

# CRITICAL ANALYSIS ON PRODUCTIVE AND REPRODUCTIVE EFFICIENCY OF UDGIRI GOAT (*CAPRA HIRCUS*) RAISED UNDER TRADITIONAL MANAGEMENT PRACTICES IN INDIA

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## SUMMARY

The present study was conducted on Udgiri goat of Maharashtra raised under traditional management practices to evaluate the productive and reproductive efficiency during the period 2018 to 2021. It was observed that, the least square means for average lactation length, average daily milk yield, total lactation milk yield, fat% and SNF% in Udgiri goat were  $129.78 \pm 4.62$  days,  $0.79 \pm 0.025$  liters,  $74.56 \pm 3.54$  days,  $3.29 \pm 0.13$  and  $10.65 \pm 1.10$ , respectively. The least square means for average age at first estrus is observed as  $259.12 \pm 5.62$  days, age at first maturity was  $326.23 \pm 7.25$  days, age at first kidding was  $486.25 \pm 10.81$  days, service period was  $89.11 \pm 2.45$  days, kidding interval was  $246.95 \pm 7.10$  days, dry period was  $113.98 \pm 4.15$  days, estrus duration was  $29.14 \pm 2.42$  days, gestation period was  $151.25 \pm 6.31$  days and average litter size was  $1.65 \pm 0.21$ .

**Keywords:** Gestation period, Lactation length, Maharashtra state, Marathwada, Udgiri goat

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Osmanabadi goat is widely distributed in Marathwada region of Maharashtra and known for their reproductive capacity, high twinning percentage and yielding milk which are mainly reared for milk and meat purpose. They perform the best potential in the native breeding track and considered as one of the hardest animals domesticated by human, are an important source of income and occupation to a rural population. However, apart from these described /recognized goat population in the country, a large number of non-descript goat population are present which does not involve in any recognized breeds. In Maharashtra's Marathwada region, the breeding tract of Sangamneri and Osmanabadi goats are adjoining and hence indiscriminant breeding practice over the decades, may develop of new goat breed with the admixture of these two breed. Therefore, an investigation was undertaken to perform baseline survey and record/measure the data on various body phenotypic parameters amongst the non-descript goat in Marathwada and western Maharashtra region for unique phenotypic characters to find out the non-descript goat as potential for recognition into new goat breed in state of Maharashtra.

## Locations of the study areas

The present study was carried out in total 242 villages from total eleven districts which include seven districts from Marathwada viz. Latur, Parbhani, Aurangabad, Nanded, Jalna, Osmanabad and Beed and four districts of western Maharashtra viz. Ahmednagar, Satara, Solapur and Nasik for four years during 2018 to 2021. The villages were selected by four levels of sampling in each district, two stage stratified sampling technique was performed.

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wherein all tahsil within each district and two villages in each tahsil was selected at random to obtain data on different performance traits. Total 1070 local goats were surveyed which includes 389 male and 681 female animals. The local farmers of each district were visited and information was recorded/collected in the prescribed format as per ICAR-NBAGR guidelines (ICAR-NBAGR, 2021). The milk yield of each goat was calculated using the Test Interval Method (TIM) recommended by International Committee for Animal Recording (ICAR, 2011). The actual milk yield for 24 hours was recorded at the interval of 15 days.

Lactation Milk Yield (LMY) =  $I_0M_1 + I_1(M_1 + M_2)/2 + I_2(M_2 + M_3)/2 + \dots + I_{n-1}(M_{n-1} + M_n)/2 + I_nM_n$

Where,

$M_1, M_2, \dots, M_n$  = actual milk yield in 24 hours of the recording days (Ltrs)

$I_1, I_2, \dots, I_{n-1}$  = the interval between recording dates (days)

$I_0$  = the interval between the lactation period start date and first recording date (days)

$I_n$  = the interval between the last recording date (days)

Least squares analysis of variance technique was used to study the influence of non-genetic factors. The means were tested for those fixed effects which were found significant difference by Duncan's multiple range test (DMRT).

The average production traits were studied in Udgiri goat. It was observed that, the average least square means for lactation length, average daily milk yield, total lactation milk yield, Fat % and SNF % in Udgiri goat were

**Table 1. The average production performance of Udgiri goat**

Sr. No.	Traits	Numbers of observations	Mean $\pm$ SE	Range
1.	Lactation length (days)	237	129.78 $\pm$ 4.62	120.97 to 137.34
2.	Average daily milk yield (Lits)	237	0.79 $\pm$ 0.025	0.5 to 1.0
3.	Total Lactation milk yield (Lits)	237	74.56 $\pm$ 3.54	69.57 to 78.34
4.	Fat %	87	3.29 $\pm$ 0.13	2.24 to 4.25
5.	SNF %	87	10.65 $\pm$ 1.10	08.95 to 11.45

**Table 2. The average reproduction performance of Udgiri goat**

Sr. No.	Traits	Numbers of observations	Mean $\pm$ SE	Range
1.	Age at first maturity (days)	213	326.23 $\pm$ 7.25	313 to 348
2.	Age at first kidding (days)	237	486.25 $\pm$ 10.81	471.54 to 488.14
3.	Service period (days)	98	89.11 $\pm$ 2.45	62.12 to 113.24
4.	Kidding interval (days)	89	246.95 $\pm$ 7.10	257.12 to 263.11
5.	Dry period (Days)	216	113.98 $\pm$ 4.15	97.91 to 138.34
6.	Oestrous cycle (days)	237	29.14 $\pm$ 2.42	27.89 to 31.91
7.	Gestation period (days)	237	151.25 $\pm$ 6.31	131.45 to 163.43
8.	Litter size	237	1.65 $\pm$ 0.21	1.12 to 1.72

129.78  $\pm$  4.62 days, 0.79  $\pm$  0.025 liters, 74.56  $\pm$  3.54 days, 3.29  $\pm$  0.13 and 10.65  $\pm$  1.10, respectively (Table 1). In accordance with the present findings, Sawaimul *et al.* (2009) reported the daily milk yield ranged from 700 gm to 1500 gm under well managed village flocks with lactation length of 130-150 day in Osmanabadi goat. However, In Sangamneri goat, the average daily milk yield of 0.860 liters, lactation yield of 77.40 liters in about 160 days of lactation was reported in farm condition.

The least square means forage at first maturity in Udgiri goat is observed as 326.23 $\pm$ 7.25 days, age at first kidding was 486.25 $\pm$ 10.81 days, service period was 89.11 $\pm$ 2.45 days, kidding interval was 246.95 $\pm$ 7.10 days, dry period was 113.98 $\pm$ 4.15 days, estrus duration was 29.14 $\pm$ 2.42 days, gestation period was 151.25 $\pm$ 6.31 days and average litter size was 1.65 $\pm$ 0.21 (Table 2). Deokar *et al.* (2007) reported that the overall age at puberty, oestrus cycle duration, oestrus duration age at first conception, age at first kidding, service period, kidding interval and gestation period recorded in Sangamneri goats under field conditions are as 9.94 months, 29.14 days, 47.96 hours, 10.40 months, 15.52 months, 73.55 days, 218.48 days and

148.26 days, respectively.

## CONCLUSIONS

The production and reproduction parameters of Udgiri goat are nearly similar to the other recognized goat breeds in the region. If proper management and scientific breeding is practiced, it will be possible to improve productive and reproductive performance of Udgiri goat in the breeding tract. This goat has a potential to recognize as distinct goat breed which possesses unique features for conservation and further improvement of economic traits.

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