



Cost-efficiency and quality in silvicultural operations 2007–2011

Research Programme - Metla



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forest • knowledge • know-how • well-being

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Background

In Finland, use of wood has in recent years accounted for 85 per cent of the highest sustainable volume, and it seems that the amount of wood stocked in our forests is unlikely to lead to restrictions in future wood use. The future of Finland's forestry and forest sector therefore depends on workable roundwood markets and a proactive approach to keep forest-owners interested in managing their forest estates.

The upward cost trend in silvicultural operations has undermined the profitability of investments in silviculture, and thus that of forestry as a whole. Given that the profitability of forestry can be deemed an incentive for efficient wood production, cost development also influences the supply of wood to the market. Moreover, it is vital that the cost-efficiency and quality of silvicultural operations be enhanced, since an increasing share of forest-owners are growing away from forestry, the forest labour force is declining, pressures persist to reduce and reallocate public investments in forestry, and the quality of timber constitutes an increasingly important competitive factor for domestic wood raw material.

Based on these scenarios, research and development related to silvicultural operations should focus on retaining forest-owners' interest in engaging in forestry, increasing the productivity of silvicultural operations, developing business operations related to silvicultural operations and capitalising on the financial opportunities available in wood production and the related businesses.

Objectives

The programme aims to deflect the upward cost-trend of silvicultural operations downwards. In silviculture, this requires a productivity improvement in particular, which is attainable through structural reforms, the development of operating models between and within organisations, and greater efficiency in operational activities. The key themes of the research programme include the mechanisation of silvicultural operations, the further development of businesses focussed around forest services, and the technical and financial management of silvicultural chains.

Research and development activities aim at close interaction with practical operators. The objective of this is to make technical and financial information of the highest possible standard available to forest professionals and forest-owners when they take decisions on silvicultural operations. Forest professionals working in organisations that produce silvicultural services, and forest-owners, are among the primary users of such information. Others include wood-processing companies, forest machine manufacturers and forest seedling companies. Moreover, the information produced by the programme supports forest policy decision-making in issues related to silvicultural operations.

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Results

Research programme results indicate significant opportunities to enhance efficiency and achieve cost savings across several sectors of silviculture.

The research programme has concerned itself intensively with research into, and the development of, new types of planting machines. Studies indicate that new innovations in machinery can yield cost savings as high as 20-30% in forest planting. At present, costs associated with the mechanical tending of seedling stands exceed those of the same work performed by forest workers, but new machines and the operating models based on them are under continuous development. The quality/cost ratio of forest cultivation can also be significantly improved by utilising continuously working soil scarifiers at planting sites, from where the biomass comprising tree stumps and slash has been collected for energy purposes.

Studies concerning the costs and quality management of silviculture have shown that the quality of forest regeneration work varies between regions, as does the price-quality ratio, even with respect to the same working method. The explanation behind this variation cannot lie in divergent natural conditions. In such situations, systematic quality management efforts have yielded major financial benefits.

A review of silvicultural operational chains shows that, in connection with forest regeneration, investments in the appropriate soil scarification method – mounding in the case of Norway spruce planting sites – pays off by the first commercial thinning stage at the latest. It also seems that in the case of the regeneration chain for spruce, two correctly timed pre-commercial thinnings of the stand are more profitable than one carried out too late.

