



How to select the appropriate techniques and suitable plant species for soil bioengineering works? – An application example from Nepal

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In Nepal soil bioengineering methods are a popular tool to control erosion and to protect instable slopes. However, soil bioengineering measures are not applicable in all situations. But if they are properly used, they could be a low cost, environmental friendly and effective solution for even large-scale erosion control, riverbank and slope protection works. The main problem for the effective implementation of soil bioengineering techniques is the selection of site-specific appropriate plant species. This paper describes a method for the selection of soil bioengineering techniques and plant species based on the engineering function of a plant, the environmental requirement of a particular plant and site conditions related to soil and moisture.

First of all, the site is assessed visually to identify the basic site characteristics (slope angle, aspects, altitude, vegetation coverage, type of soil material, rainfall and climatic conditions etc.), the causes and mechanism of the slope failure or the existing erosion process. Then, suitable soil bioengineering techniques are identified based on the functional requirement of the site. Once the soil bioengineering techniques are defined and designed, the selection of appropriate plant species are made based on the (i) functional characteristics (catch, armour, reinforce, anchor, support or drain), (ii) the topography (physical environment, climatic conditions) of the site, (iii) the site conditions (soil, moisture conditions), (iv) the economical aspects (fodder plants, fruits, medicinal plant) and also (v) the social (sacred plants) aspects of particular plant species.

The above mentioned concept to select the appropriate techniques and plant species are illustrated with a practical example from Nepal.