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Vandana

Department of Livestock Production and Management, College of Veterinary and Animal Sciences, G.B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand, India

J Palod

Department of Livestock Production and Management, College of Veterinary and Animal Sciences, G.B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand, India

DV Singh

Department of Livestock Production and Management, College of Veterinary and Animal Sciences, G.B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand, India

Brijesh Kumar

Department of Livestock Production and Management, ICAR-Indian Veterinary Research Institute (ICAR-IVRI), Izatnagar, Bareilly, Uttar Pradesh, India

Pradeep Chandra

Department of Livestock Production and Management, ICAR-Indian Veterinary Research Institute (ICAR-IVRI), Izatnagar, Bareilly, Uttar Pradesh, India

Garima Kansal

Department of Livestock Production and Management, ICAR-Indian Veterinary Research Institute (ICAR-IVRI), Izatnagar, Bareilly, Uttar Pradesh, India

HC Yadav

Department of Livestock Production and Management, ICAR-Indian Veterinary Research Institute (ICAR-IVRI), Izatnagar, Bareilly, Uttar Pradesh, India

SK Singh

Department of Livestock Production and Management, College of Veterinary and Animal Sciences, G.B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand, India

Corresponding Author:

ABC Lavanya
M.Sc. Scholar, Department of Genetics and Plant Breeding, College of Agriculture, Jagtial, Professor Jayashankar Telangana State Agriculture University, Hyderabad, Telangana, India

A study on some physical traits of Pantja goats during the peripartum period under farm condition

Vandana, J Palod, DV Singh, Brijesh Kumar, Pradeep Chandra, Garima Kansal, HC Yadav and SK Singh

Abstract

A study on some physical traits during the periparturient period was conducted on Pantja goats and kids. Body weight changes of does and kids were recorded during peripartum, and at 15 days intervals till 3 months after parturition. Dam weight changes before and after kidding, placental fluid weight in case of twins and single birth, overall (i.e. single and twins), mean kid weight, female and male kid weights at birth were 28.3 ± 0.004 and 24.5 ± 0.003 kg, 2.67 ± 0.218 kg, 0.35 ± 0.02 kg, 1.92 ± 0.001 kg, 1.94 ± 0.123 , 1.89 ± 0.084 and 1.94 ± 0.123 kg, respectively. Kid weight at 0, 15, 30, 45, 60, 75, and 90 days was recorded as 1.91 ± 0.088 , 3.50 ± 0.154 , 4.64 ± 0.213 , 5.62 ± 0.217 , 6.62 ± 0.191 , 7.5 ± 0.187 and 8.55 ± 0.164 kg, respectively. Dam weight was recorded at 15 days intervals after kidding to see the weight gain of the dam after kidding at 0, 15, 30, 45, 60, 75, and after 90 days of kidding. These were 24.37 ± 1.187 , 23.15 ± 1.362 , 24.4 ± 1.094 , 25.4 ± 1.189 , 26.2 ± 1.315 , 25.25 ± 0.968 and 24.95 ± 0.983 kg, respectively.

Keywords: Physical traits, peripartum period, fetal fluid, Pantja goat

Highlights

- Overall body weight of dams before and after kidding were 28.3 ± 0.004 and 24.5 ± 0.003 kg, respectively.
- The result indicates that the Pantja goat is well adapted to farm conditions of the Tarai region as weight gain and other physiological parameters similar to the standard parameter of a goat.

Introduction

The Goat population in the country in 2019 is 148.88 million showing an increase of 10.1% over the previous census and India stood 2nd in world goat meat production, with a 12% share. Most of the goat keepers were less educated women, who were neglected by the mainstream development program. Generating awareness, motivating and mentoring were essential for ensuring women's participation in the development program. After a scientific intervention, a reduction in mortality from 35% to less than 5%, resulted in an increase in the average herd size and family income.

As most of the goats in India are meat-type so all the desirable economical traits of these goats, like higher birth weight, faster growth, and good survival rate depend upon the pre-parturient and post-parturient care of pregnant does. Pantja is the local goats of the Tarai region of Uttarakhand. They are recognized for their similarity with deer in their morphological characteristics. These are medium-sized goats having brown red dorsal coat color with black lines and whitish ventral surfaces. There is the presence of white streaks on either side of the face. These characteristics are permanent in nature and pass from one generation to another. As these goats are from the Tarai region, they are well adapted to the climatic conditions of this region and resistant to many diseases of this region compared to other goats. The study aimed to document the different physical traits during the periparturient period, conducted on Pantja goats and kids.

Materials and Methods

The present investigation was carried out at the Goat unit, Department of Livestock Production and Management, College of Veterinary and Animal Sciences, Pantnagar to study the periparturient traits of Pantja goats, body weight changes of does during peripartum and birth weight of kids. Live weight was taken by the single recorder with utmost precision to the kilogram, on each animal. Foot weighing machine was used for measuring the live weight of the animal and the weight of the animal was calculated by subtracting the weight of the recorder.

