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Techniques, Productivity and Costs of Logging Operations in Industrial Plantation Forest in Indonesia

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Abstract

This study was carried out to promote environmentally sound, economically feasible and socially acceptable logging operations in order to achieve sustainable forest resources management in Indonesia. It was a case of logging operations in industrial plantation forest which implemented a cut-to-length method to harvest stands of *Acacia mangium* at the age of eight years with an average volume of 0.30 m³ per tree. It was stressed to present organisation and quality of logging operations and to analyse their efficiency in terms of productivity and costs. The results showed that the logging operations had taken care of environmental considerations in which all slash are left in forest sites in order to maintain soil substances and all forwarders should be operated on skidding lines which are covered by slash in order to reduce soil disturbances. They also had been well organised as well as a standard operating procedure, even though they might offer room for improvements. In felling, delimbing, bucking and bunching activities, the total cost was 1.82 USD per m³ and their productivity was 4.92 m³ per hour with the total working time of 3.66 minutes per tree at the average volume of 0.30 m³ per tree. The total cost of forwarding was 1.88 USD per m³ and its productivity was 18.60 m³ per hour with the total working time of 30.76 minutes per load at the average volume of 9.53 m³ per load and the average distance of 378 meters. The total working time of transport was 379.17 minutes per load at the average volume of 40.57 m³ per load and the average distance of 64 km, so that its productivity was 6.42 m³ per hour and the total cost for this activity was 2.68 USD per m³. It must be acknowledged that the logging operations provided social advantages to the local people such as job opportunities, agroforestry programs and the fulfilment of other needs.

Keywords: Environmental considerations, logging operations, productivity and costs, social advantages, sustainable forest resources management