चौरिदेउराली गाउँपालिका

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USAID'S TAYAR NEPAL - PRAYATNA PROJECT

Enhancing Resiliency of the Local Community of Chaurideurali Rural Municipality through Low-cost Bio-engineering Interventions for Disaster Risk Reduction and Management (DRRM-PRAYATNA)

Project Duration: February 2021 – October 2021

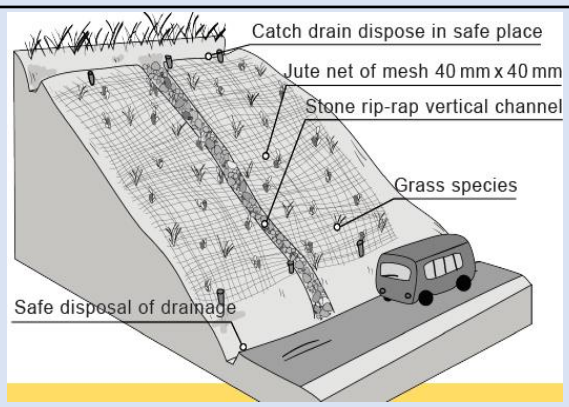
What is Bioengineering?

Bioengineering is a method where live plants alone or combined with inorganic materials are used to produce functioning systems to prevent erosion, control sediment, and provide habitat. It protects hillslopes, streambanks, and lakeshores from erosion by combining structural practices and live vegetation. From streambank and lakeshore defense to upland gully restoration and slope stabilization, bioengineering solutions can be used in a variety of soil stabilization and erosion control situations.

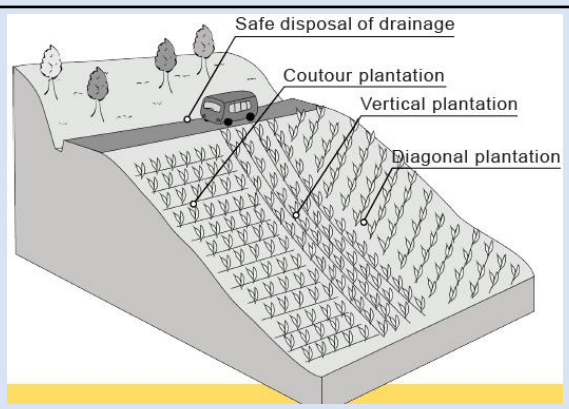
Advantages of Bioengineering Techniques

1. low cost and lower long-term maintenance cost as compared to traditional methods;
2. low maintenance of live plants after they are established;
3. environmental benefits of wildlife habitat, water quality improvement, and aesthetics;
4. improved strength over time as root systems develop and increase structural stability; and
5. compatibility with environmentally sensitive sites or sites with limited access.

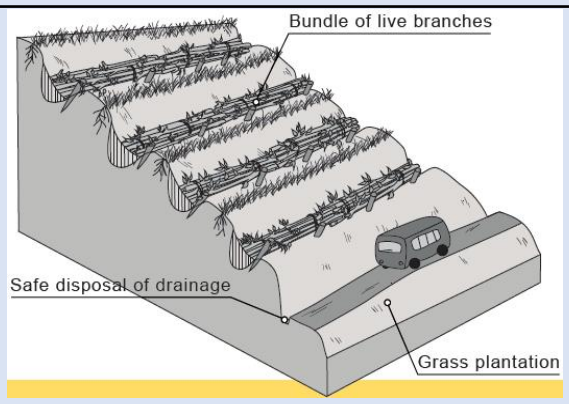
Bio-engineering techniques for surface erosion control of run-off



Schematic illustration of jute netting with seedlings
Credit : S. Eberle (Source: Devkota et al, 2014)

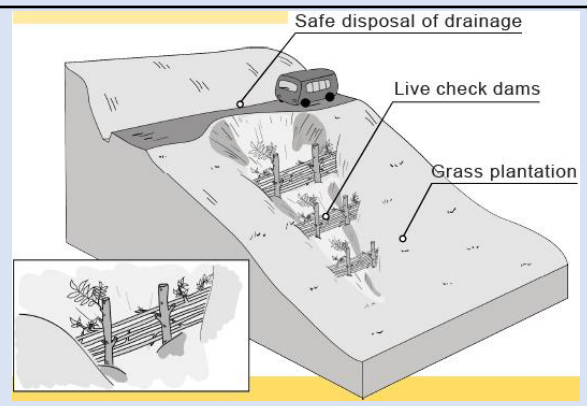


Schematic illustration of 3 types of grass plantations
Credit : S. Eberle (Source: Devkota et al, 2014)