To calculate dam weight change before and after kidding-goats were weighed daily on approaching parturition and after parturition. The body weight of the does that delivered single and twins kid and the weight of the placenta were calculated indirectly by subtracting the weight of the kid born from the weight of the dam before kidding. For the estimation of the growth rate of kids, kids were weighed at 15 days intervals till 3 months of age. Dam was also weighed at 15 days intervals to calculate the weight gain of the dam after kidding.

Results and Discussion

Body weight changes of does before and after kidding

Singlets dam weight before and after kidding were 23.73 ± 0.011 and 21.47 ± 1.498 kg, respectively, whereas in the case of dams that produced twins, body weight changes before and after kidding were noted as 31.40 ± 1.151 and 26.51 ± 1.082 kg, respectively. Overall body weight changes of the dam before and after kidding were 28.3 ± 0.004 and 24.5 ± 0.003 kg, respectively. (Table 1).

Table 1: Body weight changes of does before and after kidding

Dam weight and reduction in their wt after kidding (kg)								
Dam wt before kidding			Dam wt after kidding			Reduction in dam wt after kidding		
Overall	Singlet	Twins	Overall	Singlet	Twins	Overall	Singlet	Twins
28.3 ± 0.004	23.72 ± 0.011	31.40 ± 1.151	24.5 ± 0.003	21.47 ± 1.498	26.51 ± 1.082	3.83 ± 0.001	2.25 ± 0.193	4.59 ± 0.220

wt – weight

Weight of placental fluid

The placental fluid weight in the case of twins, single birth, and in overall birth (i.e. single and twins) were 2.67 ± 0.218 kg, 0.35 ± 0.02 kg, and 1.918 ± 0.001 kg, respectively. In contrast to the present study, Hassan *et al.* (2010) [2] observed that the average placenta weight was 342.4 g in Jamunapari goats.

Kids weight at birth

The mean kid weight was 1.94 ± 0.123 kg. Whereas female and male kid weights at birth were 1.89 ± 0.084 kg and 1.94 ± 0.123 kg, respectively. In the case of twins, overall, Male-Female, Male-Male, and Female- Female twin's birth weights were 1.92 ± 0.002 , 2.09 ± 0.106 , 1.63 ± 0.132 and 1.7 ± 0.147 kg,

respectively, whereas, in singlet's kids overall, male and female birth weights were 1.9 ± 0.175 , 1.73 ± 0.002 and 2.02 ± 0.162 kg, respectively. Ayoade & Butterworth, (1982) [1], Karua, (1989b) [4], and Kasowanjete, *et al.* (1987) [5] reported singlets' average weight to be 2.5, 1.9, and 2.0 kg, respectively, and male kid birth weights reported by earlier scientists were as 2.6 ± 0.5 , 2.0 ± 0.6 , 2.1 and female birth weight was 2.3 ± 0.5 , 1.8 ± 0.5 , 1.9 kg, respectively, while Reynolds, (1979) [6], Karua, (1989b) [4], Kasowanjete *et al.* (1987) [5] reported mean weight in Malwi goats in multiple birth 2.0, 1.7, 1.6 kg, respectively, male birth weight as 2.0 ± 0.3 , 1.7 ± 0.5 , 1.6 kg and female birth weight 1.9 ± 0.5 , 1.6 ± 0.5 , 1.6 kg, respectively.

Table 2: Kid and dam weight (kg) at 15 days interval

Days	Overall	Male	Female	Dam wt after kidding
0	1.91 ± 0.088	1.96 ± 0.149	1.85 ± 0.092	24.37 ± 1.187
15	3.5 ± 0.154	3.43 ± 0.247	3.57 ± 0.195	23.15 ± 1.362
30	4.64 ± 0.213	4.51 ± 0.333	4.76 ± 0.275	24.4 ± 1.094
45	5.62 ± 0.217	5.44 ± 0.330	5.8 ± 0.287	25.4 ± 1.189
60	6.62 ± 0.191	6.5 ± 0.267	6.74 ± 0.279	26.2 ± 1.315
75	7.5 ± 0.187	7.27 ± 0.256	7.73 ± 0.267	25.25 ± 0.968
90	8.55 ± 0.164	8.48 ± 0.195	8.61 ± 0.270	24.95 ± 0.983

Hassan *et al.* (2010) [2] reported the mean birth weight in Jamunapari goats as 1.6 kg. This differentiation in birth weight may be due to the availability of nutrients in the uterus and breed differences. Percent of male kids which is in total agreement with the present results. In contrast to the present study, Simplicio *et al.* (1981) [7] observed that kid mortality up to 1 yr of age was 76.47 and 22.22 percent, respectively for single males and females vs. 52.00 and 62.53 percent for twin males and twin females, in non-descript goat under traditional management. There were causes of mortality mainly due to pneumonia and under the birth weight of kids.

