



Studies of different feed combination of growth performance in Sahiwal cows

Nilesh S. Mawal, S.D. Chavan and M.S. Mahalle

ABSTRACT : The experiment entitled studies of different feed combination of growth performance in sahiwal cows was conducted for period of 95 day. Six sahiwal cows were divided into three groups on the nearness of age and weight. Three feeding treatment were studied namely T_1 (Jowar straw adlib + 5 kg Green Hy. napier + 1kg concentrate), T_2 (50% Jowar straw adlib + 50% Soybean straw adlib + 5 kg Green Hy. Napier + 0.750 kg concentrate), T_3 (Soybean straw adlib + 5 kg Green Hy.Napier + 0.500 kg concentrate) was fulfill requirement of sahiwal cow in all treatments. Experimental feeding lasted 95 days including 7 days gap for reducing residual effect before starting second and third period. The Growth performance of cow on jowar and soybean straw feeding was judged on the basis of body weight gain in body measurement and intake of nutrients per kg gain. Growth rate was higher in cows feed combination of jowar and soybean straw than sole feed of jowar and soybean straw was found economical for gain in weight in sahiwal cows. The per kg gain of body weight was higher in T_2 treatment. It was over experimental result, the treatment T_2 showed better and desirable result as compared with T_1, T_3 treatment.

KEY WORDS : Jowar straw, Soybean straw, Concentrate, Sahiwal cows

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INTRODUCTION

Among the zebu cattle of India, Sahiwal is considered as the best milch breed of India recognized for its highest milk production, resistance to diseases and adaptability to varied environmental conditions. The extensive and indiscriminate crossbreeding of the native cattle with the exotic breeds of Holstein Friesian and Jersey for high levels of exotic inheritance (above 75%) resulted in

: reduced conception level, repeat breeding problems, poor
: heat tolerance and adaptability, low disease resistance
: and more management problems leading to low
: productivity of the animals. The economic success of
: dairy cattle depends upon the good production and
: optimum reproduction performance of the herd. Hence
: a research study was undertaken under the Dr. Panjabrao
: Deshmukh Krishi Vidyapeeth, Akola, Napier grass. It is
: one of the highest yielding perennial tropical fodder
: grasses and considered as cut-and-carry forage for stall
: feeder systems. The characteristic features of CO-3
: fodder grass are profuse tillering, high yield potential, high
: dry matter and crude protein content, quick regeneration
: capacity, high leaf to stem ratio, high palatability, free
: from pest and diseases and low in adverse factors. Napier
: grass is also called as Elephant Grass due to its tallness

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and vigorous vegetative growth. The plants tiller freely and a single clump may produce more than 50 tillers under favorable climatic and soil conditions. Unfortunately, the grass coarse-textured, the leaf blade and sheaths hairy, leaf margins sharply serrated and stems less juicy and fibrous. In 1953, a cross was made in India between Bajra which is more succulent, leafy, fine-textured, palatable, fast growing and drought resistant and Napier to combine these qualities with its high yielding potential. Hybrid Napier is a perennial grass which can be retained on field for 2-3 years. Compared to Napier grass, Hybrid Napier produces numerous leaves. The first cut is taken from 60 to 75 days after planting. Subsequent cuts are taken after 30-45 days or when the plants attain a height of 1½ m (See figure). Annually at least 6 to 8 cuts are possible. The fodder has to be cut closer to the ground level for more profuse tillering. The grass grows throughout the year in the tropics. The optimum temperature is about 31° C. Light showers alternated with bright sunshine are very congenial to the crop. Total water requirement of the grass is 800-1000 mm. Hybrid Napier can grow on a variety of soils. Light loams and sandy soil are preferred to heavy soils. The soil has to be wet at the root zone but should not be stagnated. The grass does not thrive well on water logged and flood prone lands. Phenomenal yield are obtained from very deep fertile soil rich in organic matter and nutrient elements. It tolerates a pH range from 5 to 8.

MATERIAL AND METHODS

The present investigation entitled “studies of different feed combination of growth performance in sahiwal cows was conducted at Livestock instructional Farm, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, for a period for 95 days. The material used and method employed for this investigation is presented in the following pages under appropriate head. The Livestock instructional Farm is located at Akola, which is one of

the districts of Vidarbha region in Maharashtra state. The environmental condition is one of the most dominant factors. It is therefore, necessary to describe the topographical and climatological situation of the place. Akola is located on the latitude of 22.42° and longitude of 77.02° East with a height of 307.4 meter above mean sea level. Six sahiwal cows were divided into three groups on the nearness of age and weight. Three feeding treatment were studied namely T₁ (Jowar straw adlib + 5 kg Green Hy. napier + 1kg concentrate), T₂ (50% Jowar straw adlib + 50% Soybean straw adlib + 5 kg Green Hy. napier +0.750 kg concentrate), T₃ (Soybean straw adlib + 5 kg Green Hy. napier + 0.500 kg concentrate) was fulfil requirement of sahiwal cow in all treatments. Experimental feeding lasted 95 days including 7 days gap for reducing residual effect before starting second and third period. The samples of feed ingredients collected were analysed for proximate principles and chemical composition.

