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## GROWTH RATE OF VARIOUS INDIGENOUS BOVINE BREED FED ON SHANDAR WANDA AT LIVESTOCK RESEARCH AND DEVELOPMENT STATION SUREZAI PESHAWAR

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### ABSTRACT

In the absence of any typical beef breed of cattle and buffaloes in Pakistan, the present study was conducted to exploit the potential of beef production of indigenous breeds fed on Shandar Wanda. A total of 43 calves contained 8 cross bred calves, 7 Dhani calves, 6 Lohani, 6 Sahiwal, 6 Bhagnari and 10 Nili Ravi buffalo calves were selected and purchased from local market for this trail. The calves were fed on Shandar Wanda and weekly growth rate was recorded. Sahiwal calves showed highest daily weight gain 0.47 kg/day. During first period (1-7 week) and in 2<sup>nd</sup> period (8-14 week) of experiment the highest body weight (BW) was found in Nili Ravi buffalo calves (112.9 kg and 133.7 kg, respectively). During 3<sup>rd</sup> period of experiment (15-21 Week) the highest body weight was found in Sahiwal calves i.e. 149.25 kg. The final BW in 3<sup>rd</sup> period of experiment ranged from 108 kg in Lohani breed calves to 149.25 kg in Sahiwal breed calves. The time period effect on growth rate was significant ( $P < 0.01$ ). It is concluded from the present study that the Sahiwal breed of cattle and Nili Ravi buffalo have a potential of beef production on special fed ration.

**Keywords:** beef production, shandar wanda, growth performance, beef breeds, feeding, sahiwal cows, Nili Ravi buffaloes.

### INTRODUCTION

Livestock plays an important role in the economy of the country. Livestock sector contributed approximately 51.8 percent of the agriculture value added and 11.3 percent to national GDP during 2008-09. Gross value addition of livestock at current cost factor has increased from Rs. 1052 billion (2007-08) to Rs. 1287 billion (2008-09) showing an increase of 22.3 %. The value of livestock is 6.1% more than the combined value of major and minor crops (Economic survey of Pakistan 2008-09). The total red meat production was 1.09 and 0.72 million tons for beef and mutton, respectively. The per capita consumption indicates a growing demand of meat in the years to come. Calves for fattening may come from the dairy herd.

Per capita meat availability (kg/annum) is far below the normal physiological requirement of healthy individual. In contrast, the human population in the country is increasing with an annual growth rate of 2.2 percent and the trend in increase is continuous. This continuous increase in human population and positive shifts in the socio-economic status has resulted in increased demand of meat in the country. However, the production of meat is almost stagnant for the last one decade. The supply and demand situation analysis revealed that in future if the production remains the same or below 4-5 percent annual increase in production there will be a big gap in demand and supply of meat in the country. There are many studies, which support this upcoming meat production scenario and predict that South Asian countries including Pakistan may face deficiency of meat and hence decline in per capita meat availability (PBIT, 2010).

Pakistan is home tract of some of the finest breeds of *Bos indicus* cattle. These include milch breeds

such as Sahiwal, Cholistani and Red Sindhi, the dairy-cum-draft Thari and the draft breeds such as Bhagnari, Dhanni, Dajal, Rojhan and Lohani. They have adapted very well to the hot humid climate of the country and are resistant to the prevalent diseases. They are able to survive and perform multiple function of providing milk, meat and draft power under resource poor feeding and management systems. Unfortunately there is no any single beef breed in Pakistan.

Pakistan enjoys certain natural advantages to become a major player in the global meat market. Firstly the country has large tracts that are relatively disease-free (e.g. Cholistan) but this status has not been properly capitalized or marketed. Secondly, the taste preference of Middle East consumers is mainly for young cattle calves tender meat; Pakistani meat has a distinct advantage in this sector. Anecdotal feedback from western consumers has also validated this "taste advantage" factor of Pakistani meat.

Still this may be fully validated in a full blown consumer taste research study. On the contrary the Indian meat model focuses mainly on frozen and buffalo meat of mature animals which does not necessarily taste better. Additionally cow slaughtering is totally banned in India. Nevertheless, Pakistan and India have competitive advantages in different market segments. Pakistan's advantage is in cattle and the chilled meat sector. Thirdly, given the proximity, the country can provide chilled meat at a more competitive pricing than anybody else to the Middle East region. (PBIT, 2010).

