

Research Article

PRODUCTIVE AND REPRODUCTIVE PERFORMANCES OF BALANKYA, WANNERA AND WAGHYA STRAINS OF DEONI CATTLE

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ABSTRACT: Present investigation was undertaken on Deoni, a dual purpose indigenous cattle breed, maintained at Livestock Research Centre of Southern Regional Station of ICAR-National Dairy Research Institute, Bangalore. The study was performed to estimate the productive (Lactation length - LL and Lactation Milk Yield - LMY) and reproductive (Age at First Calving - AFC, Service Period - SP and Calving Interval - CI) performances of Balankya, Wannera and Waghya strains of Deoni cattle. Lactation milk yield of Balankya, Wannera and Waghya strains was estimated as 823.55 ± 79.78 , 979.68 ± 77.94 and 1025.62 ± 100.66 kg in a lactation length of 194.59 ± 10.60 , 229.51 ± 11.91 and 222.74 ± 14.09 days, respectively. Service period was estimated as 165.55 ± 9.71 , 186.89 ± 12.04 and 190.14 ± 15.84 days, respectively. Dry period and calving interval of these strains were estimated as 250.77 ± 19.69 and 457.93 ± 12.10 , 254.6 ± 16.11 and 480.08 ± 12.75 and 265.81 ± 24.57 and 476.61 ± 16.66 days, respectively. Least squares analysis of mean was performed to compare the performances of LL, LMY, AFC, SP and CI of these three strains of the breed of the cattle. Any significant difference of age at first calving, lactation milk yield, lactation length, service period, dry period and calving interval could not be observed among Balankya, Wannera and Waghya strains of Deoni cattle.

Key words: Deoni, Balankya, Wannera, Waghya, Productive and reproductive performances, Indigenous cattle.

INTRODUCTION

Deoni is one of the dual purpose cattle breed found in Maharashtra, Andhra Pradesh and Karnataka states of India. Balankya, Wannera and Waghya strains of Deoni cattle are found in its native tract based on morphological and coat colour variation. Balankya strain has clear coat colour with black spots on lower sides of body. Clear white and black colour at the side of face is found in Wannera strain, whereas white body with irregular black spots is on Waghya strain of the breed. The breed of cattle was introduced at Deoni Improvement Centre of Southern Regional Station of ICAR-National Dairy Research Institute, Bangalore. The cattle are being maintained since 2002 in a semi intensive management system at the institute for improvement of the Deoni cattle. The study was performed to estimate the productive and reproductive performances of three different strains of Deoni cattle.

MATERIALS AND METHODS

A total of 160 different lactation records of 75 cows of different strains of Deoni cattle were collected from the LRC (Livestock Research Centre), SRS of ICAR-NDRI, Bangalore. Least squares analysis of Age at first calving (AFC), lactation milk yield (LMY), lactation length (LL), service period (SP), dry period (DP) and calving interval (CI) records of the cows were analysed by using SPSS software, described by Harvey (1966) as follows

$$y_{ij} = \mu + a_i + e_{ij}$$

y_{ij} = j^{th} observation (AFC, LMY, LL, SP, DP and CI) in i^{th} strain of Deoni cattle

$j = 1, 2, 3, \dots, n$ number of observation

i = Strain type (Balankya, Wannera and Waghya)

μ = Overall population mean

a_i = Effect of i^{th} strain

e_{ij} = Random error, normally independently distributed $(0, \sigma_e^2)$

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Table 1. Productive and reproductive performances of three strains of Deoni cattle.

	BALANKYA	CV (%)	WANNERA	CV (%)	WAGHYA	CV (%)
AFC (Month)	44.03 ± 1.21 (27)	14.27	47 ± 1.18 (30)	13.7	42.00 ± 1.42 (18)	14.31
LMY (Kg)	823.55 ± 79.78 (56)	72.49	979.68 ± 77.94 (61)	62.14	1025.62 ± 100.66 (43)	64.36
LL (Days)	194.59 ± 10.60 (56)	40.77	229.51 ± 11.91 (61)	40.53	222.74 ± 14.09 (43)	41.47
SP (Days)	165.55 ± 9.71 (55)	43.53	186.89 ± 12.04 (61)	50.33	190.14 ± 15.84 (43)	54.64
DP (Days)	250.77 ± 19.69 (43)	51.5	254.6 ± 16.11 (50)	44.76	265.81 ± 24.57 (37)	56.22
CI (Days)	457.93 ± 12.10 (42)	17.12	480.08 ± 12.75 (49)	18.59	476.61 ± 16.66 (36)	20.97

Numbers within parenthesis indicating number of lactation records of strains of Deoni cattle.

Table 2. Least squares constants of productive and reproductive performances of three strains of Deoni cattle.

