

## 急傾斜ヒノキ人工林における伐採方法の違いによる

### 細土, 土砂, リター移動量の変化

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### **Variation in Fine Earth, Sediment, and Litter Movement with Different Forest Management Practices on a Steep Slope in a *Chamaecyparis obtusa* Plantation**

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#### 摘 要

急傾斜地の若齢ヒノキ人工林において、処理の違い（皆伐、強度間伐、通常間伐）による表土移動量（細土、土砂、リター）の変化を明らかにするため、土砂受け箱法によって、処理前後4年間にわたる表土移動量を測定し、処理ごとの細土、土砂、リター移動レート（ $\text{g m}^{-1} \text{mm}^{-1}$ ）を比較した。細土、土砂、リター移動レートは、皆伐処理後に著しく増加した。一方、強度間伐区、通常間伐区では、処理前後で細土、土砂移動レートの変化は認められなかった。林内の相対照度および林床植生は、通常間伐、強度間伐、皆伐の順に伐採強度が高いほど増大した。強度間伐や通常間伐が表土移動量に与える影響は、皆伐区に比べて小さいことが明らかとなった。皆伐区や強度間伐区では、植生回復の増加による土砂移動抑制効果が、伐倒木処理などの人為的な地表攪乱によって相殺された可能性が考えられた。以上から、急傾斜ヒノキ人工林で森林管理を行う場合、作業時の地表攪乱を最小限にすることと、速やかな植生回復を促すことを調和させることが林地の土壌を保全する上で重要であると考えられた。

## Summary

To clarify the effects of different forest management practices on the quantitative variation in surface soil (fine earth, sediment, and litter) movement, we used sediment traps to measure the transport of materials on a slope for 4 years before and after clear cutting, heavy thinning, and normal thinning. As indicators of the degree of topsoil erosion, the transport rates ( $\text{g m}^{-1} \text{mm}^{-1}$ ) of fine earth, sediment, and litter were compared. The transport rates of all three materials increased significantly after clear cutting. By contrast, the transport rates of fine earth and sediment did not change after heavy or normal thinning. The greater the cutting intensity in the order normal thinning, heavy thinning, and clear cutting, the greater the increase in the relative light intensity of the understory and floor vegetation. We showed that heavy or normal thinning had little effect on fine earth and sediment movements, as compared to clear cutting. At the clear cut and heavily thinned sites, the surface soil disturbance caused by handling the felled trees was thought to offset by the inhibitory effects of vegetation recovery on sediment transport. We believe that it is important to conserve forest soils in order to minimize surface disturbance during harvest and encourage rapid revegetation when managing forests on steep slopes in *Chamaecyparis obtusa* plantations.