

Original Research Article

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Reproductive Performance of Sirohi Goat Flock under Field Condition

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ABSTRACT

Reproductive performance on Sirohi goats is being carried out in farmers flock maintained in 16 villages of four clusters in Udaipur and Rajasamand districts of Southern Rajasthan. Reproductive records distributed over 5 years on 1169 goats were utilized for the present study. The overall mean for reproduction traits viz., age at first conception, age at first kidding, service period, dry period, kidding interval and gestation period were 546.41 ± 9.13 , 698.31 ± 9.10 , 206.23 ± 3.26 , 197.64 ± 3.18 , 356.21 ± 0.32 and 150.16 ± 0.07 days respectively. The sire had significant effect on all reproductive traits except GP. The effect of location was significant found on AFC, AFK and GP, while the effect of year of kidding was significantly on all reproductive traits under study. Season of kidding had significant effect on KI, DP, and SP. The effect of sire, location, year of kidding and parity was significant on all reproductive traits. It was concluded that this breed has proved as excellent goat breed with respect to disease resistance, adaptability to dry and hot climate, growth and lactation performance under poor quality range condition.

Keywords

Sirohi Goat,
Reproduction traits.

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Introduction

Goats' rearing is common among small, marginal and landless farmer. They are also reared on large farms, because of their size, easy management, small space requirement, high fertility, short generation interval and small investment (Haq, 1988). The reproductive performance is of prime importance for improved goat production. The overall efficiency of goat farming is judged not only on the basis of production traits i.e. milk, meat etc. but also on the reproductive performance because production is end product of reproduction. Sirohi goat is a dual -purpose goat breed distributed in arid and semi-arid regions of central and southern

Rajasthan. Meat production is the most important feature of this breed and the prolificacy of the breed is within acceptable limits. This has proved to be an excellent goat breed with respect to disease resistance, adaptability to dry or hot climate, growth and production performance under poor quality range conditions (Tomar *et al.*, 1998).

Farmers generally prefer to rear Sirohi goats over other breeds of goat due to beautiful look, colour and its performance. It is a multipurpose animal, with respect to provide milk, meat, hide and manure to enrich soil fertility and play an important role in

generating employment, raising income and improving household nutrition. Being medium in size, it can easily be handled by women, children and old members of the family. Therefore, the present study was undertaken to assess the reproductive status of Sirohi goats under field conditions.

Materials and Methods

Data on reproductive traits of 1169 Sirohi goats were collected from All India Coordinated Research Project, Livestock Research Station, Vallabhnagar from 2002 to 2006. In complete records in terms of abortions, pathological causes affecting lactation, kids born dead, abnormal, premature births and culling of animals during milking period were excluded from the purview of this study.

The reproductive traits included in the study were age at first conception (AFC), age at first kidding (AFK), services period (SP), dry period (DP), gestation period (GP) and kidding interval (KI). Mixed model least-squares analysis (Harvey, 1990) was carried out to study the effect of sires, location, year, season and parity.

The three seasons were rainy (July – October), winter (November-February) and summer (March-June). The differences between sub means were tested for significance by Duncan's new multiple range test.

Results and Discussion

The overall means of age at first conception and kidding were 546.41 ± 9.13 and 698.31 ± 9.10 days respectively (Table 1). The Results are in conformity with Singh and Roy (2003) in Jamunapari and Pathodiya (2005) in Sirohi goats. Shorter age at first kidding than that observed in the present study was

reported by Singh and Roy (2005) in Beetal and Swami *et al.*, (2006) in Sirohi x Beetal goats.

The overall mean service period was 206.23 ± 3.26 days and kidding interval was 356.21 ± 0.32 days (Table 2) a finding in close agreement with the reports of Pathodiya (2005) in Sirohi goats. Shorter service period and kidding interval than that observed in this study were reported by Kumar (1991) in Parbatsari and Singh and Rout (2005) in Barbari goats.

On the contrary, higher service period and kidding interval than that observed in the present study were reported by Singh and Rout (2005) in Barbari and Singh and Roy (2003) in Jamunapari goats respectively.

The dry period was 197.64 ± 3.18 days (Table 2), a finding in close agreement with the reports of Pathodiya (2005) in Sirohi goats under field condition. However, longer dry period than that observed in the present study was reported by Singh and Roy (2003) in Jamunapari goats. The average gestation period was 150.16 ± 0.08 days (Table 2). Similar gestation period was also reported by Pathodiya *et al.*, (2006) in Sirohi.

The location and year of kidding had highly significant effect on age at first conception, age of first kidding and gestation period. The effects of season and parity were found non-significant on these traits. The results were in agreement with the finding of Pathodiya (2005, 2006) in Sirohi goats and Misra and Sinha (2001) in Black Bengal goats. On the contrary, Misra *et al.*, (1979) and Kuriakose *et al.*, (1983) observed non-significant effect of location on gestation period in Sirohi and Jamunapari goats respectively. The goats which kidded in summer season had shorter AFC as compared to winter and rainy kidded goats.

