

## **REGENERATION POTENTIAL OF RESTORED AND UNRESTORED LANDUSE TYPES IN UPPER HANTANA, SRI LANKA**

**A.M.C.P. Weerasinghe\*, A.M.T.A. Gunaratne and H.M.S.P. Madawala**

*Department of Botany, Faculty of Science, University of Peradeniya, 20400,  
Peradeniya, Sri Lanka*

*\*Chanaki.weerasinghe@gmail.com*

Hantana range is an ecologically important area in the Central Highlands of Sri Lanka. The soil seed bank can be used as an indicator of the regeneration potential of vegetation. During the colonial era, the natural forest cover has replaced by plantation crops. At present, the area is dominated by landuse types such as grasslands, pine stands, mixed woodlands and remnants of tea and rubber cultivations. In late 1990's some grasslands and *Pinus* plantations were restored using native tree species. The present study was carried out to assess the soil seed banks of restored and un-restored grasslands and pine stands (RG, UG, RP and UP respectively) in the Upper Hantana area. From each landuse type, 12 soil samples were taken from 15 x 15 cm<sup>2</sup> quadrats to a depth of 2 cm, during wet and dry seasons in 2013. Soils were laid on sterilized soil beds (in plastic trays) and kept in a glasshouse. Seedlings emerged were counted and identified. A total of 2567 seedlings (wet - 1458, dry - 1109) belong to 27 species (wet - 27, dry - 19) and 18 families (wet - 17, dry - 12) were identified. The density of trees and shrubs was greater during the wet season than in the dry season in all four landuse types, while more grasses, herbs and sedges were observed during the dry season. The density of tree seedlings was higher in restored than in un-restored landuse types. However, the richness of tree seeds was higher in RP and UG than the rest during both seasons. Shrub density was significantly higher in UG than RG, while RP showed significantly higher shrub density over UP. A similar trend was also observed with shrub richness. The invasive, *Clidemia hirta* contributed significantly to high abundance of shrubs in UG. Grass seed densities were higher in all study sites than in UP. The herbs were greater in UG and sedges were greater in UG and RG than other landuse types. Seeds dispersed by animals were more abundant in the wet season, while the wind-dispersed seeds were more abundant during the dry season. However, there was a greater abundance of animal-dispersed seeds in UG compared to other study sites. A greater abundance of native species was also observed in RP compared to other landuse types, during both seasons. Finally, the seed bank data suggest that restored *Pinus* (RP) has the highest regeneration potential than the rest of the landuse types.