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RESEARCH PAPER

Characterization of productive traits of barbari goat under different feeding systems

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ABSTRACT

An investigation was carried out in semi-arid ecosystem of Uttar Pradesh in which 30 female kids were randomly divided in to three group *viz.* stall feeding, semi-intensive and extensive system female kids of barbari breed, which showed first sign of puberty in 194.4 ± 3.48 days when fed under stall fed system as compared to extensive system (278.4 ± 6.39 days) and semi-intensive system (235.6 ± 4.21 days). The average age of first puberty was 236.1 days (6-10 months). The age of first conception was 419.4 ± 3.59, 354.6 ± 4.26 and 313.0 ± 8.31 days in extensive, semi-intensive and intensive system, respectively. The age of first conception in female kid was significantly ($P<0.01$) earlier when fed under intensive system as compared to extensive and semi-intensive system. The gestation period ranged between 148.8 to 149.8 days. The kidding interval was significantly ($P<0.05$) lower in intensive system (192.8 ± 4.29 days) as compared to extensive (228.0 ± 7.52 days) and semi-intensive system (203.2 ± 4.77 days). The significantly ($P<0.01$) higher length of lactation was recorded when goat was stall fed (150.2 ± 3.83 days) than extensive system (92.5 ± 1.12 days). The milk yield was 431.0 ± 12.29, 571.0 ± 5.57 and 703.0 ± 8.60 g/days under extensive, semi-intensive and intensive system, respectively. The average body weight of male and female kid was 1.90 and 1.63 kg, respectively and feeding practices did not influence the body weight of male and female kids born from the female.

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Over thousand years, goats have been utilized for their milk, meat, hair and skin all over the world. Goat is a multi-functional animal and contributes greatly to the agrarian economy, especially in areas where crop and dairy farming are not economical. Thus, goat plays an important role in the livelihood of a large proportion of small farmers particularly women, landless and marginal farmers inhabiting geographically isolated areas, who do not have other means of survival. Barbari goat is tightly woven in the farming system because of the versatility to survive on poor agriculture lands and on incidental vegetation. Baribari breed of goat is becoming an attractive activity due to short gestation period, early maturity, speedy growth, low risk capital investment and low cost of maintenance and it is considered as a poor man's cow in India. Goat is also considered as a 'walking refrigerator' for storage of milk as she can be milked as and when required, several times in a day. The productive traits of barbari goat are main criteria to assess their production and finally contribution of economy to the goat growers. Hence, the present study was framed to define the productive traits of barbari goat under different feeding systems.

MATERIALS AND METHODS

Study was carried out at Regional Research Station, Hazratpur (Firozabad). Thirty female kids of barbari breed of about three month aged were grouped into three *i.e.*, 10 female kids in each group and the groups were designated as (1) stall feeding or intensive, (2) semi-intensive and (3) extensive. Kids were kept in well ventilated pacca house. The kids of stall fed group was provided the diet as per NRC (1985) under *sani* method in which crushed barley grain @ 1.5 per cent of live weight, was mixed in wet wheat straw and one kg available chopped green. Diet was formulated fortnightly to each kid. Under semi-intensive system, sole barley grains were supplemented @ 1.5 per cent live weight alongwith 6 - 8 hours grazing. The kids of intensive system were allowed to graze 6–8 hours per day. Regular deworming was done as suggested by Veterinary Officer. Body weight of each kid was recorded fortnightly. Fresh water was offered to each kid before feeding or allowing for grazing in the forenoon and at 4:00 PM each day. The information on productive traits *viz.*, age at first puberty (AFP), age at first conception (AFC), kidding interval (KI), gestation period (GP), lactation length (LL) and

lactation yield (LY) of barbari breed were compiled and statistically analysed as per Snedecor and Cockran (1967.)

RESULTS AND DISCUSSION

The results obtained from the present investigation are summarized below :

Productive traits of barbari goat :

As depicted in Table 1 that female kid of barbari breed showed first sign of puberty in 194.4 ± 3.48 days when fed under intensive system which was significantly (P<0.01) lower age than kid fed under extensive system (278.4 ± 6.39 days) and semi-intensive system (235.6 ± 4.21 days). The average age of first puberty in barbari goat was 236.1 days (6-10 months) which was in close agreement of age reported by Prasad (1969), Singh and Senger (1980) and Prakash (1997) and Prakash *et al.* (1998). The age of first conception was 419.4 ± 3.59, 354.6 ± 4.26 and 313.0 ± 8.31 days in extensive, semi-intensive and intensive system, respectively. The mean age of first conception was 362.3 days. The age of first conception in female kid was significantly (P<0.01) earlier when fed under intensive system as compared to extensive and semi-intensive system. This may be due to the higher growth rate (Singh and Senger, 1980 and Prakash, 1997) and also non-migratory habit of barbari goat. The gestation period ranged between 148.8 to 149.8 days and did not influence by feeding practices. The kidding interval was significantly (P<0.05) lower in intensive system (192.8 ± 4.29 days) as compared to extensive (228.0 ± 7.52 days) and semi-intensive system (203.2 ± 4.77 days). The over all mean kidding interval was 208.0 days. The lower kidding interval in intensive system may be due to earlier conception after kidding. The value of kindding interval was reported by Singh and Sengar (1980) and Singh (1991) for barbari goat lied on higher side. However, the value reported by Prakash *et al.* (1998) is similar to present investigation.

Average lactation length of barbari female was 119.2 days. The significantly (P<0.01) higher length of lactation was recorded when goat was stall fed (150.2 ± 3.83 days) as compared to extensive system (92.5 ± 1.12 days). The average lactation period of barbari female reported by Singh and Senger (1980) was 190 days which lied on higher side. However, Singh and Senger (1980) had also recorded 153.03 ± 3.18 days under stall fed condition which was similar to the present study. The milk yield was 431.0 ± 12.29, 571.0 ± 5.57 and 703.0 ± 8.60 g/days under extensive, semi-intensive and intensive system, respectively. The differences were significant (P<0.01). The milk yield of barbari as recorded by various workers (Agrawal, 1954, Singh and Senger, 1980 and Singh, 1991) ranged from 490 to 1040.0 g/day. However, the milk yield observed in present investigation was similar to Agrawal (1954). The average body weight of male and female kid was 1.90 and 1.63 kg, respectively and feeding practices did not influence the body weight of male and female kids born from the female.

Table 1 : Productivity traits of female Barbari goat

Particulars	Feeding system			
	Extensive	Semi-intensive	Intensive	Mean
Age at first puberty** (days)	278.4 ± 6.39	235.6 ± 4.21	194.4 ± 3.48	236.1
Age at first conception ** (days)	419.4 ± 3.59	354.6 ± 4.26	313.0 ± 8.31	362.3
Gestation period (days)	148.8 ± 0.86	149.0 ± 1.05	149.8 ± 0.66	149.2
Kidding interval (days)*	228.0 ± 7.52	203.2 ± 4.77	192.8 ± 4.29	208.0
Lactation length (days)**	92.5 ± 1.12	115.0 ± 1.38	150.2 ± 3.83	119.2
Milk yield (g/d)**	431.0 ± 12.29	571.0 ± 5.57	703.0 ± 8.60	568.3
Kid weight				
Female (kg)	1.6 ± 0.04	1.6 ± 0.06	1.7 ± 0.09	1.63
Male (kg)	1.9 ± 0.03	1.9 ± 0.03	1.9 ± 0.02	1.90

* and ** indicate significance of values at P = 0.05 and 0.01, respectively,

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