

**PJN**

ISSN 1680-5194

PAKISTAN JOURNAL OF  
**NUTRITION**

**ANSI***net*

308 Lasani Town, Sargodha Road, Faisalabad - Pakistan  
Mob: +92 300 3008585, Fax: +92 41 8815544  
E-mail: [editorpjn@gmail.com](mailto:editorpjn@gmail.com)

## Comparison of Growth Rate of Male Buffalo Calves under Open Grazing and Stall Feeding System

M. Afzal, M. Anwar, M.A. Mirza and S.M.H. Andrabi  
Animal Sciences Institute, National Agricultural Research Centre, Islamabad, 45500, Pakistan

**Abstract:** This study was conducted to compare the effect of open grazing system and feeding green fodder at the stall (cut and carry system) on the growth of male buffalo calves. Twelve male buffalo calves (of Nili Ravi breed) were either grazed ( $n = 5$ ) on natural pasture or were offered seasonal green fodder ad lib in the manger ( $n = 7$ ). The calves were kept on these treatments for 9 months. Live body weight of the calves was recorded at the start of trial and then fortnightly. The overall weight gain per day over nine months of feeding period did not differ significantly between open grazing ( $0.415 \pm 0.028$ kg) and stall fed groups ( $0.433 \pm 0.056$ kg) ( $P > 0.05$ ). It is concluded that grazing on natural pasture may result in growth of male buffalo calves comparable to that after feeding them cultivated green fodder at the manger.

**Key words:** Buffalo calves, growth rate, grazing, stall feeding

### Introduction

The world demand for animal products in human diets is steadily increasing due to growth in population and per capita consumption (Delgado *et al.*, 1999). In South Asia, this demand is projected to increase 43% by, 2020 from a low base of 70kg per annum in, 1993. There is a need to test/establish economic and efficient livestock production protocols to meet this demand of animal products. Male buffalo calves make an important resource to be exploited in this regard. Male buffalo calves usually do not receive proper attention from the buffalo farmers in Pakistan. However, if fed and managed properly from fattening point of view, they can bring good economic return to the farmer. As feed is the major input in livestock production activities, there is a need to develop economic feeding packages for fattening/growing male buffalo calves involving minimum time and financial input. Adequate amounts of high quality colostrums at birth, sufficient quantities of milk during suckling and adequate feeding after weaning are important steps for the overall well being and growth of calves. It has been observed that out of three major livestock production systems namely 'grazing', 'mixed crop livestock' and 'industrial (i.e. feedlots)', grazing makes least use of grains (Corbet, 2001). Nearly half the world's land area is grazed (Sere and Steinfeld, 1996) and supports about 360 million cattle and more than 600 million sheep and goats (de Haan *et al.*, 1997) and other herbivores. Therefore, the present study was designed to compare the effect of open grazing system and feeding green fodder at the stall (cut and carry system) on the growth of male buffalo calves.

### Materials and Methods

Twelve male buffalo calves (of Nili Ravi breed) born in August and September, 2003 at National Agricultural

Research Center, Islamabad were used in this study. The calves were 3 months of age at start of trial. They were divided into two groups balanced for weight and age and were put on following treatment.

1. Open grazing group ( $n = 5$ ): calves were grazed 6-8 hours daily on natural pasture
2. Cut and carry system (stall feeding) group ( $n = 7$ ): calves were offered seasonal green fodder ad lib in the manger. The fodder available during the study period was oats (December-April) and maize (May-August).

The calves were kept on these treatments for 9 months. They were given bath daily and had free access to clean drinking water during the trial. Animals were vaccinated against HS and FMD at the age of four months. A broad spectrum anthelmintic was administered orally at the age of two month and then on three monthly basis. Live body weight of the calves was recorded at the start of trial (initial body weight) and then fortnightly. Final weight was recorded at the end of trial period i.e. 9 months. Overall weight gain and average daily gain were calculated after feeding period of 9 months (1<sup>st</sup> December to 31<sup>st</sup> August). Weight gained over 9 months of period was compared by T-test.

