

of soil diminishes and tea cultivation has caused many environmental problems. Thus, stabilization of a systematic Agro-forestry system in these areas would minimize the environmental problems and would conserve both 'Sinharaja' and its peripheral villagers. Further, this kind of stabilization process should go parallel with the prevalent lifestyles and culture of the villagers. Additionally, that process should provide villagers with economical advantages. Moreover, plantation of crop varieties in the tea lands should be encouraged as well as animal husbandry, apiculture and plantation of medicinal plants etc. Yet, the contribution and the sponsorship of the government and non-government organizations, plan and policy making of scientists and the active participation of the peripheral villagers are essential to bring these activities into success.

017

Behaviour of cattle in an agro-forestry system

D Senaratna, N S B M Atapattu, W G D, Lakmini, W I R Palihakkara, B Piyadigama and C C Senaratne
Department of Animal Science, University of Ruhuna, Sri Lanka

Objective of the present study was to understand the behaviour of dairy cattle tethered under agro-forestry systems. Three genetically uncharacterized, indigenous, non-lactating cows and two bulls (mean live weight 199 ± 29) were tethered close to a water stream in an agro-forestry system. The vegetation of the agro-forestry system comprised of teak, coconut, mahogany and shrubs. Animals had enough foraging materials around the place they were tethered. One observer was assigned to each animal. The behaviour of the animals was observed for five hours from 1000-1500 hrs. The mean temperature and the relative humidity of day of the study were 28°C and 79% respectively. Frequency and the duration of the time spent on nine behaviours were recorded. The behavioural activities studied were drinking, feeding (ground level and upper level), lying, standing, walking, urination, defecation, vocalization and interactions (cattle-cattle and cattle-other animals). Feeding was the most prominent behaviour of the animals. The time spent on feeding and the frequency of feeding during the 300 minutes study period were 252 min and 23, respectively and thus the feeding behaviour accounted for 84% of the total time budget. The frequency (15) and the time spent on ground level grazing (234 min) were significantly higher ($p < 0.001$) than the frequencies and the time spent on upper level feeding. Though not statistically significant, animals spent more time on standing (18.9 min or 6.3% of the total time) than on Laying (14.6 min or 5% of the total time). The frequency of standing (5) was also significantly ($p < 0.001$) higher than that of lying (1). May be due to tethering, cattle spent less time (8.3 minutes or 2.7% of the total time) on walking. The frequency of drinking (2) and the time spent on drinking were (3 min or 1% of the total time) unexpectedly low. Cattle defecated and urinated twice during the five-hour study period. Vocalization was the least prominent behavioural activity. It is concluded that cattle highly engage with feeding particularly, on ground level when they are tethered under agro-forestry systems. Further researches are needed to determine as to why the drinking behaviour is suppressed when tethered in agro-forestry systems.

018

Design and development of power tiller operated multipurpose whole stick harvester especially for sugarcane

P L A G Alwis, L W S Pemasiri and W S K Rathnayake
Faculty of Agriculture, University of Ruhuna, Mapalana, Kamburupitiya, Sri Lanka.

In Sri Lanka cane harvesting is done manually using various types of hand knives. This method of harvesting not only consumes much time but also requires much skilled labourers. But nowadays labourers are becoming scarce and costly, particularly in sugarcane cultivation areas. This is due to diversion of labour to other more remunerative work in industry, construction, business and diversion of labour to other crops.

It is difficult to employ heavy machines in Sri Lanka due to various reasons such as, fragmented and small holdings with small and irregular fields, diverse cropping patterns followed, the cultivation practices