Health and sanitation:

The cow’s pens where the cows were housed during the period of experiment were cleaned daily. The byres and surrounding area were disinfected with phenyl. The help of veterinarian was taken whenever necessary. The cows were kept in open paddock from 8.00 a.m. to 9.30 a.m. daily.

RESULTS AND DISCUSSION

Chemical composition is one of the most important indexes of nutritive value of feed. Hence the chemical compositions of different feeds used in the present study the Sahiwal cow offered Jowar straw, soybean straw, green hybrid Napier and sugras concentrate mixture. It is observed from that Table 1 jowar straw, soybean straw, hybrid Napier and concentrate were containing 90.23, 87.62, 29.75 and 91.12 DM, respectively. The jowar straw was containing 3.74, 2.84, 51.52, 32.48 and 9.42 per cent

Table 1 : Chemical composition of feed stuffs (on % DM)

Particulars	Jowar straw	Soybean straw	Hybrid Napier (Green fodder)	Concentrate (Sugras dry ration)
DM	90.23	87.62	29.75	91.12
CP	3.74	6.13	5.77	17.34
EE	2.84	2.51	2.50	5.27
NFE	51.52	37.29	49.22	61.74
CF	32.48	44.21	26.28	11.84
Total Ash	9.42	9.86	16.23	3.81

CP, EE, NFE, CF and ash while soybean straw was containing 6.13, 2.51, 37.29, 44.21, 9.86 per cent, CP, EE, NFE, CF and ash, respectively. The contents of nutrients in hybrid napier containing 5.77, 2.50, 49.22, 26.28 and 16.23 per cent CP, FE, NFE, CF and Ash. The contents of nutrient in concentrate were 17.34, 5.27, 61.74, 11.84 and 3.81 per cent CP, EE, NFE, CF and ash.

Chemical composition of jowar straw is nearer with that of reported by Ibrahim *et al.* (1998). They also observed that the content of CP, CF, EE and NFE in jowar straw as 4.04, 37.34, 2.40 and 4.55 per cent, respectively. Similar observations were also noted by Kamble (2006) and Bansod (2008). Green Hybrid Napier contained 29.75% DM Along with 5.77, 2.50, 49.22, 26.28 and 16.23 per cent CP, FE, NFE, CF and total Ash on dry matter basis, respectively. The chemical composition reported by Pachauri and Negi (1976) and Gupta *et al.* (1978) for soybean straw are in the line with the present values. They reported protein value from 4.90 to 6.58 per cent. The present value falls between the reported values.

Growth performance at different ages of sahiwal cow:

The growth performance of cow on jowar and soybean straw feeding was judged on the basis of body weight gain in body measurement and intake of nutrients per kg gain. The results obtained in this regard are discussed in the following Table 2.

The mean for live weight gain in animals of different treatment group are presented in Table 2. Total weight gain were 3.696, 4.228, 3.983 kg for T₁, T₂ and T₃, respectively. The average final weight gain was highest in T₂ followed by T₃, and T₁ significantly lowest weight gain was recorded in T₁ treatment *i.e.* jowar straw feeding daily intake of DM was highest in the treatment T₂ which had adequate amount of DCP and TDN to cows. This situation might have favoured the growth in

cows.

The average daily body weight gain was 0.045, 0.052 and 0.049 kg per daily in T₁, T₂ and T₃ treatment, respectively. Pacola *et al.* (1985) observed mean daily gain of 0.098, 0.320, 0.459 and 0.511 kg, respectively by feeding sugarcane after mixing soybean straw. However Talokar (1993); Bansod (2008) and Adangale *et al.* (2009) reported beneficial effect on body weight of cows by feeding untreated SBS over that of feeding jowar straw.

Body measurement:

The body measurement like height, length and chest girth of cows was recorded overall period in order to assess the skeletal development. The average body measurements are shown in Table 3.

It is observed from that Table 3 that the differences exhibited significant differences in chest girth among the treatments, while gain in chest girth was higher (2.890 cm) in T₂ treatment and low in T₁ treatment (2.710 cm).

