

Straw Based Supplementation for Cattle Grazing Natural Herbage Under Coconut

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ABSTRACT. *A grazing study to determine the effect of unprocessed rice straw or unprocessed supplemented rice straw on the performance of calves grazing natural herbage under coconut was conducted in the low country intermediate zone. Supplements were: urea, molasses, rice bran and minerals given at the rates of 17, 85, 125 and 15 g/head/day, respectively. Straw was offered ad libitum while grazing was continuous with set stocking (4 calves/0.5 ha). Using a randomized complete block design with three replicates nine groups of four calves were randomized into nine paddocks of 0.5 ha each. Average daily gain improved significantly ($P < .01$) for G (13 g/head/day) through GS (71 g/head/day) to GGS (158 g/head/day). Intake of straw was 346 g/head/day and 679 g/head/day with GS and GSS groups, respectively. Low availability of herbage due to high stocking rate and continuous grazing may have been the reason for low live weight gain of all groups. Precipitation had a direct influence on the live weight gain of G than on other treatment groups. Subjective general observations on livestock and herbage were also kept.*

INTRODUCTION

Since land for grazing in Sri Lanka is limited, 0.5 million ha. of coconut land represent potential grazing resource. While a negligible area of such lands is under cultivated pasture, the rest for grazing is under natural herbage. Performance of grazing cattle on cultivated improved pasture species have been reported from the coconut triangle (Santhirasegaram, 1966; Fernandez, 1969) and dry zone (Fernando and Sivalingam, 1961; Pathirana and Siriwardene, 1982). However, studies on cattle grazed on natural herbage under coconut in Sri Lanka have not been reported. Objective of the present study was to determine the effect of straw based supplementation of cattle grazing natural herbage under coconut.

MATERIALS AND METHODS

Location and climate

The coconut land is situated at Hakmana in the Southern low country intermediate zone.

Treatments and experimental design

Grazing of natural herbage under coconut was the control (G), G + unprocessed unsupplemented rice straw fed *ad libitum* (GS) and GS + supplements (GGS) were the three treatments. Using a randomized complete block design with 3 replicates, 9 groups of 4 calves each were randomized into 9 paddocks of 0.5 ha. each. Grouping of animals was on a live weight basis.

Animals, feeding and management

Calves were predominantly of indigenous blood of 5-8 months of age and 59.3 ± 9.1 kg. ($\bar{x} \pm SD$) live weight. They were purchased from local small farmers and vaccinated against Haemorrhagic septicemia and Foot and Mouth Disease. Animals were dewormed initially and again 3.5 months later, using Rintal. Asuntol was sprayed for external parasites. Supplements in GSS were: minerals (15g/hd/d), rice bran (125g/hd/d) given separately; urea and molasses were evenly mixed with straw by dissolving 25g urea and 125g molasses in 0.16 L of water per 1 kg rice straw. Water for drinking was available *ad libitum* to all animals.

Measurements

Live weight changes of animals were recorded every 4 weeks using a 2 Tonne x 0.1 kg livestock scale. Intake of straw was monitored weekly on a group basis. Precipitation was recorded daily. Subjective observations on animal behaviour, resistance to disease and body condition were kept.

RESULTS AND DISCUSSION

Results are presented in Table 1 and Figures 1–3. Average daily gain (ADG) of calves increased significantly ($P < .01$) from grazing only (G) through grazing with unsupplemented straw (GS) to grazing with supplemented straw (GSS). ADG in general for the entire period for all treatments were low with animals on G being just above maintenance level. The main reason may have been the low availability of herbage resulting from a high stocking rate and poor recovery due to continuous grazing. Although a high stocking rate was intended to simulate field conditions in the control, according to the results, it seems to be too high. In fact the restricted availability of herbage is confirmed by straw intakes of 346 and 679 (g/hd/d) for GS and GSS, respectively. Higher intake resulting from increased digestibility due to supplementation of roughage diets has been reported (Fahmy *et al.*, 1984).

When the rainfall was higher during May and June all groups of animals gained better (Figures 1 and 3), probably as a function of the availability of herbage. A drop in rainfall in July affected the G group the most which lost live weight, while the gain in other two groups also declined, but to a lesser extent. With increasing rainfall in August, G group responded the best while the ADG of other two groups continued to decline. Straw intake of GS and GSS (Figure 2) followed a similar pattern as a function of time. However, during August, with an increased intake of straw the ADG declined for both groups which continued up to September with GS group recording a negative gain during that month. In general, it can be stated that during dry weather the animals fed straw and in particular those on supplemented straw can gain weight on poorly managed natural herbage under coconut while those without straw will lose weight.

