

Effectes of roots on slope stability in mountain area

IMAIZUMI, Fumitoshi^{1*}, SUWA Yutaka²

¹Faculty of Life and Environmental Sciences, University of Tsukuba, ²Prefectural Land Development Bureau, Kanagawa Prefecture

In mountain area, many landslides occur because of the steep terrain. Although there are many studies on effects of roots on slope stability, only few studies have been conducted in steep mountain area. Effects of roots on the slope stability needs to be understood to preserve stream ecosystems as well as to develop better mitigation measures for preventing disasters. In this study, we analyzed simple physically based model to clarify effects of roots on the slope stability. We also conducted aerial photograph and field investigations at Ikawa University Forest in steep Akaishi Mountains, central Japan. Physical analysis revealed that root strength at the soil layer boundaries is an important factor to evaluate effect of roots on the slope stability. Frequency of shallow landslides examined by aerial photograph investigations was highest in the forests 0-20 yr after clearcutting. Decay of root strength by cutting may have induced occurrence of these shallow landslides. Cone penetration tests revealed that slide surface of many of these landslides locates at the boundary between regolith and bedrock. These investigation results correspond to our physical analysis.

Keywords: roots, landslide, mountain area, artificial forest