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PJBS

ISSN 1028-8880

**Pakistan
Journal of Biological Sciences**

ANSI*net*

Asian Network for Scientific Information
308 Lasani Town, Sargodha Road, Faisalabad - Pakistan

Effect of Urea Molasses Straw (UMS) on the Performance of Steers (Local Zebu Cattle) with Supplementation of Wheat Bran

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Abstract: Three groups of steers mentioned as T₁, T₂ and T₃ were maintained with untreated straw (control), urea molasses straw (UMS) and UMS + wheat bran respectively. The results revealed that feed intake were more in case of T₂ and T₃ than in T₁. Average live weight gain/animal/day were 204.17, 400.0 and 418.75g in case of T₁, T₂ and T₃ treatment groups respectively. Live weight changes in T₂ and T₃ treatment groups differed significantly from 2nd month to the end of experiment at 1% level. Maximum live weight gain was observed at T₃ treatment group where extra wheat bran was added. Daily live weight gain and selling price were more in the steers of T₃ group but net return was observed maximum in the steers of T₂ group. It may be concluded that combination of UMS and wheat bran had an influencing effect on live weight gain.

Key words: Steer, UMS, feed intake, live weight gain, FSRD site

Introduction

Meat production from cattle and goat is insufficient to fulfil the requirement of a large human population (120 million) in Bangladesh. Cattle are the important meat and milk producers in our country. There are 24.3 million cattle (FAO, 1998) in Bangladesh which are mostly reared sporadically in village condition with traditional feeding system. The annual meat production in Bangladesh is about 290000 metric ton where as beef contributes 161000 metric ton (FAO, 1998) of the total meat production. If the modern technologies are properly adopted in respect of feeding, breeding, management and disease control, the expected production will raise a much higher position. For instance, a large number of farmers involved in beef fattening just before 3-4 months of Eid-ul-Azha (a Muslim festival, where cattle are slaughtered) and get profitable prices when they sell the animal in the market. Low dressing percentage and relatively lower body weight gain is the common problem of our native cattle due to improper nutrition and management.

Cattle fattening for beef production have become an important business of the small farmers in Bangladesh. The Directorate of Livestock Services of the Government of Bangladesh has taken beef fattening as action program to generate income for the rural poor farmers. The farmers of Bangladesh mainly rear indigenous cattle for getting drought power, milk, calves and meat (Hashem *et al.*, 1999). Commercially, beef production has not yet been started today in Bangladesh. A sporadic fattening program are now introduced in our country. Huq *et al.* (1997) reported that the farmers were highly benefited by selling fattened cattle before the Eid-ul-Azha in Mymensingh district.

Urea treatment improves the nutritive value of straw and supply additional N for protein formation. It was found that if urea is supplied to the animals with straw then feed intake and digestibility of straw increased (Tareque, 1985). Urea is a non-protein-nitrogenous compound that can be used in the ruminant ration as protein supplement. Rumen micro flora convert urea to protein. Molasses is a mill by product which is an instant energy supplement. Wheat bran is also a mill by product, which is easily available, can provide energy, crude protein, minerals and vitamins. Therefore, the present study was undertaken with the following objectives:

- 1) To study the effect of UMS and wheat bran on feed intake in steers.
- 2) To study the effect of UMS and wheat bran on live weight gain in steers.
- 3) To grow awareness of the people about UMS feeding to the steers for fattening.

Materials and Methods

The experiment was conducted at FSRD (Farming Systems Research and Development Site, Golapgonj, Sylhet. Four farmers

were selected for these experiments. Twelve steers were bought from local market and gave 3 steers to each farmer. Ages of these steers were more or less than 2.5 years.

Treatments are T₁= Untreated straw, T₂= UMS (urea molasses straw) and T₃ = UMS + wheat bran. Four hours grazing was

Table 1: Type of ration supplied to the experimental animal

Feed ingredients	Treatments		
	T ₁	T ₂	T ₃
Rice straw (kg)	3.2	-	-
Urea Molasses Straw(UMS) (kg)	-	3.5	3.5
Green grass (kg)	3.0	3.0	3.0
Wheat bran (kg)	-	-	0.5
Common salt (g)	50.0	50.0	50.0

allowed for every treatment group. Average initial body weight of the steers of T₁, T₂, and T₃ were 144.75, 163.00 and 170.00 kg respectively. Common salt was supplied in the ration as mineral supplement and fresh water *ad-libitum*. Table 1 shows the experimental ration for three treatment groups. Before starting the experiment, they were allowed to 15 days to adjust themselves with the experimental condition and diet. Deworming drugs were introduced before starting the experiment.

Body weights were measured at every fortnightly up to 4 months early in the morning. The experiment was conducted at 15 July to 15 November 1999. Statistical analysis was done to see the significance of the findings with the principles of Zaman *et al.* (1982) following computer package MSTAT-C.

