanks

The VALWOOD® process developed by WURC includes the edge-and-face jointing of 10-mm thick laminae to manufacture furniture blanks or panels. The advantages of blanks are that the furniture manufacturer can reduce residues considerably by cutting several components out of the one blank, which is more efficient than using solid wood. Sections for structural use are also manufactured. This study assessed five adhesives for use in manufacturing edge-jointed blanks from regrowth jarrah and karri. Urea formaldehyde, melamine fortified urea formaldehyde, resorcinol formaldehyde, and melamine formaldehyde gave similar results, with a high percentage of wood failure in dry cleavage tests. Polyvinylacetate gave poor results.

The jarrah and karri gave similar results. Samples from the end and centre of the blanks showed similar wood failure, which was a good indication of the efficiency of the gluing process.

The adhesives currently used for furniture panels by WURC are urea formaldehyde (which gives a clear glueline), and for structural use, resorcinol, phenol or tannin formaldehyde (which gives a dark but waterproof glueline).

Tests on long-term stability of blanks, including cyclic testing at 6 per cent and 20 per cent equilibrium moisture contents, will be reported later.
(WURC Report No. 12 by P. Newby and G.R. Siemon)

The 'Orma' glue press used in the adhesives study.

Shrinkage and Collapse in Jarrah

Previous basic research had indicated that young jarrah wood can collapse, although to a considerably lesser extent than the ash-type eucalypts. Steaming was shown to recover this effect in wood from near the juvenile core.

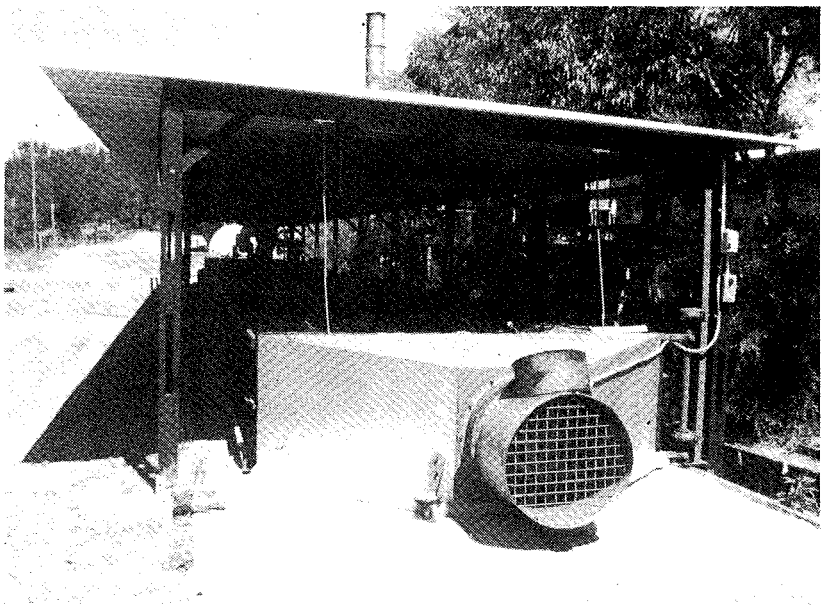
This study of 140 x 40 mm regrowth jarrah boards assessed shrinkage, collapse, and dimensional recovery by steam reconditioning. Collapse was evident, but was recovered by reconditioning at 100°C when timber was at 11-15 per cent moisture content (this MC level gave better results than reconditioning at 16-25 per cent or 8-10 per cent). The 100°C steaming was more effective than 70°C or 90°C.

The overall shrinkage was reduced by 3.1 per cent (tangential) and 2.4 per cent (radial) by the 100°C treatment at 11-15 per cent MC, compared with non-reconditioned controls.
(WURC Report No. 13 by A.B. Thomson)

Drying 25 mm Regrowth Jarrah Boards

Regrowth jarrah logs from two different areas were milled into 25-mm thick backsawn boards. They were dried to below fibre saturation point (about 25 per cent MC), in a modified tunnel kiln.

