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#### Khatke SL

Post Graduate Student, College of Agriculture, Dr. BSKKV, Dapoli, Maharashtra, India

#### Mayekar AJ

Associate Professor, College of Agriculture, Dr. BSKKV, Dapoli, Maharashtra, India

#### Kadam NP

Post Graduate Student, College of Agriculture, Dr. BSKKV, Dapoli, Maharashtra, India

#### Desai BG

Head, AHDS, College of Agriculture, Dr. BSKKV, Dapoli, Maharashtra, India

#### Gavit MS

Post Graduate Student, College of Agriculture, Dr. BSKKV, Dapoli, Maharashtra, India

#### Corresponding Author:

#### Khatke SL

Post Graduate Student, College of Agriculture, Dr. BSKKV, Dapoli, Maharashtra, India

## Reproduction performance of non-descript buffalo in Konkan region of Maharashtra state

Khatke SL, Mayekar AJ, Kadam NP, Desai BG and Gavit MS

#### Abstract

The present investigation entitled “Morphological Characterization of Non-Descript Buffalo in Konkan Region of Maharashtra State.” was undertaken with the objectives to study the morphological characteristics, milk production performance, reproductive performance, disease incidence, mortality and morbidity, management practices and feeds and feeding of non-descript buffaloes of the Konkan region. For survey, four districts viz., Thane, Palghar, Ratnagiri and Sindhudurg of the Konkan region of Maharashtra were selected. The total sample size of 500 buffalo owners with 850 non-descript buffalo was considered for sample survey. The data were collected by personal interview and by taking measurements of the non-descript buffaloes.

The average daily milk yield, peak milk yield, total lactation milk yield, lactation length and dry period in non-descript buffaloes were  $6.48 \pm 0.34$  liters,  $6.80 \pm 0.24$  liters,  $1964.57 \pm 101.58$  liters,  $302.87 \pm 2.47$  days and  $138.14 \pm 2.41$  days, respectively. The average age at first calving, calving interval, service period, gestation period and number of calving were  $51.65 \pm 1.09$  months,  $433.06 \pm 4.03$  days,  $128.62 \pm 2.04$  days,  $309.86 \pm 0.48$  days,  $2.81 \pm 0.98$  numbers, respectively. Rainy season of calving showed (July-Oct), maximum calving (51.02%) as compared with other seasons.

**Keywords:** Non-descript, Buffalo, production performance, Konkan region

#### Introduction

The buffalo population in the Konkan region was rarely employed just to obtain female buffalo for milk production. Female buffaloes are a source of milk production, so it's important to improve the non-descript buffalo population for milk and work purposes in Konkan region. It will aid in the establishment of sustainable agriculture and employment in the region.

The agroclimatic condition of the Konkan region are typical owing to high rainfall, hot and humid climate and hilly terrain. This has impact on physiological and structural adoption of cattle and buffaloes in this region. Non-descript buffalo population of the Konkan region of Maharashtra state exhibit tremendous variation in characterization and production performance. So, far no such survey has been carried out in Konkan region.

As a first step in the process, it is necessary to conduct study on morphological characterization of the existing non-descript buffalo population and its link with production performance through a sample survey in terms of selecting the permissible animal for further development.

#### Material & methods

The data on morphological characteristics of non-descript buffaloes from Palghar, Thane, Ratnagiri and Sindhudurg districts was collected using a three-stage stratified random sampling method. In the first stage, five tehsils were randomly selected from the proposed districts under study viz., Palghar, Thane, Ratnagiri and Sindhudurg districts and five villages were randomly selected from each tehsil in the second stage. In the third stage, five farmers with buffalo from each village were chosen at random. Thus, total sample size was five hundred (500) buffalo owners.

The data was collected using a set of questionnaires that were adapted to study the objectives. The data was collected by a sample survey method. Before the actual data collection, the questionnaires were pretested. The information was collected through personal interview with the farmer as well as the measurements of morphological parameters of the non-descript buffaloes. The data collected were properly arranged, grouped and were analysed by using mean, average and standard error with statistical techniques.

## Results & Discussion

### Milk production performance

#### Daily milk yield

The daily milk yield of non-descript buffaloes recorded in Palghar, Thane, Ratnagiri and Sindhudurg districts was  $6.45\pm 0.35$ ,  $6.49\pm 0.34$ ,  $6.46\pm 0.33$  and  $6.52\pm 0.28$  liters, respectively. The overall average daily milk yield observed in non-descript buffaloes was  $6.48\pm 0.34$  liters in the Konkan region of Maharashtra. Compared with the present finding, Karim *et al.* (2013) [3] reported low milk yield in indigenous buffalo. They reported average milk yield of  $3.33\pm 0.68$  liters/day and  $3.43\pm 0.744$  liters/day in buffaloes of Pirojpur and Borguna district of Bangladesh, respectively.

