

Appropriate technologies for small-scale forest harvesting operations in Tasmania

The integration of forestry operations into farm practices, or farm forestry, is well accepted within Tasmania. However, farm forestry is a small component of the overall forest industry and several impediments need to be addressed to ensure it continues to develop into an attractive and viable industry.

As an industry, farm forestry in Tasmania has been extremely successful in promoting the multiple benefits of small-scale forestry and establishing small plantations. Landowners face great difficulties when trying to undertake harvesting operations, the cost of harvesting and haulage operations often prohibit viable operations in both native and plantation forests and the situation gets worse as the scale becomes smaller.

The current generation of harvesting machinery in Tasmania is highly productive, expensive and relatively large in size and has focused on large-scale or high volume operations. A typical operation consists of:

- chainsaw or mechanised felling (excavator);
- mechanised processing (excavator);
- skidding or forwarding to roadside (skidder or forwarder); and
- loading trucks with an excavator (excavator).

These high volume operations mean contractors are working in a harvesting coupe for a number of weeks or longer. The costs of relocating equipment is considerable but is a relative minor element in the total cost of harvesting given the high volumes harvested at each location.

The reliance on an excavator to load the trucks dictates good communication between the harvesting crew and the trucks to ensure the excavator is available to load the truck. Normally a harvesting contractor cannot leave a site until all the timber has been removed.

Within the small-scale scenario, where harvests are completed in a couple of days, the logistics of organising loading-out of all the wood harvested and relocating equipment to a new location can be difficult,

time-consuming and costly.

An average 35,000 tonne per year timber harvesting contract will employ four or five operators, two or three 20-tonne capacity excavators, plus a skidder or forwarder.

The use of these large machines on small-scale harvest operations and/or thinning operations results in a drop in productivity and an increase in operating costs. Machines more closely matched to the small-scale operations can help to reduce capital investment and operating costs associated with thinning operations and smaller coupe sizes.

The timber resource in small stands of forest has increased over the past few decades. Small areas of farms that have been planted by individual landowners are now reaching maturity. These small stands of timber are spread across a fragmented ownership.



Non-clearfell, uneven-aged, partial-harvest systems and thinning of native regrowth are gaining prominence. Harvesting machinery employed under these systems must be able to work in restricted spaces with minimal site and stand impact.

Cost-effective and flexible harvesting systems have been available for some time in Europe, principally in Scandinavia. Within Scandinavia the scale of forestry is greatly reduced, coupes that are considered marginal or uneconomic in Tasmania are commonly harvested in Sweden, Norway and Finland. In these countries, they have developed appropriate systems and machinery to suit the conditions. Information about these small-scale technologies has not been widely available to harvesting contractors or forest owners in Tasmania.

Private Forests Tasmania has reviewed:

- the characteristics of the small-scale resource;
- the currently available small-scale machinery (within and without Tasmania); and
- harvesting and haulage systems.

The intent is to identify harvesting systems that could be used in small-scale situations in Tasmania.

Following the above review, Private Forests Tasmania has collated an internal compendium of Appropriate Technologies for Small-Scale Forest Harvesting. This publication is available upon request by emailing admin@pft.tas.gov.au

Woodlot Analysis Tasmania (WATAS)

As an adjunct to the published review by Private Forests Tasmania Technical Report 1: Appropriate Technologies for Small-Scale Forest Harvesting, the Forest Industries Research Centre – USC and Private Forest Tasmania collaborated on a National Institute for Forest Products Innovation (NIFPI) funded project “Optimising machinery configurations for profitable harvesting operations of small-scale plantations”. As part of this project a decision support system (DSS) was developed and became the Woodlot Analysis Tasmania (WATAS) tool.

The Woodlot Analysis Tasmania (WATAS) is an Excel-based tool to effectively match and evaluate harvesting equipment configurations, in particular, for smaller scale forest harvesting operations in Tasmania, thereby potentially increasing efficiencies and profits plus demonstrating the benefits of alternative equipment.

Woodlot Analysis Tasmania (WATAS) tool is coming soon.

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