

Effect of Varying Levels of Concentrate Feed Formulation on Cost Structure in Osmanabadi Weaned Kids

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ABSTRACT: The experiment was conducted on Effect of varying levels of concentrate feed formulations and cost structure in Osmanabadi weaned kids. An experiment with Complete Randomized Design (CRD) for analysing the varying feed formulations and cost structure of commercial and homemade concentrate mixture under different concentrate feeds was conducted in Parbhani over a period of 90 days while taking concentrate feed as main factor. Eighteen Osmanabadi weaned kids selected with average body weight and their ages in three treatments as T₁- Basal diet + Sugras as a concentrate mixture I (control), T₂ - Basal diet + Concentrate mixture II (GNC 20% + jowar 22% + Wheat bran 5% + Tur 10% + Gram 10% + Mineral mixture 2% + Salt 1%), T₃ - Basal diet + Concentrate mixture III (Soya Doc 20% + jowar 20% + Wheat bran 5% + Tur 10% + Gram 12% + Mineral mixture 2% + Salt 1%). In present investigation total six kids in each treatment T₁, T₂, and T₃, respectively. In this experiment different feed formulations and cost structure also studied with efficient concentrate feed mixture. From the experimental findings it was observed that concentrate feed varies its cost by different type of formulations, high quality ingredients required high cost as compared to homemade ingredients.

Note:- (In basal diet include green fodder (Dashrath grass, Paragrass, Napier grass, Hatga Subhabul) and dry fodder (Kadbi, Soyabean straw) as per the age and body weight required).

Keywords: Cost structure, Feed formulation, Osmanabadi kids, Sugras, concentrate.

INTRODUCTION

An important part of the Indian economy is livestock. The livestock industry saw an increase in the value of its output of 4.8% annually. The goat proves why it is called "the poor man's cow". Goats can have longer productive lives than cattle because of their shorter generation interval. They fall into the category of low-income items due to their small size and comparatively low individual cost. The daily challenges of raising larger animals, such as buffaloes and cattle, are increasing. The GDP of the livestock industry is 4.11% of the overall GDP of agriculture, or 25.6%. (Anonymous, 2019) population at about 535.78 million. India has 192.49 million cattle, 109.85 million Buffalo, Goats 148.88 million and Sheep 74.26 million populations. India has second largest poultry market in the world and also second largest producer of fish in world. Register breed of Cattle; 41, Buffalo; 13, Goat; 28, Sheep; 42 founds in India (20th Livestock Census 2019).

One of the key facets of the animal feed business is feed formulation. One of the biggest challenges that industries face as customer demand grows is balancing feed stocks. The quality of feed, which is dependent on the raw materials used to formulate feed (ration), is

what drives the development of the animal feed industry. According to Afolayan and Afolayan (2008), ration formulation is the process of combining various ingredients in the proportion required to give the animal the right amount of nutrients at a given stage of production. Ration is the total amount of feed given to the animal on a daily basis. The main issue in cattle production is the expensive and scarce nature of high-quality feed, which has a negative impact on reproduction, health, and production and reduces profitability and productivity (Jabber and others 2006). One of the byproducts of oil extraction is groundnut cake. Compared to other large organic manures, this concentrated organic manure has more nutrients. According to Desai *et al.* (1999), the cake has 45–60% protein, 22–30% carbohydrates, 3.8–7.5% crude fiber, and 4–6% minerals. Soybean meal comprises 44% crude protein and all essential amino acids, with the exception of cysteine and methionine, which have suboptimal concentrations. The high cost of good quality concentrate is making it increasingly difficult for marginal farmers to afford it.

MATERIAL AND METHODS

The trial was conducted at Goat Unit, College of Agriculture VNMKV, Parbhani. For experiment the

same age and uniform conformation of 18 weaned kids was selected from Goat Unit, College of Agriculture VNMKV, Parbhani. The experimental period was 90 days. The experiment was conducted during 1st Feb. 2023 to 1st May 2023 at Goat Unit, College of Agriculture VNMKV, Parbhani. Kids were grouped under same weight and average age in three treatments groups and six kids in each group. All the kids are free from diseases and physiological disorders. The observation recorded during the research was Body weight gain, body height, body length, chest girth, belly girth. The data was statistically analyzed by Complete Randomized Design (CRD).

RESULT AND DISCUSSION

The experimental period was 90 days (Feb. 1 to May 1 2023) and observation from experiments was recorded and result was analyzed statistically.

Feed formulation of concentrate mixture: Feed formulation is one of the important aspects of animal feed industry. Balancing the feed stuffs is big challenge faced by the industries when the cost and requirement increases. Development of animal feed industry depends upon the quality of feed and quality of feed is based upon the raw material used to formulate feed (ration).

Chemical composition. Balanced feed nutrients are important for proper growth and development of livestock. Feed analysis is important to analyze composition of feed in order to meet nutrient requirement of livestock animals. Better feed management can be obtained by feed analysis.

It was observed (Table 1). The values of DM, CP, EE, CF, NFE, Total Ash of concentrate mixture of three treatments are given in table 1. It shows that Dry Matter content of Treatments T₁, T₂, and T₃ are 90.21, 90.20, and 90.16, respectively. Amount of CP found in T₁, T₂, and T₃ is 18.10, 19.26 and 17.80, respectively. Crude Fiber content is 10.48, 10.68, and 12.38 in treatments T₁, T₂ and T₃, respectively.

Table 1: Concentrated mixture as per treatment.