Timber dried in conditions similar to the mild winter of the Mediterranean climate had minimal degrade. However, timber dried under the hot dry summer conditions had unacceptably high surface checking, bow and twist.



The simple tunnel kiln developed at the Wood Utilisation Research Centre

Bow and spring in boards originating from one area decreased during drying. Spring in boards from the other area increased negligibly by an average 1 mm/m during drying.

These results indicate the need for kiln controls which could duplicate winter conditions during summer drying.

The boards were high temperature dried satisfactorily from below f.s.p. to 10 per cent. The overall shrinkage was 7.0 per cent in width and 6.7 per cent in thickness in these backsawn boards.
(WURC Report No. 14 by G.K. Brennan)

OTHER REPORTS

Several Technical Reports with more limited distribution were also produced. These included SEP Study material and other CALM research.

Regrowth Jarrah Stockpiling and Sawing

Regrowth jarrah is similar to other regrowth eucalypts in having growth stresses that cause problems in sawmilling. This trial was designed to compare the sawn graded recoveries from logs either fresh sawn or stockpiled under water sprays. They were sawn using one of three different sawing patterns to see if this reduced the effects of growth stresses. Data were collected for four length classes and five diameter classes.

The results showed that, in both fresh sawn and stockpiled treatments, sawn graded recoveries were not affected by log length but increased with increasing log diameter. Different sawing patterns resulted in similar levels of bow and spring.
(by K.J. White)

Regrowth Karri Sawing

Both structural and appearance grade timber were produced after logs were stockpiled under continuous watersprays for two years. Recovery was 30.2 per cent. Bow reduced in the sawn timber after a further three months under water sprays.

Kino veins associated with insect attack, and brownwood, were the major defects causing downgrading. Only 2.3 per cent of the appearance timber made furniture grade by the FPA (W.A.)'s TAS-G4 industry standard.
(by K.J. White)

Furniture Manufacture - Italian Study Tour

A Western Australian group visited Italy in 1987 to assess furniture manufacturing (including education and training), and the prospects for upgrading W.A. manufactured jarrah furniture. Visits to International Fairs in Cologne and Hanover in West Germany were included in the tour.

The report summarises the major activities of the group and tour findings. It makes recommendations on promoting jarrah furniture, on improving training, and on establishing furniture testing facilities. Research needs in Western Australia are discussed.
(by P.N. Shedley)

Veneers from Regrowth Jarrah

This joint trial with Wesfi resulted in low recoveries of sliced jarrah veneer, mainly because of the small diameter of regrowth logs. The presence of heart, which had to be included to get a minimum size flitch for slicing, was the major problem. Only 19 per cent of flitch volume was recovered.
(by G.K. Brennan)

Sawmilling Equipment for VALWOOD®

Various saws and other equipment were assessed to find the most suitable for the production of the 15 mm thickness boards used for VALWOOD® production. The Linck K45 gang saw gave better results in sawing regrowth jarrah and karri flitches than did a Linck HMK20 double arbor multiple saw and the Linek SSP20 slicing machine. The Ledinck Lestro Rotoles P600 horizontal planer was also assessed, but was considered unsuitable for VALWOOD® production because it only dresses one face at a time.
(by D.J. Donnelly)

Strength of Radiata Pine Poles

Radiata pine has considerable potential as an alternative source of power transmission poles. The poles must be C.C.A. preservative treated, which requires an initial drying to 30 per cent M.C. There was concern about the effect of sapstaining fungi attack (which was often accompanied by attack by other species which destroy wood) during the drying period.

This study indicated that sapstaining attack and C.C.A. treatment did not reduce strength (modulus of rupture and modulus of elasticity). The treatment with NP1 to prevent sapstain attack, followed by C.C.A. treatment, gave the best results overall.
(by D.J. Donnell and G.R. Siemon)

Copies of any reports are available from WURC, Department of Conservation and Land Management, Harvey WA 6220 (phone 097 29 1913), or from Dr Graeme Siemon at Department of Conservation and Land Management, PO Box 104, Como WA 6152 (phone 09 367 0333).

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