Subjective observations were as follows: animals fed straw spent more time lying down. Rainy weather led to a higher straw intake since animals came to shelter where straw was kept. Appearance of skin and hair coat, incidence of tick infestation, recovery and resistance to disease tended to improve with feeding of straw and mostly with the supplements. As grazing continued, herbage species with a higher selection (palatability) declined while unpalatable weeds tended to dominate. Indications are that there is a need for a less frequent and a lighter weeding of coconut land under grazing than those without livestock.

Table 1. Live weight gain and the intake of straw and supplements.

Item	Treatment		
	G	GS	GSS
Average daily gain (g/hd/d)	13 ^a	71 ^b	158 ^c
Straw intake (g/hd/d)	-	346	679
Supplements (g/hd/d): Urea	-	-	17
Molasses	-	-	85
Rice bran	-	-	125
Minerals	-	-	15

a, b, c - Values bearing different superscripts are significantly different ($P < 0.01$)

G - Grazing only (control)

GS - Grazing + unsupplemented straw

GSS - GS + Supplements

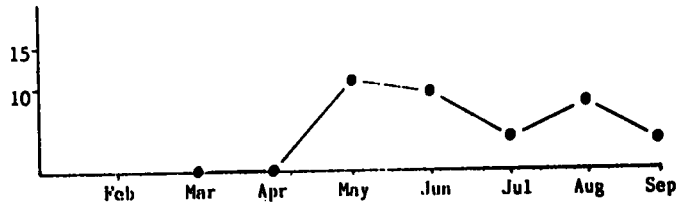


Fig.1. Average monthly rainfall (mm)

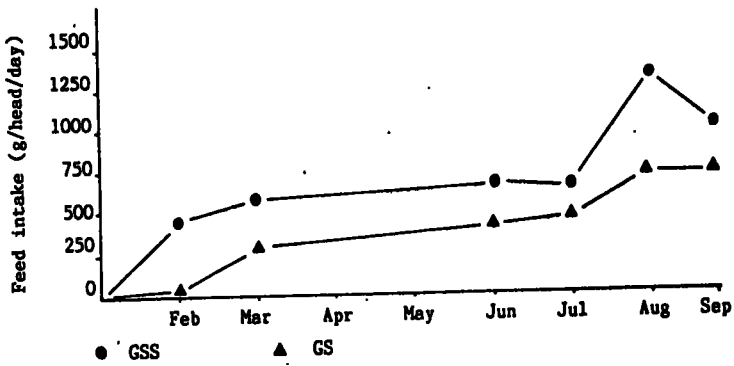


Fig.2. Feed intake of animals (g/head/day)

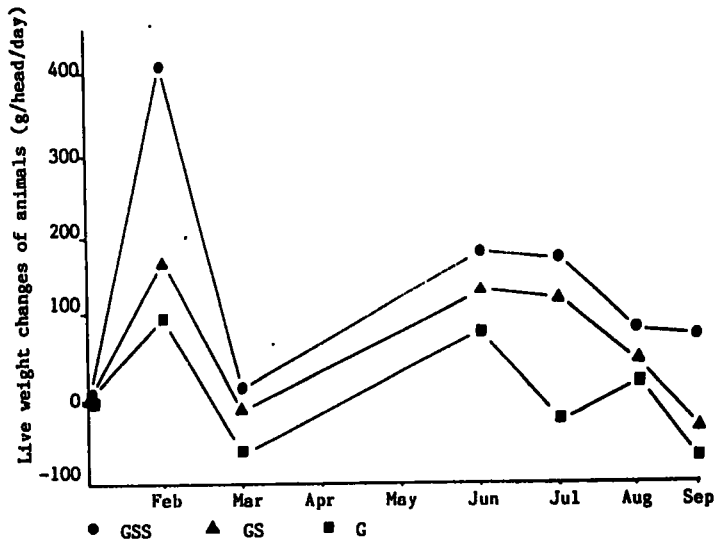


Fig.3. Live weight changes of animals (g/head/day)

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