



Comparative Feeding of Two concentrate Diets on Voluntary Feed Intake and Growth Performance of Pyar Sein Calves in Myanmar



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Abstract

The objectives of this study were to evaluate the potential Lablab bean husk (LLBH) for local calves to get maximum growth performance and optimum feeding cost by homemade concentrate in dry season. Ten male Pyar Sein calves with an average age of nine months were used in this experiment. All calves were individually weighed and divided equally into two treatments. Treatment 1 was fed with homemade concentrate while treatment 2 calves were fed commercial concentrate and both treatments were given the same NGS. There were no significant differences occurred in average dry matter intake of NGS (nDMI), average total dry matter intake (tDMI), the average final weight, average weight gain (WG), average daily weight gain (ADG) and average feed conversion ratio (FCR) between the treatments. However, dry matter intake of NGS (%BW) and total dry matter intake (% BW) showed a significant difference. The treatment 1 calves fed homemade concentrate showed greater nDMI and tDMI. As an aspect of economic evaluation, feeding agricultural and industrial by-products as a concentrate feed is economically viable for local smallholder farmers.

Introduction

- Various roughages or forages are applicable for cattle feeding in tropical countries; however most of cattle roughages are low nutrient crop residues, namely rice straw, corn stover, sorghum stover, and cut-and-carry grasses from along roadsides. Napier grass was generated originally from sub-Saharan tropical Africa (Clayton et al., 2013).
- Ensiled forages are important sources of roughage that are fed throughout the year during the periods of restricted seasonal availability of pasture for the grazing animals (Wilkinson and Davies, 2013).
- Feeding of local cattle with conserved forages has become an important feeding strategy, however, silage making and feeding of silage from Napier grass is not still conventional in tropical regions including Myanmar.
- Protein is the main component of ruminant ration and a suitable crude protein (CP) level is very important (Bailey et al. 2008).
- To promote the efficient feeding of Napier grass, a conventional or commercial concentrate with high CP is needed (Tessema and Baars, 2004)
- Protein supplements like sesame meal, peanut meal, cottonseed meal and sunflower meal and energy supplement such as rice bran, wheat bran, corn, molasses, lablab bean husk and chick peas husk are available regionally in Myanmar (Andy et al., 2018).
- An easily digestible fiber, lablab bean husk (LLBH) is a by-product, which is leftover when fried bean seeds are made from bean.
- Myanmar local cattle have smaller body size and a poor growth rate than temperate or *Bos taurus* beef cattle. Consequently, the CP requirement of Myanmar local cattle may not be similar as those recommended by national research council (NRC, 1996). Recently, by-products of agriculture or industries have been extensively used to fatten cattle in Myanmar. Therefore, there is a clear need to determine the CP level of concentrates based on low quality feed to facilitate potential cattle production. The aims of this work were to evaluate a potential LLBH for local calves to obtain a maximum growth performance and optimum feeding cost by feeding homemade concentrate in dry season.

Results and Discussion

Feed intake and growth performance of Pyar Sein calves fed two concentrate Diets

Average	Diet 1	Diet 2	P-value
Initial body weight (kg)	141.8	138.6	
Final body weight (kg)	154.0	151.6	
Weight gain (kg)	12.2	12.5	NS
Average daily gain (ADG) (g/day)	225.2	230.6	NS
Dry matter intake of NGS (kg)	2.2	1.9	NS
Total dry matter intake (kg)	3.6	3.2	NS
Dry matter intake of NGS (% of BW)	1.5	1.3	**
Total dry matter intake (% of BW)	2.5	2.2	**
Feed conversion ratio (FCR)	14.8	13.4	NS

Diet 1: homemade concentrate, Diet 2: commercial concentrate, NGS: Napier grass silage, BW: body weight, NS: non-significance *:P<0.05, **P<0.01

- The quality of silage fed to livestock influences its intake, total feed intake and consequently fattening efficiency (Steen et al., 1998). In the current feeding trial, for dry matter intake of NGS and total dry matter intake of calves, the results were not significant different between groups although diet 1 calves possessed numerically higher average DMI of NGS (2.2 kg/day) and average total DMI (3.6 kg/day) than calves in diet 2 (1.9 kg/day and 3.2 kg/day). It is commonly accepted that Napier grass yields increase and nutritive value declines with increasing maturity (Spitaleri et al., 1995).
- In terms of dry matter intake expressed as % of body weight (BW), the data observed that calves fed diet 1 showed significantly greater average dry matter intake of NGS (1.5 % BW) and average total dry matter intake (2.5 % BW) than calves fed diet 2 (1.3% and 2.2%). This means that the intake of silage was clearly affected by given concentrates
- Lablab bean husk as a supplemental feed ingredient in the diet of calf may help farmers to profit from this by-product, whose utilization could help sustain the factories and minimize the environmental pollution.

Conclusion

Feeding of homemade concentrate did not show adverse effect on ADG, DMI and FCR in local Pyar Sein calves. It would be useful from the point of view of low cost animal feeding or reduction of the residue.

Materials and Methods

Experimental Design, Animal and Diet

The experiment was conducted at the Livestock Demonstration Farms, University of Veterinary Science, Yezin, Naypyitaw. Ten male local calves (Pyar Sein) of approximately 8 to 10 months of age, with live weight of 140.2 ±13.8 kg were used in this experiment by using student-t test. All calves were individually weighed and allocated randomly and equally (five calves) into two treatment groups for the entire duration of the trial (74 days). All animals were treated for internal and external parasites with Ivermectin (SAMYANG ANIPHARM, SEOUL, KOREA) 14 days prior to experiment.

Group 1 was fed diet 1(homemade concentrate) while group 2 was fed diet 2 (commercial concentrate). The main ingredients of Diet 1 were cottonseed meal and lablab bean (*Dolichos lablab*) husk (LLBH) and those of diet 2 were corn, palmkernel meal, rice/wheat bran, green bean shell and dried distillers grains (DDGS). The homemade concentrate was formulated only same crude protein level (CP20%) in accordance with commercial concentrate. Concentrate allowance for each calf was 1 % of live body weight (DM basis) daily and was adjusted biweekly in accordance with any changes to the body weight of the calf. Both grouped calves were given the same quality of Napier grass silage (NGS).

Feeding Trial

The calves were fed treatment diets for 14 days for the adaptation period before the beginning of data collection. The calves were fed twice a day around 7:30 am and 3:30 p.m. Feed intake of calves was recorded daily and feed consumption was determined weekly to meet the daily requirement.



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