



Effect of Various Organic Matter stimulates Bacteria and Arbuscular Mycorrhizal Fungi Plantations on Eroded Slopes in Nepal

G. Shrestha Vaidya (1), K. Shrestha (2), and H. Wallander (3)

(1) Nepal Academy of Science and Technology (NAST), Khumaltar, Lalitpur, Nepal, (2) Natural History museum , Swayambhu, Kathmandu, (3) Microbial Ecology Lab, Lund University, Lund, Sweden

Erosion resulting from landslides is a serious problem in mountainous countries such as Nepal. To restore such sites it is essential to establish plant cover that protects the soil and reduces erosion. Trees and shrubs on the lower hillsides in Nepal form symbiosis with arbuscular mycorrhizal (AM) fungi and these fungi are important for the uptake of mineral nutrients from the soil. In addition, the mycelia formed by these fungi have an important function in stabilizing the soil. The success of plantations of these eroded slopes is therefore highly dependent on the extent of mycorrhizal colonization of the plants. Mycorrhizal fungi growing in symbiosis with plants are essential in this respect because they improve both plant and nutrient uptake and soil structure. We investigated the influence of organic matter and P amendment on recently produced biomass of bacteria and arbuscular mycorrhizal (AM) fungi in eroded slopes in Nepal. Eroded soil mixed with different types of organic matter was placed in mesh bags which were buried around the trees of *Bauhinia purpurea* and *Leucaena diversifolia*. This experiment were done in two seasons (the wet and the dry season). Signature fatty acids were used to determine bacterial and AM fungal biomass after the six month intervals. The amount and composition of AM fungal spores were analyzed in the mesh bags from the wet and dry seasons. More microbial biomass was produced during wet season than during dry season. Further more, organic matter addition enhanced the production of AM fungal and bacterial biomass during both seasons. The positive influence of organic matter addition on AM fungi could be an important contribution to plant survival, growth and nutrient composition in the soil in plantations on eroded slopes. Different AM spore communities and bacterial profiles were obtained with different organic amendments and this suggests a possible way of selecting for specific microbial communities in the management of eroded sites.