



Investigating Forest Soil Disturbance with Different Timber Harvesting Operations in South Korea

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Forest operation such as timber harvesting can influence to forest environment by displacing soil particles, compacting surface layers, and destroying soil structures. This results in increased surface runoff and associated soil erosion during rainy season, due to soil disturbance. The extent of soil disturbance depends on the skidding/yarding method, types of machine used, and soil types. In South Korea, cut-to-length (CTL) operation is traditionally used by excavator with grapple in most areas. Recently, whole-tree (WT) harvesting system by swing yarder has gained considerable attention as an alternative traditional extraction method.

The objectives of this study were to describe the effects of two different harvesting methods (CTL and WT) on soil disturbance and soil physical properties. After the CTL observation, we found that severe disturbed soils and compacted area were more than WT. Rutting was influenced more than 50% of the deep disturbance classes by the uphill climbing and downhill extraction method, while exposing bare soil was most disturbance in WT operation. Soil physical properties were influenced considerably by the number of excavator passes and slash residual classes in both units. The results from the study would be useful for understanding soil disturbance influence by timber harvesting in Korea. But, more detailed observations are needed to accurately estimate erosion rates and sediment delivery associated with forest management and operation.

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