Results and Discussion

The feed intake by several treatment groups is shown (Table 2). The mentioned values are the mean amount of dry matter consumed by the steer from roughage and concentrate. The mean DM intake of T₁, T₂ and T₃ treatment groups were 4.27± 0.25, 4.60± 0.33 and 4.83± 0.46kg respectively. There was significant difference (p< 0.05) in DM intake in 9th, 11th, 13th and 15th weeks at the experimental period. DM intake significantly differs in T₂ and T₃ treatment groups after 7th week from starting the experiment. Rahman (2000) showed that bulls of urea treated group intake more (4.50 ± 0.06kg DM) than untreated group (4.08 ± 0.63kg DM). Huque and Chowdhury (1997) also stated that UMS increases the feed intake and digestibility. Live weight of the steers of T₁, T₂ and T₃ treatment groups are shown in Table 3. Average live weight gain/animal/day were 204.17, 400.0 and 418.75g in case of T₁, T₂ and T₃ treatment groups respectively. Live weight changes in T₂ and T₃ treatment groups were significantly different from 2nd month to the end at 1% level. At the first month of experiment (3rd and 5th week) body weight changes were significant at 5% level. Maximum live weight gain observed in T₃

Table 2: Feed intake (kg) of beef cattle (steers)

Experimental week	Treatment			Level of significance
	T ₁	T ₂	T ₃	
1 st	3.91	4.08	4.19	NS
3 rd	4.01 ^b	4.14 ^b	4.56 ^a	*
5 th	4.21	4.48	4.40	NS
7 th	4.34	4.53	4.50	NS
9 th	4.23 ^b	4.79 ^a	4.73 ^a	**
11 th	4.08 ^b	4.83 ^a	5.03 ^a	**
13 th	4.48 ^b	4.59 ^b	5.19 ^a	**
15 th	4.59 ^b	4.98 ^{ab}	5.34 ^a	**
17 th	4.61	4.96	5.55	NS
Mean± SD	4.27± 0.25	4.60± 0.33	4.83± 0.46	
NS-non significant		* significant at 5% level		
** significant at 1% level		a,b- ranking letter		

Table 3: Body weight gain of beef cattle (steers)

Experimental week	Body weight (kg)			Level of significance
	T ₁	T ₂	T ₃	
Initial body wt.	144.75 ^b	163.00 ^{ab}	170.00 ^a	*
3 rd	146.25 ^b	167.00 ^{ab}	173.00 ^a	*
5 th	149.50 ^b	172.25 ^{ab}	177.75 ^a	*
7 th	152.25 ^b	178.25 ^a	183.75 ^a	**
9 th	156.25 ^b	185.00 ^a	191.00 ^a	**
11 th	159.50 ^b	192.25 ^a	199.25 ^a	**
13 th	162.50 ^b	199.25 ^a	206.75 ^a	**
15 th	166.25 ^b	205.75 ^a	214.75 ^a	**
Final body wt.(17 th)	169.25 ^b	211.00 ^a	220.25 ^a	**
Total body wt. gain (kg)	24.50 ^b	48.00 ^a	50.25 ^a	**
Body wt. gain/day (g)	204.17 ^b	400.00 ^a	418.75 ^a	**
NS-non-significant		* significant at 5% level		
** significant at 1% level		a,b- ranking letters		

Table 4: Cost-benefit analysis of the beef fattening

Parameters	Treatments		
	T ₁	T ₂	T ₃
Cost (Tk.)			
Buying	3026	3417	3855
Feed	1300	1500	1800
Medical	200	200	200
Total	4526	5117	5855
Return (Tk.)			
Dung	200	200	200
Sale	5000	7000	7500
Gross	5200	7200	7700
Net return (Tk.)	674	2083	1845

treatment group where extra wheat bran was added. Rahman (2000) worked with two groups of bull, found that the body weights gain were 492.67 and 365.33g in urea treated and control group respectively. Chowdhury and Haque (1998) stated that the mean live weight gain were 292, 125 and 19g in case of UMS, UGS and US (Untreated straw) supplementation. Hossain *et al.* (2001) worked with two groups of dairy cows and calves and observed that the body weight changed negatively (-57.40g/day) in the cows of control group and increased (37.50g/day) in the cows of UMS group. In case of calf daily weight gain were 96.99 and 139.35g in case of control and UMS group respectively.

It was observed from Table 4 that the average daily feed cost of T₁, T₂ and T₃ treatment groups were Tk. 10.83, 12.50 and 15.00 respectively. Management cost (Deworming + labor cost) was same (Tk. 200). Average buying cost of steers of T₁, T₂ and T₃ treatment groups were Tk. 3026, 3417 and 3855 respectively. Gross return were earned from selling of fattened steers and from dung. Net return obtained were Tk. 647, 2083 and 1845 from T₁, T₂ and T₃ treatment groups respectively. Daily live weight gain and selling price were more in the steers of T₃ group but net return was observed maximum in the steers of T₂ group. It was suggested from the experiment that cattle fattening is more beneficial with only UMS and green grass supplementation. Hashem *et al.* (1999) stated that Tk. 3647.79 was earned from each cattle from cattle fattening program in Bangladesh. From this study it can be concluded that UMS and wheat bran in combination have an influencing effect on live weight gain. Bangladesh have a large cattle population and can produced more meat and meat byproducts by feeding UMS in a large scale in the rural areas.

Acknowledgment

Financial support from World Bank is greatly acknowledged.

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