Meat production in Pakistan is a secondary farm enterprise and its potential has not been fully exploited. Current buffalo meat production systems are traditional and inefficient. The average gain in live weight per day is



1.87 lb up to one year and 1.46 lb up to two years of age (Bilal and Ahmad, 2004). In Pakistan there are neither specific breeds of cattle or buffaloes nor any specific rearing system for beef production. In the absence of any typical beef breed of cattle and buffaloes in Pakistan, because of their comparable growth rate with defined beef breeds of the world have the potential to serve as beef animal. The present challenge to the animal scientist is to sincerely exploit their potential (Bhatti and Khan, 1999). Keeping in view this challenge the present study was conducted to exploit the potential of beef production of indigenous breeds fed on Shandar Wanda.

### MATERIALS AND METHODS

The study was conducted at Livestock Research and Development Station, Surezai, Peshawar. A total of 43 calves (33 cattle cows and 10 buffalo calves) were selected for this trial. The calves were purchased from local market contained 8 cross bred calves, 7 Dhani calves, 6 Lohani, 6 Sahiwal, 6 Bhagnari and 10 Nili Ravi buffalo calves. All calves were 6 to 12 months of age. All the calves were weighed, sprayed against ectoparasites and dewormed with Nilzan plus. The calves were kept on stall feeding. The special feed (Shandar Wanda) was offered to calves at the rate of 3 kg per day per calve. The specially designed feed (Shandar Wanda) was prepared at Cattle Feed Mill in Livestock Research and Development Station, Surezai, Peshawar for this experiment. The composition of this feed was Cotton seed cake 10%, Cotton seed meal 6%, Rape seed cake/meal 10%, Wheat bran 33%, Maize gluten 20%, molasses (brix 78-80) 8%, Maize grain 10%, salt powder 1%, Dical. phos (Leiner) 1%, Lime 0.5% and Urea 0.5%. The wheat straw was fed at the rate of 3 % body weight. Drinking water was offered thrice a day. The green fodder matt grass and sorghum were offered in chopped form of 15 kg per calve daily. The weekly weight gain was recorded of individual calve. The experiment was continued for 21 weeks.

### Statistical analysis

The weekly growth rate were collected and data were maintained in MS excel file. Computer software SPSS 12 was used. Means were compared through Duncan's multiple range tests.

### RESULTS AND DISCUSSIONS

In present study Sahiwal calves showed highest daily weight gain 0.47 kg/day (Table-1). Jabbar *et al* 2009

found average daily weight gains of Sahiwal calves during 92 days period of 0.849. Ahmad and Asghar (1994) reported similar results in Sahiwal (0.92 to 1.17kg). Cross breed calves showed average daily weight gain of 0.33 kg/day at 2<sup>nd</sup> period. Jabar *et al.* (2006) found average daily weight gain of 0.71 kg and in another study of Jabber *et al.* (2009) found 0.89 kg average weight gain in cross bred calves. The difference in daily weight gain from the present study may be due to different environmental condition and management practices. The Buffalo calves showed average daily weight gain of 0.45 kg/day. Ahmad and Asghar (1994) reported (0.83 to 1.0 kg/day).

The time period effect on growth rate was significant ( $P < 0.01$ ) (Figure-2). Total time period of the experiment was 21 weeks, divided in to 3 periods (Period 1: 1-7 weeks, Period 2: 8-14 weeks, Period 3: 15-21 weeks). The average daily weight gain in 1<sup>st</sup> period (1-7 weeks) was 0.23 kg/day (1<sup>st</sup> group) to 0.31 kg/day (3<sup>rd</sup> group). Willson *et al* 1994 found average daily gain (ADG) for period 1 (2 - 7 weeks) ranged from 1.20 kg/d to 1.52 kg/d. Average daily weight gain in 2<sup>nd</sup> period was found in range of 0.25 kg/day (2<sup>nd</sup> group) to 0.45 kg/day (Nili Ravi Buffalo). Willson *et al* 1994 found average daily weight during period 2 (7 to 16 weeks) similar to those in period 1 ranging from 1.30 to 1.71 kg/d. The difference from the present study was due to different genetic potential of breeds and environmental variation.