Kid weight change at 15 days interval

Kid weight at 0, 15, 30, 45, 60, 75, and 90 days was recorded as 1.91 ± 0.088 , 3.50 ± 0.154 , 4.64 ± 0.213 , 5.62 ± 0.217 , 6.62 ± 0.191 , 7.5 ± 0.187 and 8.55 ± 0.164 kg, respectively. Male kid weight changes at 15 days intervals from 0 to 90 days after their birth were 1.96 ± 0.149 , 3.43 ± 0.247 , 4.51 ± 0.333 , 5.44 ± 0.330 , 6.5 ± 0.267 , 7.27 ± 0.256 and 8.48 ± 0.195 kg whereas in case of female body weights were 1.85 ± 0.092 , 3.57 ± 0.195 , 4.76 ± 0.275 , 5.8 ± 0.287 , 6.74 ± 0.279 , 7.73 ± 0.267

and 8.61 ± 0.270 kg at 0, 15, 30, 45, 60, 75, 90 days, respectively, while Reynolds (1979) [6] reported mean single and multiple kid weight at 12 weeks as 9.0 and 6.0 kg while male kid weight 9.0 ± 1.4 and 6.6 ± 0.6 and female 8.9 ± 2.0 , and 5.4 ± 1.4 kg, respectively in Malwi goat. This difference in weight may be due to differences in nutrition and management (Fig. 1).

Dam body weight change after kidding at 15 days interval

Dam weight was recorded at 15 days intervals after kidding to see the weight gain of dam after kidding at 0, 15, 30, 45, 60, 75, and after 90 days of kidding. These were 24.37 ± 1.187 , 23.15 ± 1.362 , 24.4 ± 1.094 , 25.4 ± 1.189 , 26.2 ± 1.315 , 25.25 ± 0.968 and 24.95 ± 0.983 kg, respectively (Table 1 & Fig. 1). Hassan *et al.* (2010) [2] observed that the average body weight of Jamunapari does just after kidding was 26.7 kg, while Karua, (1989a) [3] reported post-partum weight of singles and twins Malawi does as 27.9 kg and 31.0 kg, respectively. This may be due to breed difference and nutrition availability during pre-partum.

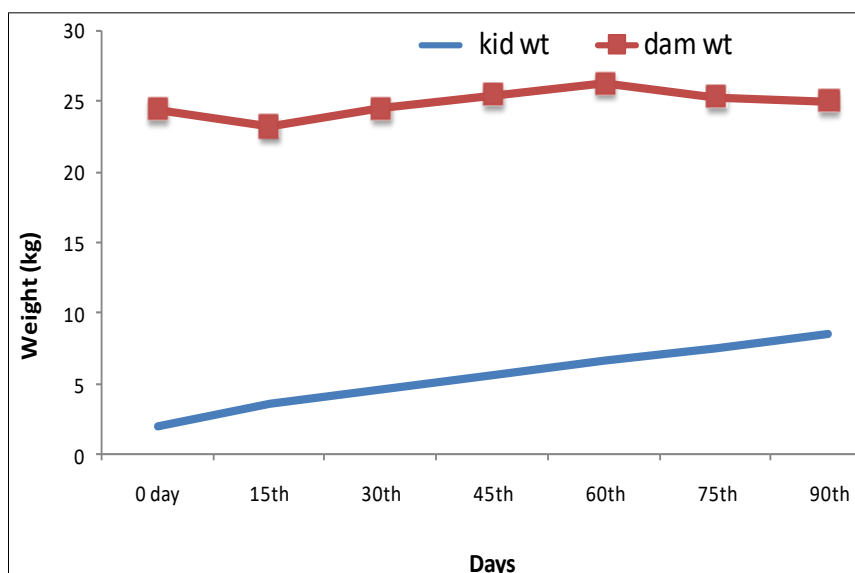


Fig 1: Kid and dam weight at 15 days interval

Conclusion

Overall body weight of dams before and after kidding were 28.3 ± 0.004 and 24.5 ± 0.003 kg, respectively. Placental fluid weight in the case of twins, single birth, and overall were 2.67 ± 0.218 , 0.35 ± 0.02 , and 1.92 ± 0.001 kg, respectively. The mean kid weight was 1.94 ± 0.123 kg, whereas female and male kid weights at birth were 1.89 ± 0.084 and 1.94 ± 0.123 kg, respectively. The result indicates that the Pantja goat is well adapted to farm conditions of the Tarai region as weight gain and other physiological parameters similar to the standard parameter of a goat.

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