

## AN ECOLOGICAL STUDY OF GRASSLANDS AT HANTANA

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Grasslands of Sri Lanka are ecologically fascinating for their wide floristic, physiological and environmental diversity. Grasslands at Hantana come under humid zone dry patanas. There are many floristic and edaphic variations within these grasslands due to altitude, microclimate, moisture regime, nutrient status, textural properties of soil, human interferences etc. During this study we tried to identify the ecology of grasslands at two different elevations at Hantana and the edaphic factors that may have contributed to this variation.

Two grassland sites with an elevation difference of approximately 35 m were selected for this study. Floristic information such as the species composition, density and cover were investigated. Shannon Diversity Index and Evenness values were calculated. Biomass allocation pattern was determined using three 1m x 1m plots. For soil characters, 5 plots (10 m x 10 m each) were randomly selected at each elevation level. In each plot, 12 soil samples were collected randomly from a depth of 0-15 cm. Soil samples were then analyzed for chemical parameters using standard procedures.

*Panicum maximum* (density, 10000 ha<sup>-1</sup>) is the dominant species at lower elevation grasslands (LoG) while *Cymbopogon nardus* (density, 8800 ha<sup>-1</sup>) is the dominant species at higher elevation grasslands (HiG). From the total of 18 plant species, 17 % were represented by grasses, 50 % represented by herbs, 22 % by shrubs and 11% represented by treelets in LoG. At HiG, 21 plant species were recorded, and out of that 24% were represented by grasses, 54% were represented by herbs, 19% by shrubs, and 5% by treelets. The Shannon Diversity Index showed that the species richness is higher at HiG than at LoG. The family Poaceae showed the highest cover values in both grasslands (LoG = 44%, HiG = 35%) whereas the family Fabaceae showed the second highest cover values in both grasslands, but it is relatively higher in HiG (33%) than in LoG (29%). The root:shoot ratio of *Panicum maximum* (0.9460) is higher at LoG than the root: shoot of *Cymbopogon nardus* (0.7633) at HiG.

Slightly higher soil pH (6.4) was recorded at LoG compared to HiG (6.0). The total nitrogen (0.2%) and magnesium contents (162 ppm) are significantly higher at HiG than in the LoG (0.15%, 25 ppm respectively) whereas the potassium content is higher at LoG (150 ppm), than HiG (50 ppm). Organic carbon (LoG = 5%, HiG = 5.4%), sodium (LoG = 35 ppm, HiG = 23 ppm) and calcium (LoG = 314 ppm, HiG = 288 ppm) contents are more or less similar in both grasslands. The C: N ratio is close to 30 in both elevations indicating a net immobilization

Results of the present study indicate that the floristic composition and diversity as well as some soil characters differ markedly in these grasslands within this small elevation gradient.