#### Peak milk yield

The Peak milk yield of non-descript buffaloes recorded in Palghar, Thane, Ratnagiri and Sindhudurg district was  $6.81\pm 0.24$ ,  $6.81\pm 0.24$ ,  $6.80\pm 0.24$  and  $6.79\pm 0.24$  liters, respectively. Irrespective of districts, the average peak milk yield observed in non-descript buffaloes was  $6.80\pm 0.24$  liters in the Konkan region of Maharashtra. The results corroborate with the findings of Siddiquee *et al.* (2010) [5] who observed that the average peak milk yield of indigenous buffaloes in Trishal and Companiganj sub-districts were as  $5.03\pm 0.678$  kg and  $1.50\pm 0.717$  kg, respectively.

#### Lactation milk yield

The means of total lactation milk yield of non-descript buffaloes recorded in Palghar, Thane, Ratnagiri and Sindhudurg district was  $1953.98\pm 108.71$ ,  $1967.38\pm 106.16$ ,  $1959.44\pm 102.93$  and  $1976.78\pm 88.13$  liters, respectively. The average total lactation milk yield of  $1964.57\pm 101.58$  liters

was observed in the Konkan region of Maharashtra. Similar report was also made by Das and Balaine (1985) [2] who observed that average lactation milk yield was  $1764.45\pm 9.51$  kg in indigenous buffaloes. Thiruvankadan *et al.* (2010) [7] observed that the average lactation milk yield of Murrah buffalo was  $1686.2\pm 44.4$  kg in the coastal region of India.

#### Lactation length

Average lactation length in non-descript buffaloes was observed in Palghar, Thane, Ratnagiri and Sindhudurg district as  $302.93\pm 2.46$ ,  $302.85\pm 2.47$ ,  $302.89\pm 2.48$  and  $302.85\pm 2.49$  days, respectively. The average lactation length in non-descript buffaloes was  $302.87\pm 2.47$  days in the Konkan region of Maharashtra. Lactation length observed in the present survey corroborated with the findings of Thiruvankadan *et al.* (2010) [7] who observed the average lactation length as  $312.8\pm 5.7$  days in Murrah buffalo maintained in the coastal region of India.

#### Dry period

Average dry period in non-descript buffaloes was recorded in Palghar, Thane, Ratnagiri and Sindhudurg district as  $137.9\pm 2.47$ ,  $138.33\pm 2.36$ ,  $137.89\pm 2.47$  and  $138.33\pm 2.36$  days, respectively. The average dry period observed in non-descript buffaloes was  $138.14\pm 2.41$  days in the Konkan region of Maharashtra. Similar observation of long average of dry period was noticed in Sankar *et al.* (2014) [4]. They found overall average dry period as  $144.34\pm 0.77$  days in different grades of buffaloes *viz.*, graded Murrah ( $130.48\pm 1.32$  days), Diara buffaloes ( $151.60\pm 1.30$  days) and non-descript buffaloes ( $150.93\pm 1.30$ ).

**Table 1:** District wise average milk production performance of non-descript buffaloes

District	No. of animals	Daily milk yield (liters)	Peak milk yield (liters)	Lactation milk yield (liters)	Dry period (days)
Palghar	150	$6.45\pm 0.35$	$6.81\pm 0.24$	$1953.98\pm 108.71$	$137.9\pm 2.47$
Thane	135	$6.49\pm 0.34$	$6.81\pm 0.24$	$1967.38\pm 106.16$	$138.33\pm 2.36$
Ratnagiri	145	$6.46\pm 0.33$	$6.80\pm 0.24$	$1959.44\pm 102.93$	$137.89\pm 2.47$
Sindhudurg	160	$6.52\pm 0.28$	$6.79\pm 0.24$	$1976.78\pm 88.13$	$138.33\pm 2.36$
Average	590	$6.48\pm 0.34$	$6.80\pm 0.24$	$1964.57\pm 101.58$	$138.14\pm 2.41$

### Reproduction performances

#### Age at first calving

The age at first calving in non-descript buffaloes in Palghar, Thane, Ratnagiri and Sindhudurg district was  $51.66\pm 1.09$ ,  $51.67\pm 1.08$ ,  $51.64\pm 1.10$  and  $51.66\pm 1.11$  months, respectively. The average age at first calving observed in non-descript buffaloes was  $51.65\pm 1.09$  months in the area under study. Similar findings were reported by Das and Balaine (1985) [2] who observed average age at first calving as  $44.32\pm 0.30$  months in Indian buffalo herd, maintained at military dairy farm at Jullundur, Ferozpur and Hissar.