During first period (1-7 weeks) of experiment the highest body weight (BW) was found in Nili Ravi buffalo calves 112.9 kg followed by 96.6, 92, 90.75, 82 and 74.75 kg in Dhani, F Cross, Sahiwal, Lohani and Bhagnari breeds, respectively (Table-2). In 2<sup>nd</sup> period (8-14 weeks) of experiment the highest Body weight was found in Nili Ravi calves 133.7 kg followed by Sahiwal, Dhani, F Cross, Lohani and Bhagnari breeds (127.5, 123.4, 120.5, 108 and 104.25, respectively). During 3<sup>rd</sup> period of experiment the highest body weight was found in Sahiwal calves 149.25 kg followed by 147.8, 133.5, 125.25, 118.6 and 108 kg in Nili Ravi, F Cross, Bhagnari, Dhani and Lohani breeds, respectively.

In this study the final BW in 3<sup>rd</sup> Period of experiment ranged from 108 kg in Lohani breed calves to 149.25 kg in Sahiwal breed calves. Wilson *et al* (1994) obtained Mean final BW over all groups, 187.1 kg and ranged from 176.2 for group 6 to 195.7 for group 5. They conducted experiment purely on beef breeds while local breeds were selected in this present trial which have low potential of getting higher final BW.



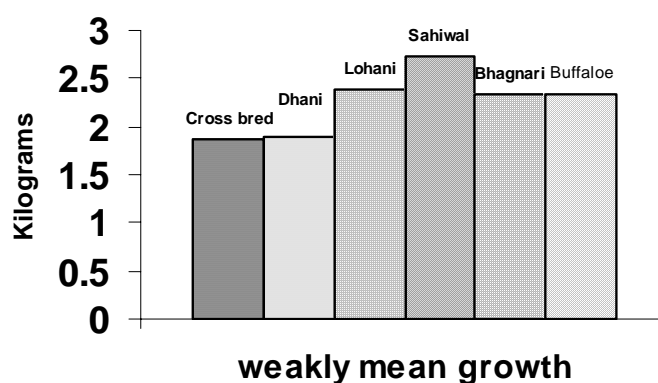
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**Table-1.** Mean daily growth rate of various indigenous breeds at different period of experiment.

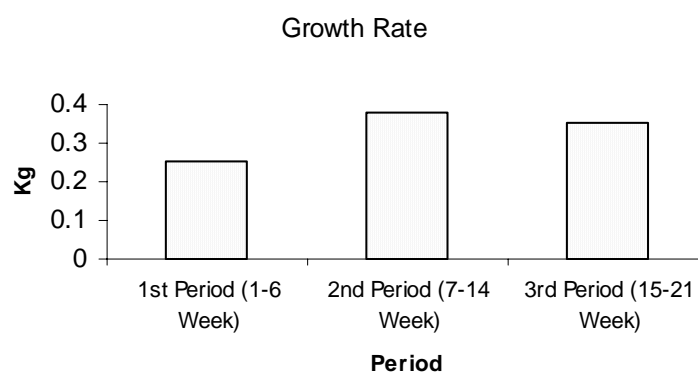
Groups	1 <sup>st</sup> Period (1-7 weeks)	2 <sup>nd</sup> Period (8-14 weeks)	3 <sup>rd</sup> Period (15-21 weeks)
F Cross	0.23	0.33	0.26
Dhani	0.26	0.25	0.32
Lohani	0.25	0.38	0.41
Sahiwal	0.31	0.41	0.47
Bagnari	0.23	0.44	0.34
Buffalo (NR)	0.25	0.45	0.32

**Table-2.** Mean BW (Body Weight) of various indigenous breeds at different periods of experiment.

Breed	1 <sup>st</sup> Period (1-7 weeks)	2 <sup>nd</sup> Period (8-14 weeks)	3 <sup>rd</sup> Period (15-21 weeks)
F Cross	92	120.5	133.5ab
Dhani	96.6	123.4	118.6ab
Lohani	82	108	108b
Sahiwal	90.75	127.5	149.25a
Bagnari	74.75	104.25	125.25ab
Buffalo(NR)	112.9	133.7	147.8
P value	NS	NS	NS



**Figure-1.** Weekly growth rate of various indigenous breeds of Pakistan.



**Figure-2.** Daily growth rates in different periods of experiment.



## CONCLUSIONS

Sahiwal breed of cattle and Nili Ravi buffalo have a potential of beef production on special fed ration. Despite great deficiency of specific local beef breed, the beef production potential of indigenous breed can be explored by the advantage of special feeding strategy.

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