### Results and Discussion

Mean ( $\pm$  SD) values of birth weight, initial weight at start of the trial, final weight after 9 months of feeding, total weight gain over 9 months and weight gain per day are shown in Table 1. The fortnightly weight of calves in two groups has been shown in Fig. 1. The overall weight gain over nine months of feeding period did not differ significantly between two groups ( $P > 0.05$ ). The growth rate recorded in present study was comparable to that reported by Tahir *et al.* (1989) who noted a 0.52kg

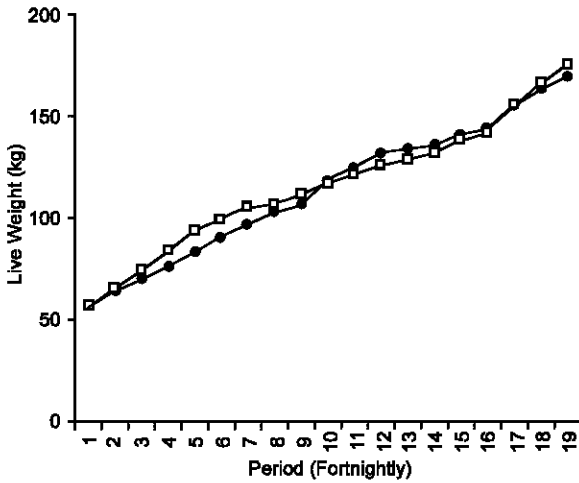


Fig. 1: Growth rate (fortnightly) of buffalo calves either fed green fodder (ad lib) in the stall or grazed for 6-8 hours on natural pasture from December 1 to August 31.

Table 1: Weight gain of buffalo calves after 9 months of either feeding green fodder in the stall or open grazing on natural pasture

Parameters	Treatment Group	
	Stall feeding	Open Grazing
Birth Weight (kg)	34.857±3.485	36.600±3.209
Initial Weight (kg)	56.429±8.658	56.200±4.550
Final Weight (kg)	175.000±20.841	170.000±7.106
Total Weight Gain (kg)	118.571±15.447	113.800±7.823
Weight gain per day (kg)	0.433±0.056	0.415±0.028

Values are mean±SD. Values in the same row did not differ significantly (P > 0.05)

growth rate per day on Sudan sorghum hybrid. It was higher than that recorded by Akram and Khalid (1982) who fed calves on oats silage but lower than that

observed by Gilani *et al.* (1982) who fed calves on a concentrate mixture. The important finding of the study was that grazing on natural pasture may result in growth of male buffalo calves comparable to that after feeding them cultivated green fodder at the manger.

**References**

Akram, M. and M. Khalid, 1982. Silage feeding trial on buffalo calves. Pak. Vet. J., 2: 45-46.

Corbet, J.L., 2001. The challenging demand for increases in meat and milk production: enhancing the contributions of grazing livestock. Asian-Aust. J. Anim. Sci., 14: 1-12.

Delgado, C., M. Rosegrant, H. Steinfeld, S. Ehui and C. Courbois, 1999. Livestock to, 2020. The Next Food Revolution. Food, Agriculture and the Environment Discussion Paper No. 28, IFPR/FAO/ILRI. International Food Policy Research Institute, Washington, D.C.

De Haan, C., H. Steinfeld and H.W. Blackburn, 1997. Finding a balance. Livestock-Environment Interactions. Report of FAO/USAID/World Bank Study. Food and Agriculture Organization, Rome.

Gilani, A.H., N. Ahmad and A. Nuzhat, 1982. Comparative efficiency of male buffalo and cow calves for utilization of various nutrients (1) restricted feeding system. Pak. Vet. J., 2: 65-66.

Sere, C. and H. Steinfeld, 1996. World Livestock Production Systems: Current Status, Issues and Trends. FAO Animal Health and Production Paper No. 127. Food and Agriculture Organization, Rome.

Tahir, M.S., S. Rehman and S. Javed, 1989. Economics of fattening of male buffalo calves fed on Sudan sorghum hybrid. Pak. Vet. J., 9: 146-147.