Geophysical Research Abstracts,
Vol. 11, EGU2009-2628, 2009
EGU General Assembly 2009

Reinforcement of Tree Root and Non-frame Method in Slope Stabilization

I. Naoto and N. Minh Quang
(nghiem@ns-kenzai.co.jp)

A root fiber can nail a slipping soil mass into the bedrock and thus can increase slope stability. The reinforcement of root fibers is considered as the resultant of tension and shear reinforces occurred in the cross section of root at slip surface. The shear force and bending moment of a deformed root directly prevent against the displacement of unstable soil mass while the tension force increase the friction force between unstable soil and bed rock. Longer displacement of slope causes larger deformation and thus causes larger reinforcement of tree root. In other side, larger root reinforcement results in more slope stability. The reinforcement of tree root and displacement of slipping soil mass depending on each other is the reinforcement mechanism of tree root in a landslide. The mechanism of tree root reinforcement is considered in developing a new soil nail method named Non-frame. By conducting a number of experiments of soil nail stabilizing slope, the alteration process of root reinforcement was performed in various conditions of rainfall and earthquake.