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Effect of Growth Performance and Milk Intake from Birth to Weaning Age of Goat Kids

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Abstract This experiment was conducted on 27 goat kids (Sirohi, Jakharana and Crossbreed) 9 from each breed. Kids were divided in to three equal groups with respect of breed, age and live weight. Kids were used within the first 60 days of life when they solemnly depend on their dams week to assess the effect of birth-weight on their weight gain and milk intake from the result it was observed that birth weight has a significant effect on weight gain of kids as well as their milk intake. The birth and final body weight of kids in G_3 (3.06 and 8.84 kg) was higher than in G_2 (2.83 and 8.17 kg) and G_1 (2.97 and 8.26 kg) kids. The body weight gain (kg), average daily gain (g) and milk intake (Lit) of kids in 60 days of age was also higher in G_3 (5.77 kg, 96.29 g and 39.27 Lit.) than in G_2 (5.29 kg, 88.61 g and 36.05 Lit) and G_1 (5.34 kg, 89.05 and 35.44 Lit) respectively.

Keywords Birth weight, Body weight, Crossbreed, Goat kids, Milk intake.

Introduction

Animal growth is the function of cell multiplication, which requires balanced supply of energy and protein for optimized growth performance. Since at younger age protein deposition favored due to muscular development hence higher levels of dietary protein require, while at maturity and older stage fat deposition takes place therefore protein need reduces and energy need increases. Kids, those grow faster attains marketable weight at a younger age, which generally means that they require a shorter feeding period and have less risk of death loss. Faster growth potential of kid has higher nutritional needs, especially with regards to protein for bone and tissue growth. Creep feeding and supplemental feeding of lambs and kids are practiced to sustain high early growth and to attain early finishing weight. The

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birth weight of kids is an important tool in the estimation of their live weight gain, which invariably is an economic tool in meat production. Since there is little information on milk production the indigenous goat and there is need to carry out study on their potentials for milk production, which invariably will determine kid growth. Kids of indigenous goats as influenced by milk produced will therefore be important tools in kid management and selection program.

Materials and Methods

The experiment was conducted at goat farm, SKN college of agriculture, Jobner District Jaipur, (Rajasthan, India). Geographically Jobner is located 45.0 km west Jaipur at 26°05′. North latitude, 75°28′ east longitude. The area falls in agro-climatic zone III-A (semi-arid eastern plain zone of Rajasthan). The climate of this region is a typically semi-arid, characterized by extremes of temperature during both summers and winters. The average annual rainfall of this tract varies from 400—500 mm and is mostly received during the month of July to Sept.The relative humidity fluctuates between 41 to 75%.

Twenty seven goat kids were [Sirohi, Jakharana and Crossbreed (Jamunapari, Jakharana and Sirohi)] 9 from each breed. Kids were divided in to three equal groups with respect of breed, age and live weight. The total duration of experiment was 60 days. The experiment was conducted in randomised block design. Animals were penned in well-ventilated enclosures for the experiment.

Data collection and analysis

Data were obtained on the birth weight (kg) of each and every kid born at farm was recorded with its length, height, heart girth and punch girth (in cm). The recording of data for their physical parameters was done fortnightly, with the milk intake of kids which was recorded weekly by the difference method (weight of kid before and after suckling). The recording of milk intake was done up to weaning of kids. The observations of live weight change analyzed using repeated measures analysis with pre-experimental observations as covariates. All statistical procedures performed using Statistical Package for Social Sciences (SPSS) 16th, release 16.0.0 (Sep 13, 2007) copyright © SPSS inc., 1989-2007.

Results and Discussion

Initially body weight and body conformations of the kids were similar among the three groups (Table 1). The birth and final body weight of kids in G_3 (3.06 and 8.84 kg) was higher signifcantly (p<0.05) than in G_2 (2.97 and 8.26 kg) and G_1 (2.83 and 8.17 kg) kids. The body weights of kids at 0, 15, 30, 45 and 60 days of age were higher (p<0.05) in G_3 than that in G_2 and G_1 kids. Kharkar et al. [1] and kharkar et al. [2] reported in Berari goat kids that the birth and final body weight (90 days) were 2.43 and 10.60 kg. Tailor et al. [3] in sonadi lambs and Kumar et al. [4] in Mecheri lambs reported the average pooled birth weights of 2.35 kg and 2.27 kg, respectively. The body weight gain (kg), average daily gain (g) and milk intake (Lit) of kids in 60 days of age was also higher significantly (p<0.05) in G_3 (5.77 kg, 96.29 g and 39.27 Lit) than in G_2 (5.29 kg, 88.61 g and 36.05 Lit) and G_1 (5.34 kg, 89.05 g and 35.44 Lit.) respectively as shown in Table 1. Otoikhian et al. [5] and otoikhian et al . [6] observed in West African Dwarf (WAD) kids that the kids with higher birth

Table 1. Growth performance and milk intake of goat kids during pre-weaning period (birth to 60 days age). Significant at the 5% level.

