International Journal of Veterinary Sciences and Animal Husbandry 2023; 8(3): 154-156

ISSN: 2456-2912
VET 2023; 8(3): 154-156

www.veterinarypaper.com
Received: 03-03-2023
Accepted: 08-04-2023

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Studies on economics of weaned Osmanabadi kids fed with different combination of leguminous foliage

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DOI: https://doi.org/10.22271/veterinary.2023.v8.i3c.535

Abstract
Twenty four Osmanabadi weaned kids of same age and uniform confirmation was selected for experimental trails. The kids were grouped under same weight and average age in four treatment group with six kids (3 Male 3 Female) in each group. The control (T_0) included 80% DCP through concentrate mixture + 20% DCP through green Sorghum + sorghum *Kadbi* should be given in *ad-lib*; T_1 included 20% DCP through concentrate mixture + 20% DCP through green sorghum fodder + 30% DCP from *Sesbania grandiflora* (Hadaga) foliage + 20% DCP from *Leucaena leucocephala* (Subabul) foliage + 10% DCP from *Desmanthus virgatus* (Dashrath) foliage + *ad-lib* sorghum *kadbi*; T_2 included 20% DCP from 20% DCP from green sorghum fodder + 20% DCP from *Sesbania grandiflora* (Hadaga) foliage + 20% DCP from *Leucaena leucocephala* (Subabul) foliage + 30% DCP from *Desmanthus virgatus* (Dashrath) foliage + *ad-lib* sorghum *kadbi*; T_3included 20% DCP from 20% DCP from green sorghum fodder + 10% DCP from *Sesbania grandiflora* (Hadaga) foliage + 30% DCP from *Leucaena leucocephala* (Subabul) foliage + 20% DCP from *Desmanthus virgatus* (Dashrath) foliage + *ad- lib* sorghum *kadbi*; The experimental period was 270 days and 10 days as a pre-experimental period.

Keywords: Osmanabadi, *Leucaena leucocephala*, *Desmanthus virgatus*

1. Introduction
In India, some goat breeds are basically reared for meat purpose. The goat meat, known as 'chevon,' is preferred by the country's non-vegetarians because to its great taste, wonderful flavour, high protein (22 g), low fat (12.3 g), calories (2 Kcal), saturated fat 85 mg and less cholesterol (94 mg) than other species meat such as chicken, cattle, pork and mutton. Higher value of iron, potassium and thiamine associated with a low sodium level further aggravate the consumption of meat (Eastridge and Johnson, 1990) [2]. Although goat meat intake is not associated with any religious attitude, it is critical to raise goats and increase their number at a faster rate. Goats are regarded as valuable 'gold' that can be cashed by their owners at any time.
Agathi (*Sesbania grandiflora* L.) is a legume plant found in tropical Asia and popular among the dairy farmers which is used to supplement rice straw in animal diets due to high levels crude protein which is near about 25-30%, of content in leaves (Karmakar *et al*, 2016) [12]. Agathi is traditionally used for anti-microbial activities anti-inflammation, anti-diabetic, anti-oxidant activities, anti-cancer, anti-ulcer activity, an immune-modulatory activity, and various associated diseases such as renal diseases, respiratory diseases and hepatic diseases Agathi leaves and pods were reported palatable and non-toxic to cattle according to Jiraungkoorskul and Jiraungkoorskul, 2015 [4].
Hedge Lucerne or Dasharath (*Desmanthes virgatus* L.) is grown as a forage legume which produces green fodder. This Hedge contains high amount of crude protein with good palatability, which contains near about 22.4% crude protein. The yield is up to 15-25 t/ ha under favorable soil and climate conditions.
Subabul (*Leucaena leucocephala*) which conatins higher protein amount as 27.5% and production of these forage crop is up to 60 t/ha/year which contains nutrient rich leaf biomass. leaves, pods and seeds of subabul are also rich in minerals, proteins and essential fatty acids. Due to which growth rate and milk production increases in animals. Most preferred feed for goat and sheep due to its high palatability, selectivity and dry matter intake level (Gunasekaran *et al*, 2014) [3].

Important income source for the farmers may be sale of breeding stock. This versatility allows the producer to plan and operate a more stable economic production unit. All breeds may be raised for fiber, meat, and milk and cheese production in some parts of the world. In coming years demand for export and internal consumption of goat milk and milk products is expected to rise. Goat husbandry provides glimpses of future hope for employment generation, nutritional security and prosperity to the millions of small and marginal farmers in the country reported by AMAM Zonaed Siddiki *et al.* (2010) [1].

