



Theme Leader: Keith Raymond



HARVESTING THEME UPDATE

Issue Number: 7

Date: November 2009

Summary

The first quarter of the new FFR Harvesting research year has been a busy one with a lot of reports out on work completed in 2008/09, and work commencing on the new Research Programme. The following is a summary of the Q1 2009/10 review undertaken in October.

Highlights of the quarter are :

- Commencement of the 2009/10 FFR Harvesting Research Programme
- Publication of four Technical Notes; one Technology Watch report and the Business Management for Logging handbook to FFR members.
- Communication of current research through the Harvesting Theme Update
- Successful first stage application to Primary Growth Partnership for harvesting research funding

RESEARCH OUTPUTS FROM Q1 2009/10

The following is a list of reports that have been published during Quarter 1:

- Technology Watch Number 2: July 2009
- Technical Note Vol. 2 No. 1: Robotics for Steep Country Tree Felling
- Technical Note Vol. 2 No. 2: Unobtrusive Work Measurement of Tree Felling
- Technical Note Vol. 2 No. 3: Human Factors and Ergonomics Research – Uptake and Evaluation
- Technical Note Vol. 2 No. 4: A Method to Estimate Yarding Distance
- Business Management for Logging - 2nd Edition 2009

All these reports are available from the FFR website. To access the website, go to <http://www.ffr.co.nz/> Click on Members Area and enter your username and password. Click on Harvesting and Logistics Theme and you can access all these publications. If you need help with the FFR website or have forgotten your login, please call Veronica Bennett on 07 9217246 or email: veronica.bennett@ffr.co.nz.

UPDATE ON RESEARCH PROGRAMME

Reducing Unproductive Time through Better Monitoring Systems

Following on from the work commenced in 2008/09, there is a strong focus on developing better tools to capture data for productivity monitoring. Further work will continue in identifying potential for installation of Danfoss electro-hydraulic control systems in haulers, and further development of the prototype Production Display Unit (PDU) for entry/display of payload data in a hauler cab. Other work will investigate the potential to integrate these productivity monitoring tools in to a prototype system.

Uptake of Human Factors Research

This project detailed industry perceptions of the impact of implementation of previous human factors research. Successes generally concerned interventions of either a technical nature (e.g. widespread adoption of PPE, or greater use of mechanisation) or those of an individual nature (e.g. practical guidance to enhance behaviour such as technique change, or fatigue reduction measures).

Findings also indicated a general lack of progress in many of the interventions relating to key work organisation and management factors such as work scheduling (inconsistent taking of breaks, long work days for machine operators);



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production pressure (payment by volume and inconsistent productivity target calculations). The exploration of these is highlighted for further work in the theme.

A number of recommendations have been made and the full Project Report detailing these has been completed and is in the final stages of publication.

Benchmarking Cost and Productivity of Harvesting Operations

There are now 83 harvest areas in the Benchmarking database. This initial data set represents a non-random sample of about 1.6 million cubic metres of logging production or 8% of the national annual cut.

Of the harvesting operations in the sample, 23% used mechanised felling, and 33% of processing was done mechanically, a big increase from the 5% of mechanised harvesting in the 1991 Survey of the Logging Industry. The level of mechanisation has increased to 3.7 machines per crew (compared to 2.3 machines per crew in 1991). Average benchmarks have been calculated for various logging productivity related parameters.

The database is available to all participating FFR members to analyse their own data, and we are keen that all FFR Harvesting Theme members continue to enter their production data (at the Harvest Area level) into the database, in order to gain better representation from all companies and regions across New Zealand.

Members can enter their data directly into the website set up for FFR members on a confidential basis. Use this link:

[\(http://www.foresteng.canterbury.ac.nz/survey/\)](http://www.foresteng.canterbury.ac.nz/survey/),

An initial Technical Note has been written by Rien Visser at the School of Forestry, University of Canterbury summarising the New Zealand forest

industry average data to date, and is now available on the FFR website.

Crew Best Practice – Costs and Productivity

This study is a follow up to the development of the Benchmarking Database to examine the characteristics of high performance.

Analysis of benchmarking data from the database will identify crews for further study. As a first stage, criteria for selection will be determined, and then individual companies will be approached for their approval for FFR to study them in more detail.

Best Practice and Training for Cable Operations

In the Uptake of Human Factors project, varied perceptions of optimum practices (content, frequency of interventions) in health and safety management within the industry were found. These learnings have been examined to focus the project on best practices in the breaking out task. This will be validated by examining recent accident statistics (using the Forest Owners IRIS database and ACC injury claims). This project will then form part of the wider ACC/NZ Forest Owners/Dept of Labour project on breaking out to identify elements of good practice, and contribute towards positive behaviour change.

Optimising Work Organisation for Maximum Performance

Arising from the Uptake of Human Factors project, it was identified that work organisation initiatives (including job design, alternative communication methods, and job rotation) were poorly understood across the industry. For example, although adopted by some crews, the frequency of job rotation is unknown, unspecified or undertaken reactively to absenteeism. Lack of job rotation may also inhibit opportunities for skill



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retention for those qualified in a wide range of tasks.

In the area of work scheduling, lengthy and uninterrupted work periods for machine operators and the widespread adoption of one single work break per day, appear as problems, especially in the North Island.

Ongoing FFR research concerns the identification of barriers and factors influencing work organisation and scheduling within logging operations, including the effect on physical and psychological workload of logging workers.

Mechanisation of Steep Slope Harvesting

A report on the field study of Ross Wood's steep terrain bunching operation in the Nelson area has recently been completed and is available on the website. This study showed that bunching and presenting bunches for grapple yarder extraction resulted in +33% larger haul size than conventional grapple yarding using a spotter (3.2 vs. 2.4 trees/haul). This translated to increased harvesting system productivity of 23 m³ / PMH or 126 m³ / day.

Two other production studies of operations bunching for hauler extraction have examined the extent of use of free-moving excavators on steep terrain, and bunching and shovelling productivity under differing terrain conditions. A report of these two studies has been completed and will be published soon.

Further work analysing harvest plans and profiles over a sample of New Zealand cable logging conditions has been undertaken to determine potential for bunching based on terrain, piece size and hauler payload. This report is in draft form.

Logging Technology Watch

One regional Technical Meeting was held in Napier during the quarter to promote the work in

this Theme to harvesting contractors and forest company staff. Further Technical Meetings are scheduled during for Gisborne and Taupo later in the year.

The third edition of the Harvesting Technology Watch, covering the COFE (Council on Forest Engineering) 2009 Conference has been published to the website.

The Business Management for Logging handbook has been published. This is a second edition of the original LIRO handbook, and has been completely rewritten and revised by Mark Blackburne of Blackburne Group Ltd: <http://www.blackburnegroup.co.nz/>. The cost of the handbook and costing template is: \$50.00 (+ GST) for members of FFR and FICA; \$100.00 (+ GST) for non-members.

GOVERNMENT FUNDING FOR HARVESTING RESEARCH

FFR has participated in an industry-wide application to the Primary Growth Partnership (PGP) for funding a new harvesting research programme to develop innovative solutions to the steep country harvesting problem, and encouraging local manufacturing of equipment suitable for New Zealand conditions given the demise of all the North American cable yarder manufacturers.

We are pleased to advise members that the PGP investment advisory panel has approved as a single programme the "Innovative Harvest Solutions" project proceeding to the next stage of the PGP application process. This is the development of a Business Plan (by 1 Feb 2010).

That is great news after a lot of attempts to get additional funding in this area.