Table.1 Least-squares means for age at first conception and age at first kidding a cross different factors

Effects	N	Mean ± SE	
		Age at first Conception (days)	Age at First Kidding (Days)
Overall means	406	435.07±33.69	587.00±33.52
Location			
Vallabhnagar	81	406.55 ^a ±39.72	556.00 ^a ±39.56
Railmagra	61	382.77 ^a ±41.22	538.86 ^a ±41.06
Devgarh	204	531.95 ^b ±36.83	686.84 ^c ±36.67
Nathdwara	60	419.01 ^a ±41.80	565.71 ^b ±41.64
Year			
2002	33	134.33 ^a ±45.38	289.28 ^a ±45.23
2003	52	328.84 ^b ±40.08	481.76 ^b ±39.92
2004	94	452.32 ^c ±36.81	605.60 ^c ±36.64
2005	112	566.42 ^d ±37.82	717.40 ^d ±37.66
2006	115	693.45 ^e ±39.33	840.97 ^e ±39.17
Season			
Rainy (July-Oct.)	147	447.50 ^a ±34.51	598.17 ^a ±34.34
Winter (Nov-Feb)	230	434.28 ^a ±34.61	586.60 ^a ±34.44
Summer (Mar-Jun)	29	423.43 ^a ±43.30	576.23 ^a ±43.15

Means with different superscript for a particular effect differ significantly (P<0.05) among them selves

Table.2 Least-squares means for dry period, service period, gestation period and kidding interval in Sirohi goats across different factors

Effects	N	Mean ± SE			
		Dry period	Service period	Gestation period	Kidding interval
Overall means	1169	206.87±10.36	207.93±10.74	150.16±0.12	358.16±10.70
Location					
Vallabhnagar	247	208.02 ^a ±13.07	207.63 ^a ±13.49	151.33 ^c ±0.24	358.98 ^a ±13.44
Railmagra	199	224.84 ^a ±13.98	213.40 ^a ±14.42	149.94 ^b ±0.27	363.12 ^a ±14.36
Devgarh	442	207.46 ^a ±12.31	222.73 ^a ±12.71	150.31 ^b ±0.21	373.04 ^a ±12.67
Nathdwara	281	187.16 ^a ±14.55	187.97 ^a ±15.00	149.09 ^a ±0.27	337.51 ^a ±14.93
Year					
2002	282	82.86 ^a ±14.47	90.65 ^a ±14.92	149.17 ^a ±0.29	241.19 ^a ±14.86
2003	234	195.15 ^b ±14.15	190.14 ^b ±14.60	150.19 ^b ±0.28	341.49 ^b ±14.54
2004	248	216.94 ^c ±12.38	224.28 ^c ±12.80	150.18 ^b ±0.22	373.72 ^c ±12.75
2005	231	259.84 ^d ±14.50	260.14 ^d ±14.95	150.48 ^b ±0.29	409.78 ^d ±14.89
2006	174	279.77 ^d ±15.45	274.46 ^d ±15.92	150.80 ^b ±0.32	424.93 ^d ±15.85
Season					
Rainy (July-Oct.)	416	230.79 ^b ±11.08	240.58 ^c ±11.48	150.15 ^a ±0.16	390.61 ^c ±11.43
Winter (Nov-Feb)	624	202.63 ^a ±10.75	206.17 ^b ±11.14	150.32 ^a ±0.14	355.88 ^b ±11.10
Summer (Mar-Jun)	129	187.20 ^a ±13.55	117.06 ^a ±13.98	150.02 ^a ±0.26	327.99 ^a ±13.92
Parity					
I	183	222.41 ^b ±12.43	218.95 ^b ±12.36	150.12 ^a ±0.22	369.69 ^c ±12.79
II	251	214.97 ^b ±11.95	215.60 ^b ±12.36	150.14 ^a ±0.20	365.12 ^a ±12.31
III	315	194.87 ^a ±11.55	198.19 ^{ab} ±11.95	150.24 ^a ±0.18	348.24 ^a ±11.91
IV & Above	420	195.24 ^a ±11.09	198.99 ^a ±11.48	150.16 ^a ±0.16	349.59 ^b ±11.44

Means with different superscript for a particular effect differ significantly (P<0.05) among them selves

Significant effects of year and season of kidding on SP, DP and KI were found in this study. Non-significant effect of season on AFC and AFK was found in this study. Similar results were also reported by Kale and Tomer (1997) in (1242) Alpine x Beetal (AB), 659 Saanen x Beetal (SB), 234 Alpine x SB (ASB) and 206 Saanen x AB cross (SAB) breed goat and Katakaware *et al.*, (2004) in cross bred goats. On the other hand, non-significant effect of year of kidding was reported by Pathodiya (2005, 2006) in Sirohi goats. These traits are more affected by climatic condition as physiological traits besides management parameters. The least-square mean on the basis on the parity reveals as declining trend in service period with advancement of lactation. The possible reason for decreasing trend in length of service with increase in order of lactation might be due to improvement in the reproductive efficiency of goat with advancement in age. Service period is a trait which can be improved to advantage by adopting better managemental practices. Reproduction in service period can result in reducing the kidding interval and consequently in no-profitable dry period. Post-partum anestrus is major causes of long kidding interval. Better feeding and hygiene results in reduction of kidding interval. Length of kidding interval is controlled chiefly by the service period which is affected by post-partum oestrus.

The season of kidding and parity were found to be non-significant effect on gestation period, a finding in agreement with those of Kurakose *et al.*, (1983) in Jamunapari, Kumar (1991) and Cabelo *et al.*, (1991) in Anglo-Nubian goats. However, significant effect of season of kidding on gestation period was reported by Ageeb (1992) and Katakaware *et al.*, (2004) in Baggara and crossbred dairy goats.

Service period and dry period have good scope of improvements as indicated from

higher coefficient of variation. The reproductive and productive performance was found best for goats that kidded during winter and summer seasons. Any attempt to reduce service period would cause reduction of kidding interval, thus helping in curtailing the unproductive life span (dry period) of goats.

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