

## Utilization of Logging Residue to Reduce Soil Disturbance of Timber Harvesting

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**Abstract :** Industrial plantation forest in Indonesia was developed in 1983, and since then, several companies have been successfully planted a total area of concessionaire approximately 10 million hectares. Currently, these plantation forests have their annual harvesting period. In the timber harvesting process, amount part of the trees generally become logging residue. Tree parts such as branches, twigs, defected stem and leaves are unused section of tree on the ground after timber harvesting. The use of heavy machines in timber harvesting area has caused damage to the forest soil. The negative impact of such machines includes loss of topsoil, soil erosion, and soil compaction. Forest soil compaction caused reduction of forest water infiltration, increase runoff and causes difficulty for root penetration. In this study, we used logging residue as soil covers on the passages passed by skidding machines in order to observe the reduction soil compaction. Bulk density of soil was measured and analyzed after several times of skidding machines passage on skid trail. The objective of the research was to analyze the effect of logging residue on reducing soil compaction. The research was taken place at one of the industrial plantation forest area of South Sumatra Indonesia. The result of the study showed that percentage increase of soil compaction bare soil was larger than soil surface covered by logging residue. The maximum soil compaction occurred after 4 to 5 passes on soil without logging residue or bare soil and after 7 to 8 passes on soil cover by logging residue. The use of logging residue coverings could reduce soil compaction from 45% to 60%. The logging residue was effective in decreasing soil disturbance of timber harvesting at the plantation forest area.

**Keywords :** bulk density, logging residue, plantation forest, soil compaction, timber harvesting

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