FUTURE FORESTS RESEARCH

HARVESTING THEME UPDATE

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Summary

This update summarises the Q1 2010/11 review of the Programme Steering Group on 21st October 2010 which highlights the completion of all of the projects in the 2009/10 year and features progress with the commencement of the "Innovative Harvesting Solutions" PGP Harvesting Programme.

RESEARCH OUTPUTS FROM Q1 2010/11

The following reports have been completed during Quarter 1 2010/11:

- Harvesting Technology Watch Number 6 August 2010.
- Technical Note Vol. 3 No. 1: Using GPS to Monitor Machine Performance.
- Report H003 Optimising Work Organisation for Maximum Performance.

COMPLETION OF 2009/10 RESEARCH

Better Monitoring Systems

A Technical Note on using the GPS to monitor machine productivity, comparing the use of the GPS with an on-board monitoring system (e.g. Komatsu's machine tracking information system, MATRIS) was published during the Quarter.

Further development on an improved Production Data Unit (PDU) in terms of drum rotation sensors to measure haul distance was approved at the recent TST meeting in October.

Mechanisation of Steep Slope Harvesting

A Technical Note (Vol. 3 No. 2) on the steep country winch-assisted feller buncher developed by Kelly Logging Co. and Trinder Engineers has been completed.

The study of the Valmet 445 EXL self-levelling feller buncher operating in Yarram, Victoria has been completed and a Technical Note is in preparation (Vol. 3 No. 8).

A study of the potential in New Zealand harvesting for the "walking excavators" now common in Europe, and specifically the Kaiser Spyder in operation in the Waikato has been completed and a Technical Note is in preparation (Vol. 3 No. 9).

Best Practice and Training for Cable Operations

The study using wearable cameras to record breaker out best practice was completed during the Quarter and a Technical Note (Vol. 3 No. 3) on using videos for breaking out training has been completed.

Application of Harvesting Technology

A Technical Note (Vol. 3 No. 4) investigating studies of fuel consumption in New Zealand harvesting has been completed including some recommendations for improved efficiency. We will follow up in the new year with a more in-depth study of fuel consumption in logging.

Landing Size and Characteristics

A survey of 142 log landings across six regions in New Zealand was undertaken as part of a University of Canterbury School of Forestry project to determine landing size and production characteristics. This research was presented at the FORMEC 2010 Symposium "Forest Engineering: Meeting the Needs of the Society and the Environment", held at the University of Padua on July 11-14, 2010. A Technical Note (Vol. 3 No. 5) has been prepared of this study for FFR members by Rien Visser of the School of Forestry.

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Optimising Work Organisation for Maximum Performance

The major Project Report (H003) on work organisation of harvesting, identifying barriers, bottlenecks and factors influencing effective work organisation and scheduling in logging, was published during the Quarter. FFR acknowledges the financial support of ACC in this project.

The Report was tabled at the recent NZFOA Health, Safety and Training sub-committee meeting. There was general agreement that the issues identified were of high importance, and in many ways hindered further progress in H&S performance / recruitment / training etc. Some of the issues raised will be addressed within the H&S Culture Project championed by ACC and DoL. The Forest Industry Contractors Association (FICA) will also discuss issues raised in the Report with their members.

A brief Technical Note (Vol. 3 No. 6) exploring these work organisation factors and summarising the recommendations is in preparation.

Crew Best Practice – Costs and Productivity

A Technical Note (Vol. 3 No.7) identifying the characteristics of individual high performing operations from the Benchmarking database has been completed.

PRIMARY GROWTH PARTNERSHIP (PGP) CONTRACT SIGNED

The contract for the Innovative Harvesting Solutions programme for steep country harvesting was signed recently by MAF and FFR. This confirms $3.625 million of Government funding, alongside matching industry funding, for this new programme over a six year period.

As this was only the second PGP contract signed and being a front runner in the new process it has involved a lot more work to finalise the work programme, the milestones and the expected deliverables. With this planning completed we can now get underway with this exciting new programme.

The PGP programme also received a lot of attention at the ForestWood conference in October, with mentions from the Prime Minister, the Minister of Forestry and Agriculture, Hon David Carter and the Director-General of MAF, Murray Sherwin. The Minister said he looked forward to seeing further Primary Growth Partnership investment that will lead to transformation and growth across the forestry sector.

The individual Research Work Plans for 2010/11 along with more detail on milestones and budgets were presented to the Harvesting Theme Technical Steering Team Q1 review in October and approved.

The November edition of the Journal of Forestry also featured an article entitled “Innovative Harvesting Solutions – A Step Change Harvesting Research Programme”.

Mechanisation – Steep Slope Feller Buncher

Work on Task 1.1 has commenced with a baseline measurement of productivity of the Kelly Logging System. A Technical Note (Vol. 3 No. 2) on the cable-assisted excavator feller buncher has been completed.

Discussions have been held with Trinder Engineers regarding the next steps in the project and a Business Plan for commercialisation of the development is in preparation.

Mechanisation – Teleoperated Felling Machine

As a result of the meeting with Professor XiaoQi Chen of the Mechatronics programme at

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University of Canterbury in August, and the finalisation of the 2010/11 programme budget it is planned that the first graduate student in the Mechatronics programme will commence in this project on teleoperation in harvesting in 2012.

Cable Extraction – Hauler Vision System

Technical Note (Vol. 3 No. 3) was published on the work in 2010 using state-of-the-art body cameras to capture videos for training in cable breaking out.

This technology and learnings from the previous projects using on tree fallers and breaker outs is now being applied to the Hauler Vision Project. Richard Parker is leading this project.

Cable Extraction – Improved Grapple Control System

This project aims to develop an improved control system where the grapple/carriage can be controlled by the bunching machine. Discussions have commenced with EMS Ltd in Rotorua regarding this project.

Operational Efficiencies – Harvesting Cost and Productivity Benchmarking

During the last quarter, Rien Visser at the School of Forestry, University of Canterbury completed analysis of 2010 harvest area production data. The Benchmarking database now holds over 160 harvest areas – covering 2009 and 2010 data.

While many of the parameters for cable hauler systems have remained unchanged from 2009 to 2010, ground-based systems have shown an increase in productivity and a reduction in average logging rate. This is explained by a shift to better working conditions (bigger piece size, larger harvest areas and higher volume per ha). A number of companies confirmed they had used the improved 2010 export demand and prices to shift into better stands – especially more remote stands.

Swing yarders have been compared to tower yarders, with swing yarders showing lower logging rates and higher average productivity, related to the shorter extraction distances and better conditions (higher volume per ha).

Looking at mechanisation, 81% of swing yarder systems use mechanised processing, 54% of tower yarders, 20% of cable skidders but only 3% of grapple skidder operations. This suggests that mechanised is driven by small landing size, and where space is available, manual log making is used.

A Technical Note (Vol. 3 No. 10) is in preparation.

Development of Operational Efficiencies – Harvesting Technology Watch

Hamish Marshall of Interpine Forestry Ltd will be providing some input to the Technology Watch programme in 2011, working on two projects: application of LiDAR in improving machine stability on steep slopes; and assessing fuel consumption in harvesting operations.

Harvesting Theme Member Meeting

Please note in your diary that the Annual Harvesting Theme member meeting is scheduled for Tuesday 22nd March 2011 in Rotorua.

MERRY CHRISTMAS!

Thanks to all Harvesting Theme members for your support through the year. Hope you have a Merry Christmas and best wishes for a productive year in 2011.

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