

SESSION NO. 9
Paper No.(e)

UNIVERSITY EDUCATION IN FOREST HARVESTING

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There are three levels at which the School of Forestry, University of Canterbury could contribute to education on harvesting technology:
(1) in undergraduate courses; (2) in postgraduate courses; and
(3) in continuing education programmes.

(1) B.FOR.SC. COURSE WORK

The B.For.Sc. course has been of a generalist nature to allow an appreciable amount of mobility in the New Zealand professional forestry work force. The coverage is extensive, the depth for any one facet therefore restricted and the philosophy is generally to concentrate on principles rather than contents of techniques. In other words, the aim is to train minds to cope with problem-solving in as wide a range of forestry-related topics as possible: we shall not produce logging engineers but foresters who are oriented to logging and who can work with engineers.

As a result of studying the recommendations of the Training and Manpower Working Party approved by the 1981 Exotic Forestry Conference, the structure of the B.For.Sc. degree has been altered. The new regulations are now being phased in and will be fully implemented in 1986. The changes include a measure of specialization in the fourth year of study, one of which options is harvesting. The diagram below shows the subjects covered and provides a perspective. Fuller details of the proposed contents of each of the professional courses is provided by McKelvey (1982). Nevertheless, the contents of courses in years 3 and 4 are far from being finalized and we would welcome suggestions in any form on how to make the material more relevant.

FOREST	MANAGEMENT CASE STUDY			SPECIAL TOPIC	YEAR 4
MANAGEMENT	WOOD CONVERSION TECHNOLOGY, OR WOOD SCIENCE 2 (WOOD SCIENCE OPTION)	MULTIPLE-USE FORESTRY, OR ADVANCED SILVICULTURE (FOREST MANAGEMENT OPTION)	TRANSPORTATION SYSTEMS IN FORESTRY, FOREST HARVEST PLANNING (HARVESTING OPTION)		(3-Pro.)
AND	MARKETS AND INTERNATIONAL TRADE IN FOREST PRODUCTS	FOREST ECOLOGY 2 (TWO OUT OF THREE)	FORESTRY ADMINISTRATION		
FORESTRY	FOREST ENGINEERING PRINCIPLES OF MANAGEMENT SILVICULTURE FORESTRY AND SOCIETY WOOD SCIENCE 1				YEAR 3 (2-Pro.)
SCIENCE	FOREST ECONOMICS FOREST BIOMETRY FOREST ECOLOGY 1				YEAR 2 (1-Pro.)
PURE	BOIN 202: SOIL 201:	SEED PLANT STRUCTURE AND FUNCTION SOIL SCIENCE			
SCIENCE	BIOL 101: CHEM 101: STAT 101: AND 18 POINTS FROM STAGE 1 BIOLOGY, ECONOMICS, PHYSICS, MATHEMATICS	CELL BIOLOGY GENERAL CHEMISTRY ELEMENTARY STATISTICAL METHODS			YEAR 1 (Int.)

Although "Forest Engineering", "Forest Harvest Planning", and "Transportation Systems in Forestry" are readily identifiable as relevant to forest harvesting, other papers contain elements very relevant to harvesting.

Forest Engineering is a third year paper amounting to 5 hours formal tuition a week throughout the academic year: the topics and their proportional allocation of time are as follows :

Topic	% time allocation
Role of Engineering	2
Surveying	19
Photogrammetry	11
Road planning, location and construction	8
Forest layout	4
Logging and logging machinery	16
Forest machinery	12
Environmental aspects of engineering	12
Work science	16

Forest Harvest Planning and Transportation Systems in Forestry are both fourth year papers amounting to 3 hours formal tuition a week throughout the academic year.

The topics and time allocations for them are shown below :

Paper	Topic	% time allocation
Forest Harvest Planning	Objectives and elements	7
	Indicative Logging Production Planning	20
	Tactical Logging Plans	53
	Operational Logging Plans	20
Transportation Systems	Methods of Transport	6
	Truck Transport and Control	40
	Forest Road Networks	40
	Forest Transport Alternatives	14

Nevertheless, the emphasis is on "why" rather than "how" things are done, on the planning rather than the operational and there is concern that harvesting is viewed as just one of several components in the whole forestry system. Specialists in harvesting will need further training.

(2) GRADUATE COURSE WORK

The School has encouraged its bachelor graduates to undertake postgraduate training in other universities. There are pros and cons in such altruism. While we may prevent inbreeding to some extent by so doing, we do suffer through having to cope with a lower overall quality of postgraduate student which reduces the stimulation needed by staff to direct their attention to relevant research and advanced teaching. The degree of M.For.Sc. can be obtained by taking and passing three papers and a report; two of those papers could be taken in outside departments such as Mechanical or Civil or Agricultural Engineering; the report, too, could be supervised jointly by foresters and engineers. Alternatively, a M.For.Sc. can be obtained by research and thesis alone. The Review Committee Discussion Paper 5 (Brownlie, 1982) has estimated that there will be a demand, additional to that at present through normal replacements, for about 200 additional engineering opportunities in the forest industries by 1995. The report goes on to say that it expects New Zealand universities, particularly Canterbury because of the juxtaposition of the Schools of Engineering and Forestry, to provide for this. There is a need to foster the development of such a centre of excellence.

While not denying the advantages of overseas education for at least some New Zealand loggers, it will be to the long-term detriment of harvesting technology relevant to New Zealand, if the industry makes no effort to encourage a full-time harvesting option at Canterbury. We believe that it is possible to set up computer systems designed to explore harvesting options that are designed specifically to cater for the New Zealand scene. We are about to install a computer at the School to make this a reality. Also, Ph.D. research into harvesting research topics would be held back if there is no teaching of harvesting at the masterate level.

(3) CONTINUING EDUCATION PROGRAMMES

The University of Canterbury has had a long and successful history in extension studies. We have offered several well-attended courses in various facets of forest technology, but not harvesting. It is time that this situation was remedied. What can be done is to provide teaching facilities (including computers) and a forum to bring together New Zealand and overseas experts (both inside and outside universities) and practitioners so that all can interact in a teaching environment and so improve the transfer of technology. Conferences help, but formal study is even better!

PERSPECTIVE

At each of these three teaching levels, there are three assumptions on which everything hinges; that :

- (a) there are adequate numbers of teaching staff;
- (b) there are management information systems that can be made to work;
- (c) the whole forestry system can be modelled and managed realistically.

I would like to recommend that a working group be set up to examine and report on education and training in harvesting. Such a report would be of benefit to the School of Forestry in designing courses and research programmes as well as being useful, I believe, to the logging industry at large.

REFERENCES

- Brownlie, A.D., 1982 University Review Committee, Discussion Paper 5, Engineering.
- McKelvey, P.J., 1982 Changes to Bachelor of Forestry Science Course.