#### Calving interval

The calving interval in non-descript buffaloes recorded in Palghar, Thane, Ratnagiri and Sindhudurg district was  $432.86\pm 4.06$ ,  $433.37\pm 4.13$ ,  $433.03\pm 3.57$  and  $433.03\pm 4.08$  days, respectively. Irrespective of districts, average calving interval observed in non-descript buffaloes was  $433.06\pm 4.03$  days in the Konkan region of Maharashtra. The results are similar to that of Sankar *et al.* (2014) [4] who noted all over calving interval as  $450.24\pm 1.53$  days in different grades of buffaloes *viz.* graded Murrah ( $424.32\pm 2.60$  days), Diara

buffaloes ( $464.21\pm 2.57$  days) and non-descript buffaloes ( $462.19\pm 2.55$  days), respectively.

#### Service period

The service period of non-descript buffaloes was recorded in Palghar, Thane, Ratnagiri and Sindhudurg district as  $128.44\pm 2.17$ ,  $128.89\pm 1.82$ ,  $128.75\pm 1.91$  and  $128.4\pm 2.18$  days, respectively. The overall average service period observed in non-descript buffaloes was  $128.62\pm 2.04$  days in the Konkan region of Maharashtra. The results agree with that of Banerjee (1998) [1] in Murrah buffalo ( $144.11$  days).

#### Gestation period

The gestation period of non-descript buffaloes was recorded in Palghar, Thane, Ratnagiri and Sindhudurg district as  $309.83\pm 0.49$ ,  $309.79\pm 0.50$ ,  $309.86\pm 0.503$  and  $309.93\pm 0.44$  days, respectively (Table 4.20). The overall average gestation period observed in non-descript buffaloes was  $309.86\pm 0.48$  days in the Konkan region of Maharashtra. Banerjee (1998) [1] reported  $307-314$  days gestation period in Murrah buffalo and  $308.5\pm 0.24$  days gestation period in Surti buffalo.

### Number of calvings

The number of calvings of non-descript buffaloes was recorded in Palghar, Thane, Ratnagiri and Sindhudurg district as  $2.09 \pm 0.99$ ,  $2.53 \pm 0.92$ ,  $2.53 \pm 0.94$  and  $3.22 \pm 0.91$  (Table 4.20). The average of number of calving in non-descript buffaloes was  $2.81 \pm 0.98$  in different districts of the Konkan region Maharashtra. Similar results are reported by Thalkar and Kasal (2018) [6] who observed number of calving as  $3.728 \pm 0.067$  in Purnathadi buffalo in Akotahsil of Akola district of Maharashtra state and  $3.694 \pm 0.054$  in Ellichpuri strain of Nagpuri buffaloes in Partwada, Achalpur tahsil of

Amaravati district.

### Season of calving

The different districts of the Konkan region had 17.29, 51.02 and 31.69 per cent calving in summer (March-June), Rainy (July-Oct) and winter (Nov-Feb) seasons, respectively. This showed that the highest number of calving were in rainy season. The result is similar to that of Siddiquee *et al.* (2010) [5] who observed that calving season in Trishal and Companiganj sub-district of Bangladesh was august to January.

**Table 2:** District wise average reproduction performances of non-descript buffaloes

District	No. of animals	Age at first calving (months)	Calving interval (days)	Service period (days)	Gestation period (days)	No. of calving	Season of calving (month) (%)		
							Summer (March- June)	Rainy season (July-Oct)	Winter (Nov-Feb)
Palghar	150	$51.66 \pm 1.09$	$432.8 \pm 4.06$	$128.44 \pm 2.17$	$309.83 \pm 0.49$	$2.09 \pm 0.99$	21.33 (32)	46.00 (69)	32.67 (49)
Thane	135	$51.67 \pm 1.08$	$433.3 \pm 4.13$	$128.89 \pm 1.82$	$309.79 \pm 0.50$	$2.53 \pm 0.92$	14.07 (19)	56.30 (76)	29.63 (40)
Ratnagiri	145	$51.64 \pm 1.10$	$433.03 \pm 3.57$	$128.75 \pm 1.91$	$309.86 \pm 0.503$	$2.53 \pm 0.94$	15.17 (22)	55.86 (81)	28.97 (42)
Sindhudurg	160	$51.66 \pm 1.11$	$433.03 \pm 4.08$	$128.4 \pm 2.18$	$309.93 \pm 0.44$	$3.22 \pm 0.91$	18.13 (29)	46.88 (75)	35.00 (56)
Average	590	$51.65 \pm 1.09$	$433.06 \pm 4.03$	$128.62 \pm 2.04$	$309.86 \pm 0.48$	$2.81 \pm 0.98$	17.29 (102)	51.02 (301)	31.69 (187)

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