	AFC (Months)	LMY (Kg)	LL (Days)	SP (Days)	DP (Days)	CI (Days)
Overall mean	40.97 ± 1.82	900.48 ± 56.17	199.55 ± 9.16	173.91 ± 8.40	259.81 ± 12.11	461.98 10.79
Balankya	-0.08544	116.4906	19.92538	14.91651	6.312132	13.52312
Wannera	-3.35462	-42.8788	-16.2202	-7.06793	2.861559	-9.94175
Waghya	3.440066	-73.6118	-3.70521	-7.84858	-9.17369	-3.58137

Table 3. Analysis of variance (Mean sum of squares and F-value) of productive and reproductive performances.

Traits	AFC	LMY	LL	SP	DP	CI
Between variance	198.1289	566240.5	19173.98	9134.499	2494.929	6257.73
Within variance	188.246	422970.3	11246.1	9360.271	16143.62	12472.27
F-value	1.0525	1.338724	1.704945	0.97588	0.154546	0.501731

RESULTS AND DISCUSSION

On analysis of the data, mean age at first calving of Balankya, Wannera and Waghya strains of Deoni cattle was estimated as 44.03 ± 1.21, 47 ± 1.18 and 42.00 ± 1.42 months respectively (Table 1). Age at first calving of Balankya (46.21 ± 1.03 months) and Waghya (44.51 ± 0.39 months) strains was higher in the reports of Kuralkar *et al.* (2012) than the present finding, whereas in Wannera strain it was 44.34 ± 0.43 months. Mean lactation milk yield of Wannera and Waghya strains was estimated 979.68 ± 77.94 and 1025.62 ± 100.66 kg which was higher than the reports of Kuralkar *et al.* (2012). Mean lactation length of Wannera and Waghya strains was computed as 229.51 ± 11.91 and 222.74 ± 14.09 days. Mean lactation milk yield of Balankya strain was computed as 823.55 ± 79.78 kg in a lactation length of 194.59 ± 10.60 days. Lower service period was observed in Balankya strain (165.55 ± 9.71 days) than Wannera (186.89 ± 12.04 days) and Waghya strain (190.14 ± 15.84 days) of Deoni cattle.

Lower calving interval also observed in Balankya strain (457.93 ± 12.10 days) than Wannera (480.08 ± 12.75 days) and Waghya (476.61 ± 16.66) strain. Lower service period and calving interval was found in Balankya strain in the investigation of Kuralkar *et al.* (2012). Dry period of Balankya, Wannera and Waghya strain was investigated as 250.77 ± 19.69, 254.6 ± 16.11 and 265.81 ± 24.57 days, respectively.

Least squares mean of lactation milk yield and lactation length, age at first calving, service period, dry period and calving interval of Deoni cattle was computed as 900.48 ± 56.17 kg and 199.55 ± 9.16 days, 40.97 ± 1.82 months, 173.91 ± 8.40, 259.81 ± 12.11 and 461.98 ± 10.79 days, respectively. Dhumal *et al.* (1993) reported lower least squares mean of lactation milk yield (605.0 ± 25.00 kg) of Deoni cattle than the present investigation. Previous study of Singh *et al.* (2002) and Das *et al.* (2011) indicated lower lactation milk yield of Deoni cattle than the present reports. Deshpande and Singh (1977b) mentioned lactation milk yield of Deoni cattle was 942.7 ± 16.6 kg. Reports

of mean lactation length Chakravarthi *et al.* (2002) and Das *et al.* (2011) were lower than the present finding in Deoni cattle. Deshpande and Singh (1977c) mentioned mean lactation length were 293.3 ± 2.9 days. Mean age at first calving of Deoni cattle was higher in the reports of Deshpande and Singh (1977a) and Singh *et al.* (2002), although Das *et al.* (2011) mentioned lower than the present study. Service period reported by Deshpande and Singh (1977d) and Singh *et al.* (2002) were similar to present finding. Mean dry period and calving interval of Deoni cattle were similar to the reports of Das *et al.* (2011) to the present values.

Least squares constants of productive and reproductive performances of Balankya, Wannera and Waghya strains are presented in Table 2. Results of analysis of variance (Table 3) revealed no significant differences of age at first calving, lactation milk yield, lactation length, service period, dry period and calving interval was observed in the three strains of Deoni cattle.

CONCLUSION

The study revealed that Waghya strains of Deoni breed of cattle had better performances of productive *i.e.* lactation milk yield and lactation length and reproductive *i.e.* age at first calving than Balankya and Wannera type. Whereas, service period, dry period and calving interval of Balankya type was lesser than Wannera and Waghya type of Deoni cattle. Any significant difference of age at first calving, lactation milk yield, lactation length, service period, dry period and calving interval could not be observed among three different strains of Deoni cattle.

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