The gain in body length was 1.181, 1.535 and 1.350 in T₁, T₂ and T₃, respectively. This revealed that the gain in length was significantly highest in T₂ and lowest in T₁

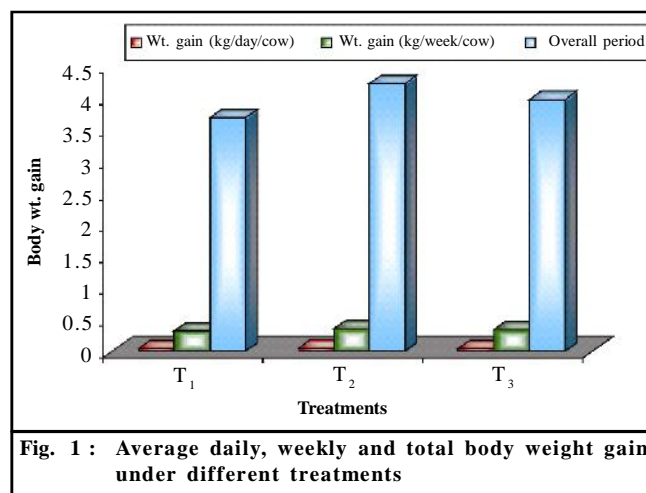


Fig. 1 : Average daily, weekly and total body weight gain under different treatments

Table 2 : Body weight gain of cow under different treatments

Treatments	Average Final body wt (kg)	Period weight gain	Weight gain (kg/day/cow)
T ₁	299.789	3.696	0.045
T ₂	300.181	4.228	0.052
T ₃	300.008	3.983	0.049
F test	-	Sig	Sig
S.E.±	-	0.159	0.001
C.D. (P=0.05)	-	0.511	0.005

Table 3 : Effect of different feeding treatment on body length and chest girth (cm)

Treatments	Average chest girth	Average gain in chest girth	Treatments	Average length	Average gain in body length
T ₁	159.015	2.710	T ₁	108.231	1.181
T ₂	159.375	2.890	T ₂	108.840	1.535
T ₃	159.095	2.750	T ₃	108.556	1.350
F test	-	Sig	F test	-	Sig
S.E. ±	-	0.097	S.E.±	-	0.100
C.D. (P=0.05)	-	0.310	C.D. (P=0.05)	-	0.320

Table 4 : Effect of different feeding treatment on body height (cm)

Treatments	Average body height (cm)	Average gain in body height (cm)
T ₁	130.745	1.530
T ₂	131.355	1.785
T ₃	131.071	1.686
F test	-	Sig
S.E. ±	-	0.068
C.D. (P=0.05)	-	0.220

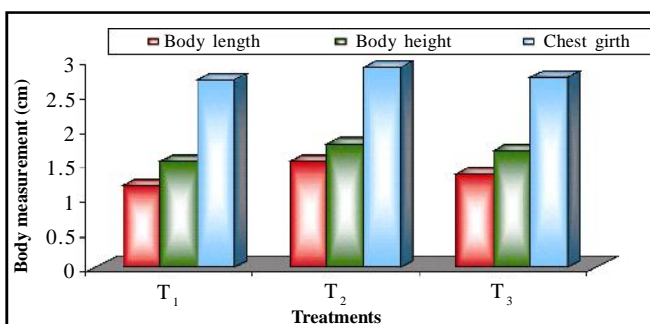


Fig. 2 : Effect of different feed combinations on body length, body height and chest girth in sahiwal cow

treatment.

It was observed that table increase in height was 1.530, 1.785 and 1.686 cm in treatment T₁, T₂ and T₃ in experimental cows, however, the differences in height did not influence significantly. It is evident from table that cow from T₂ group showed more body height as compared to other treatment and lowest in T₁ treatment.

Generally significant changes in body measurements are not observed in adult matured animal. However, one can know the skeletal development of animal from these body measurements. From this point of view the observations recorded in Table 3 and 4 indicate that sahiwal animals were of medium type having similar proportion of height and length. Much variation in body measurements between the treatments was not observed. A slight gain in height and Length of animal was noticed.

Moreover, notable change in chest girth was observed. This could be attributed to the effect of feeding strategy on the expansion of chest girth development. The cows maintained on soybean based diet exhibited more development of chest organ as against the growth noticed in cows fed with jowar based diet.

It was further noted that the cows from T₂ and T₃ groups exhibited signs of fatty tendency like rounded rump, thick neck and fatty back region at the end of experiment. This means the increase in body weight and measurement of T₂ and T₃ cows was not the true growth but it was on account of fat deposition in the body. Similar observations were recorded by Talokar (1993) during the study on the performance of buffalo heifer on soybean straw based diet. Moreover, this logic is explained by Singh (1983) where he reported that animals fed with soybean straw had development of adipose tissues on account of microbial digestion which converts unsaturated fatty acid into saturated once and are subsequently absorbed through rumen mucosa.

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