Concentrate mixture-I Ingredient T1	Percentage (%)	Concentrate mixture-II Ingredient T2	Percentage (%)	Concentrate mixture-III Ingredient T3	Percentage (%)
(commercial conc.) Sugars	100	GNC	20	Soya Doc	20
		Maize	30	Maize	30
		Jowar	22	Jowar	20
		Wheat bran	05	Wheat bran	05
		Tur	10	Tur	10
		Gram	10	Gram	12
		Mineral mix.	02	Mineral mix.	02
		Salt	01	Salt	01

Table 2: Chemical composition of feed stuff.

Particulars	Concentrate mixture I (Sugar)	Concentrate mixture II	Concentrate mixture III
DM	90.21	90.20	90.16
CP	18.10	19.26	17.80
CF	10.48	10.68	12.38
EE	4.18	4.16	4.12
NFE	59.62	60.70	60.24
Total Ash	4.44	5.20	5.46

Amount of Ether extract d in treatment T₁, T₂, and T₃ are 4.18, 4.16, 4.12, respectively. Nitrogen free extract found 59.62, 60.70 and 60.24 in treatments T₁, T₂ and T₃, respectively. Total ash was found highest in T₃ (5.46 %) and it is found lowest in T₁ (4.44%) and T₂ (5.20%).

Economics of Feeding. Feeding cost was calculated at the end of 90 days of experimental period. The feed cost was calculated based on actual cost of feed and fodder at market. Cost of feeding commercial and homemade concentrate mixture was recorded and presented in Table 3 and cost per kg live weight gain was depicted in Fig. 1.

It is observed from Table 3 that total feed cost per kid was 876, 912.5 and 898.4 Rs. in treatment T₁, T₂ and T₃, respectively. The cost per kg live weight gain 288.15, 222.63 and 273.90 Rs. in treatment T₁, T₂ and T₃, respectively. It was seen from the results treatment T₂ has low cost per kg live weight gain and treatment T₁ has highest cost per kg live weight gain. It was determined from the discussion of the experimental results that the treatment T₂, concentrate mixture-II (homemade concentrate), exhibits more favorable results than the treatments T₃ and T₁.

It could be seen from Table 3 that MAIDC feed was not economical in terms of its cost/kg live wt. gain in comparison with homemade feed. Further, the physiological response of the growing kids under feeding of homemade concentrate (4.10, 3.28 kg body weight gain) was more as compared to MAIDC feed (3.04 kg body weight gain). While considering the input output ratio, cost of feed required to gain one kg live body weight needs Rs. 288.15 in MAIDC feeds while Rs. 222.63 and 273.90 are to be spent in feeding of homemade concentrate. Thus, goat keeper are to consider feeding of concentrate mixture prepared at their home, farm such ingredient which can be collected locally. This will also ease proper and uniform utilization of locally feed resources.

The data from the Table 3 showed similarities with Adangale *et al.* (2008) stated that the cost per kg of body weight growth was highest in treatment T₀ at RS 48.99 and was followed by treatments T₁ (Rs. 43.09) and T₂. The current findings are closer to current findings (Rs. 39.11). The reported figures do not match the present value. Anjum *et al.* (2014) noted that the price per kg of NRC ration provided was rupees (Rs. 17.37); the prices for stair-step low energy ration and stair-step high energy ration, were Rs. 13.06 and Rs. 20.12 respectively. Heifers fed SSF had an overall feed

cost that was 12% less than heifers fed according to NRC requirements.

Table 3: Economics of feeding commercial and homemade concentrate mixture to Osmanabadi kids.

Particular	Qty (Kg)	Rs.	Qty (Kg)	Rs.	Qty (Kg)	Rs.
Common Feeding Roughages charges/kid		480		480		480
Requirement of total homemade concentrate mix/kid	12		12		12	
Homemade Concentrate mixture/kid charges		396		432.8		418.4
Sugras (33 Rs / kg charged/kid)			-	-	-	-
GNC (55Rs./kg Charges/kid)			20	1100		
Soya DOC charges/kid (50Rs/kg)					20	980
Total cost of Feeding roughages + concentrates		876		912.8		898.4
Concentrate mix. Cost /kg	1	33.00	1	36.07	1	34.87
Total live weight gain	3.04		4.10		3.28	
Cost/kg live wt. gain		288.15		222.63		273.90

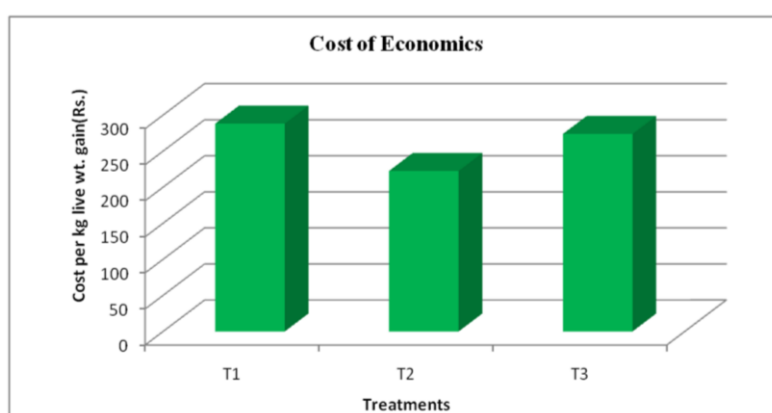


Fig. 1. Cost of economics.

CONCLUSIONS

Throughout 90 days of the experimental period, the implementation of different feed formulation does not affect certain nutritional-related blood profile in goat such as total protein, Hb, RBC, WBC, also growth parameters showed no significant difference but cost of economics shows significant results.

1. From the view of utilization of easily available byproducts like wheat, jawar, bajra, soybean, feeding homemade concentrate mixture is always beneficial and can be recommended to the goat farmers.

2. From the economics point of view feeding homemade concentrate mixture is beneficial than commercial concentrate.

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