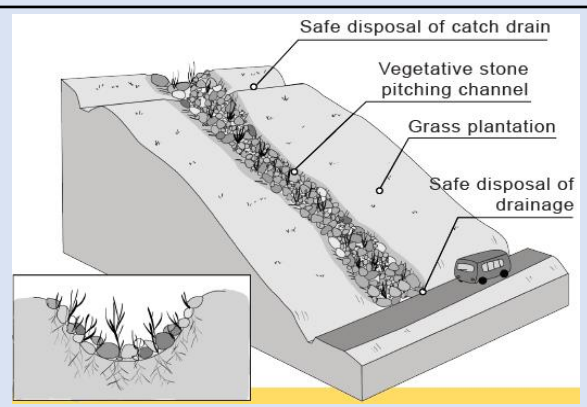


Schematic illustration of fascines
Credit : S. Eberle (Source: Devkota et al, 2014)

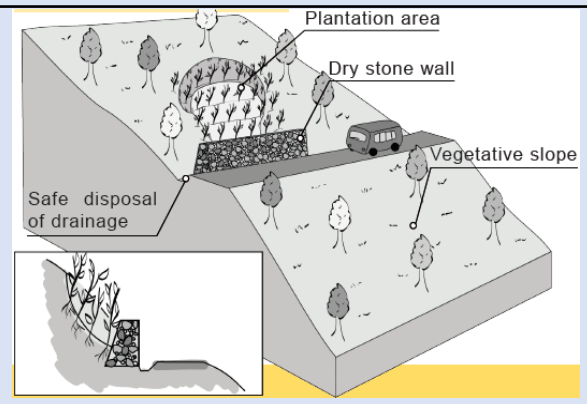
Bio-engineering techniques to control gullies formation



Schematic illustration of live check dams
Credit : S. Eberle (Source: Devkota et al, 2014)

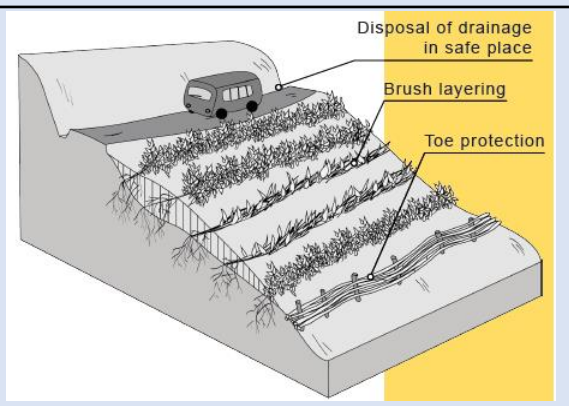


Schematic illustration of vegetative stone pitching
Credit : S. Eberle (Source: Devkota et al, 2014)

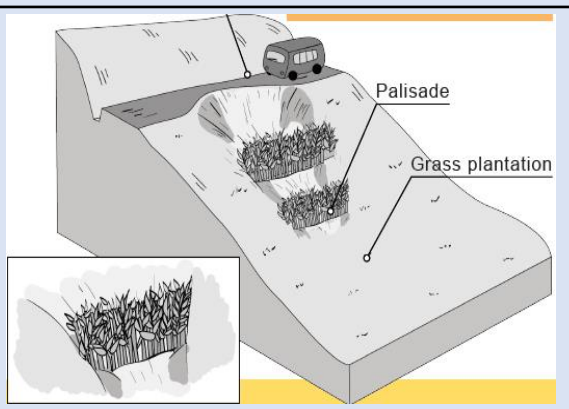


Schematic illustration of dry stone wall with vegetation
Credit : S. Eberle (Source: Devkota et al, 2014)

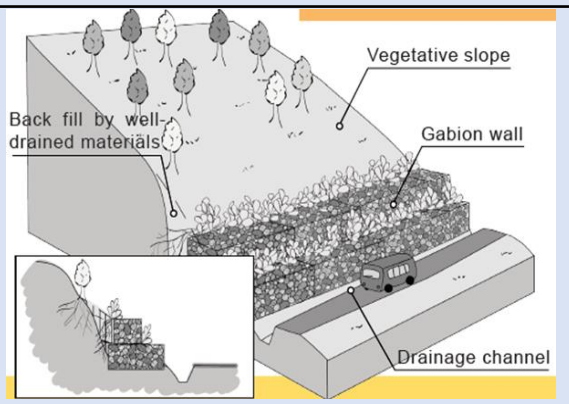
Bio-engineering techniques to control shallow landslide



Schematic illustration of brush layering
Credit : S. Eberle (Source: Devkota et al, 2014)



Schematic illustration of palisades
Credit : S. Eberle (Source: Devkota et al, 2014)



Schematic illustration of gabion wall + vegetation
Credit : S. Eberle (Source: Devkota et al, 2014)

Reference: Devkota, S., Sudmeier-Rieux, K., Penna, I., Eberle, S., Jaboyedoff, M., Adhikari, A. and R. Khanal (2014) Community-based bio-engineering for eco-safe roadsides in Nepal. Lausanne: University of Lausanne, International Union for Conservation of Nature, Nepal and Department of Soil Conservation and Watershed Management, Government of Nepal. (Illustrations by Sandrine Eberle, University of Lausanne, Switzerland)