Attributes	Groups G_1	G_2	G_3	SEm+	p-value
Initial weight (kg)	2.83 ± 0.844	2.97 ± 0.453	3.06 ± 0.339	0.110	0.703
Final weight (kg)	8.17 ± 1.453	8.26 ± 2.692	8.84 ± 1.826	0.384	0.755
Total gain (kg)	5.34 ± 2.020	5.29 ± 1.359	5.77 ± 1.988	0.338	0.802
Average daily gain (g/day)	89.05 ± 33.665	88.16 ± 22.645	96.61 ± 33.132	5.643	0.801
Total milk intake (lit.)	35.44 ± 0.723	36.05 ± 0.297	39.27 ± 0.290	0.949	0.213
Efficiency (Lit milk/kg gain)	6.63 ± 0.179	6.81 ± 0.248	6.80 ± 0.223	0.398	0.901

Table 2. Changes in body conformation (cm) of goat kids during pre-weaning period (birth to 60 days age). Significant at the 5% level.

	Attributes	Groups G_1	G_2	G_3	SEm±	*p*-value
1.	Height					
	Initial	36.66 ± 1.768	37.77 ± 2.320	38.27 ± 3.850	0.532	0.467
	Finishing	46.86 ± 4.235	46.88 ± 2.494	46.94 ± 2.480	0.587	0.998
2.	Length					
	Initial	28.33 ± 1.250	28.47 ± 1.954	29.16 ± 1.250	0.290	0.775
	Finishing	37.61 ± 3.088	38.41 ± 1.132	38.63 ± 1.126	0.381	0.529
3.	Heart girth					
	Initial	35.27 ± 2.635	35.55 ± 2.083	36.38 ± 1.318	0.396	0.510
	Finishing	45.50 ± 3.269	45.61 ± 2.028	46.77 ± 1.558	0.457	0.467
4.	Punch girth					
	Initial	33.33 ± 2.165	33.88 ± 2.205	34.72 ± 1.954	0.406	0.387
	Finishing	47.50 ± 2.165	48.05 ± 4.805	49.44 ± 2.732	0.653	0.475

weight gain more body weight and their milk intake was also higher in comparison to kids of lower birth weight.

The physical measurements (height, length, heart girth and punch girth) being almost similar in all three groups initially, but there was a significant difference ($p<0.05$) in G_1, G_2 and G_3 kids at the end of suckling period (Table 2). At finishing , the height, length heart girth and punch girth was higher in G_3 (46.94, 38.63, 46.77 and 49.44 cm) than that G_2 (46.88, 38.41,45.61 and 48.05 cm) and G_1 (46.86, 37.61, 45.50 and 47.5 cm) kids, respectively. In Changathangi X Non descript goats reported the body weight, height, length and heart girth was higher ($p<0.05$) in male compared to their female [7]. Mondal [8] compared the body measurements of sheep and goats under Kargil conditions and reported similar observations. Similar findings were reported earlier [1,2,9] in Berari and Sirohi local kids, respectively.

The growth rate was relatively better in G_3 than G_2 and G_1 kids. The fortnightly changes in body height, length, heart girth and punch girth are presented in Tables 1 and 2 respectively. Like body weight, body conformations also increased with the advancement in age and found relatively higher in the G_3 kids. The birth weight of G_1, G_2 and G_3 kids was almost similar, thereafter the G_3 kids showed higher ($p<0.05$) improvement in body weight as compared to G_1 and G_2 kids upto end of suckling period (60 days). However, the height of G_1 kids increased more rapidly ($p<0.05$) from 15 to 45 days of age in comparison to G_1 and G_3 kids. The body length of G_2 kids was higher ($p<0.05$) than G_2 and G_3 kids and increased progressively throughout the experimental period. The increment in heart girth and punch girth of G_1 and G_2 kids was progressive throughout the experiment while increased sharply from 0 to 60 days of experiment in G_3 kids. Kharkar et al. [1] and Kharkar et al. [2] reported that higher estimation of birth weight, height, length, heart girth and punch girth in Berari goats were at 3 months of age. Similar trend was also earlier found [10, 11]in Malpura lamps and Kutchi goats.

Conclusion

The presence result on birth weight on weight gain, milk intake and growth performance of goat kids indicate that birth weight is positively correlated with milk intake and growth. The higher the birth weights the higher milk intake. Consequently better weight gain it is therefore, important that milk consumption of kids increase as the live weight increase.

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