Cost analysis or economics of goat rearing is different due to breeds and various areas. That's why this study was under taken to study the economics of weaned Osmanabadi kids fed with different combination of leguminous foliage rearing under different groups in Maharashtra region.

2. Materials and Methods

Twenty four Osmanabadi weaned kids of same age and uniform conformation was selected from the Goat Unit, Department of AHDS, VNMKV, Parbhani to conduct the experiment. Kids were grouped under same weight and average age in four treatment groups with six kids in each group. All the kids were free from diseases and physiological disorders. The details of selected experimental kids are given in Table 1.

2.1 Collection of foliage

Different foliage i.e Hudga (*Sesbania grandiflora*), Subabul (*Leucaena leucocephala*) and Dashrath (*Desmanthus virgatus*) were cut and carry, and collected from CCBP, AHDS Department, VNMKV, Parbhani.

2.2 Duration of experiment

The experiment was conducted from 12th February 2021 to 12th November 2021 at Goat unit, Department of AHDS, VNMKV, Parbhani Maharashtra state. The experimental period was 270 days and 10 days as a pre-experimental period.

Table 1: The details of selected experimental kids are given

Treatments	Feed details
T_0	80%DCP through concentrate mixture + 20% DCP through green sorghum fodder + sorghum *kadbi ad lib*
T_1	20% DCP through concentrate mixture + 20% DCP through green sorghum fodder +30% DCP through hudga foliage + 20% DCP through subabul foliage + 10% DCP through dashrath foliage + sorghum kadbi *ad lib*
T_2	20% DCP through concentrate mixture + 20% DCP through green sorghum fodder 20%DCP through hudga foliage + 10% DCP through subabul foliage + 30%DCP through dashrath foliage + sorghum kadbi *ad lib*
T_3	20% DCP through concentrate mixture + 20% DCP through green sorghum fodder +10% DCP through hudga foliage + 30% DCP through subabul foliage + 20% DCP through dashrath foliage + *ad lib* sorghum kadbi

2.3 Dressing percentage

The meat production performance of the male kids was measured in terms of dressing percentage.

$$\text{Dressing \% PSW} = \frac{\text{Hot carcass weight}}{\text{Pre-slaughtered weight}} \times 100$$

$$\text{Dressing \% ELW} = \frac{\text{Hot carcass weight}}{\text{Empty live weight}} \times 100$$

Where,
PSW Pre-slaughter weight in kilogram
ELW Empty live weight in kilogram

4. Results and Discussion

The results of present research work entitled "Studies on economics of weaned Osmanabadi kids fed with different combination of leguminous foliage" were recorded, analyzed and presented in the following headings.

4.1 Economics of feeding

The feeding cost of the Osmanabadi weaned kids per kg live weight of kids under four different treatment were calculated and presented in Table 2.

The feeding cost of the Osmanabadi weaned kids is given per kg live weight gain in T_0, T_1, T_2 and T_3 were 15.8.26, 115.97, 106.02 and 125.36, respectively. From the result, it was observed that the feeding cost of T_2 (Rs. 106.02) treatment group was comparatively less than T_1 (Rs. 115.97), T_3 (Rs.125.36) and T_0 (Rs.158.26).

Table 2: Effect of different combination of leguminous foliage feed treatment on Economics of goat rearing

Particulars	T_0		T_1		T_2		T_3	
	(Kilogram)	Rs.	(Kilogram)	Rs.	(Kilogram)	Rs.	(Kilogram)	Rs.
Concentration kid/av/270 days @ 25/kg	52.83	1320	13.25	331	13.24	331	13.23	330
Green jowar @ Rs. 40/kg	241.12	965	255	1020	252	1008	257	1023
Hugda @ 2 Rs/kg	--	--	70	140	50	100	25	50
Subabul @ 2 Rs/kg	--	--	45	90	25	50	70	140
Dashrath @ 2 Rs/kg	--	--	40	80	130	260	80	160
Kadbi @ 3/kg	27	81	27	81	27	81	27	81
Total cost/ kid av		2366		1742		1830		1789
Total live wt gain	14.95		15.02		17.26		14.27	
Cost/kg live wt		158.26		115.97		106.02		125.36

