

## Forage composition and quality of tankbed grassland ecosystems in Sri Lanka; a preliminary study of “Tabbowa” Tank

G.G.C. Premalal<sup>1</sup> and S. Premaratne<sup>2</sup>

<sup>1</sup>Pasture Division, Veterinary Research Institute, Peradeniya, Sri Lanka, Email: premalal\_ggc@yahoo.com,

<sup>2</sup>Department of Animal Science, Faculty of Agriculture, University of Peradeniya, Peradeniya Sri Lanka

**Keywords:** grassland ecosystems, forage composition, free-grazing livestock, water catchments

**Introduction** Although, Sri Lanka does not have large natural lakes, the early settlers devoted their energy to build water bodies (tanks or reservoirs) in association with forest catchments to provide water for irrigation. The tank bed is a grassland area of the tank, which lies between the catchment forest and the present water level. In general, the tankbed has three major zones - lower, middle and upper - and in some seasons the middle and upper parts may be underwater. This tankbed area is dominated by grassland vegetation and is a valuable feeding ground for free-grazing livestock. The main objective of this study was to identify the common forage species and to investigate the nutrient composition of species most relevant to ruminant livestock in one of the larger tankbed grasslands in the country.

**Materials and methods** This study was carried out in Jan. to July 2003 at the “Tabbowa” tank, which is mostly grazed in common by free-grazing livestock. The mean annual rainfall and temperature of the area were about 1750 mm and 30<sup>o</sup> C respectively. Botanical composition of the tankbed was measured according to the predetermined contours in the lower, middle and upper zones using 1 x 1 m quadrats with three replicates. The edible part of the most common forage species were analysed in duplicate for crude protein (CP), neutral detergent fibre (NDF), lignin and minerals, viz; sodium, magnesium, calcium and phosphorus.

**Results and discussion** The floristic composition of the tankbed was very diverse. The plant species identified, belonged to 14 families, 14 genera and 29 species. Out of 29 species, *Cynodon dactylon* (67.94%) and *Cyperus rotundus* (22.84) were the dominant species. Density of species changed on the moisture gradient towards the slope. The density of *C. rotundus* was higher in the lower region while that of *C. dactylon* was higher in the middle. High densities of herb species such as *Alternanthera paronchoides*, *Coldenia procumbens*, *Aeschynomene indica* and *Mollugo pentaphyla* were found in upper region of the tankbed. Out of 29 species, 7 species were commonly consumed by the animals with their selective grazing. These species and their nutrient composition are shown in Table 1. The nutrient composition differed among the species. However, most of the species were rich in CP, NDF, and minerals and comparable with other improved forage species (Ibrahim, 1989).

**Table 1** Nutrient composition of common forage species in “Tabbowa” tankbed grassland (%)

Species	DM	Ash	CP	NDF	Na	Mg	P	Ca
<i>Cynodon dactylon</i>	25.1	9.63	13.62	81.76	0.80	1.20	0.25	0.03
<i>Cyperus rotundus</i>	19.6	4.36	14.87	75.33	1.30	0.46	0.31	0.03
<i>Lippia nodiflora</i>	17.6	8.73	14.15	46.85	1.83	1.30	0.46	0.43
<i>Alternanthera paronchoides</i>	17.0	9.45	17.62	49.29	1.02	1.67	0.13	0.06
<i>Panicum psilopodium</i>	23.0	8.12	23.18	79.07	1.55	2.01	0.51	0.24
<i>Securinega leucophyrus</i>	42.0	5.75	18.09	34.06	0.87	1.79	0.27	0.25
<i>Accacia leucoplea</i>	33.5	3.93	19.18	31.17	0.62	0.91	0.19	0.03

**Conclusions** The vegetation of the “Tabbowa” tankbed grassland ecosystem is diverse and includes valuable forage species. This grassland type plays a major role for free-grazing livestock in the dry zone of the country. A detailed study of soil, plant and animal relationship and the socio-economic background of the farmers is required.

### Reference

Ibrahim M.N.M. (1989). Feeding tables for ruminants in Sri Lanka. Fibrous Feed Utilization Project, Sri Lanka-Netherlands Livestock Development Programme.