The results of this study were agreement with the Liu *et al.* (2001) [7] Lie *et al.* presented in their research that the effects of Mulberry leaves were replaced with rape seed meal. This replacement of leaves were compared with performance of feeding sheep on ammonia treated rice straw. Forty five lambs were used for experiment. They were divided into five equal groups. The groups were then divided with their body weight and gender. Lamb in each groups were kept in three pens as

male, female and mixed. In each group one male and two female were mixed in pens, and received one of the following dietary treatments: 100 g RSM (A), 75 g RSM plus 60 g Mulberry leaves (B), 50 g RSM plus 120 g Mulberry leaves (C), 25 g RSM plus 180 g Mulberry leaves (D) and 240 g Mulberry leaves (E). All these experimental animals were gives 100 g ground corn per head per day with ABRS *ad lib*. In Nigeria country Bamikole *et al*. (2005) [11] reported nutritive value of Mulberry (*Morus* spp.) leaves. The experiment was taken for the growing Rabbits. Bamikole *et al.* (2005) [11] presented that weight gain and FCE were only significantly depressed below the level achieved with an all concentrate ration when mulberry leaves comprised more than 50% of the ration where mulberry leaves increased, reduction in FCE and weight gain might have resulted from the combination of lower intake of Dry Matter of leaves because of its low Dry Matter content. Means only 262 gram/kilogram vs. 925 gram/kilogram in the concentrate) and lower intake and digestibility of NFE and possibly digestible energy. With comparable DM intake, weight gain as well as digestibility in all concentrate rations achieved with up to 50% substitution of concentrate in ration, less cost can be achieved with rapid growth rate of rabbits. Korake *et al*. (2015) [6] reported in their experiment that feeding cost of live weight gain per kilogram in T_0, T_1, T_2 and T_3 were Rs. 164.08, Rs. 183. Rs.10,150.73 and Rs.157.55, respectively. From the experimental results, it was observed that treatment group fed with salt sprinkled neem leaves i.e. (T_2) observed lowest feeding cost per kg live body weight gain and highest in experimental group fed with WWNSC (T_1).The results were in agreement with those of Radhakrishnan (2005a) [9] conducted experiment with weaned male kids fed with complete ration containing neem leaves at 0,20,40 and 60 percent level as roughage source and reported lower feeding cost per kilogram live weight gain in treatment group as compared to control. Radha Krishnan (2005) [9] showed the Madrared lamb fed with ration containing 60 percent of green fodder hay (T_1) and ration contained 60 percent of Neem: SS: GNH25:37.5:37.5, (T_3) Subabul: GNH:RS25:37.5:37.5 and (T_4) Gliricidia: GNH:RS 25:37.5:37.5 and recorded lower feeding cost per kilogram live weight gain in treatment groups as compare to control. Madhavi *et al*. (2006) [8] stated that comparable feeding cost in Nellore lambs of normal group and control group fed with complete diet formulated with 15 percent level of water washed with 4 percent of urea-ammoniated neem seed cake, 28.5 percent Bajra (*Pennisetum americanum*) straw and 10 per cent groundnut (*Araches hypogaea* L.) haulms.

Rashid *et al.* (2016) stated that the cost per kilogram live body weight gain were Rs.121.13$\pm$1.351, Rs.183.09$\pm$41.096 and Rs.143.46$\pm$7.1 on feeding three different complete compound pellets containing different levels of energy, It was due to higher cost of concentrate mixture which was given to the experimental groups. Sonwane *et al.* (2019) [10] stated that the effect of feeding hedge lucerne (*Desmanthus virgatus*) at replacement of 50% and 100% concentrate mixture. They reported that total cost of production was significantly higher in control group T_1 than treatment group T_2 and T_3 and also found that the highest net profit per goat in T_2 group than other treatment. They concluded that up to 50% hedge lucerne to replace concentrate in diet of experimented goats may increases net profit with improvement in growth performance in experimental goats.

5. Summary and Conclusion

The economics or the feeding cost of weaned Osmanabdi kids per kilogram live weight gain in T_0, T_1, T_2 and T_3 were Rs. 158.26, Rs. 115.97, Rs. 106.02 and Rs. 125.36, respectively. From the result, it was observed that the feeding cost of T_2 (Rs. 106.02) treatment group was comparatively less than T_1 (Rs. 115.97), T_3 (Rs.125.36) and T_0 (Rs. 158.26).

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