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Milk Production and Reproduction Performance of Non-descript Buffaloes in Konkan Region

P.D. Chendge, S.U. Waghmare, S.P. Harane, S.L. Khatke, D.J. Bhagat, A.A. Hanmante[1] 10.18805/ajdfr.DR-1770

ABSTRACT

Background: Buffaloes are economically important in particular region and also buffalo milk are nutritionally rich. In Konkan region, buffalo should be rarely used only to get female buffalo for milk production. To improve the non-descript buffalo population for milk production and reproduction performance.

Methods: During survey period January, 2021 to February, 2021, record of 400 non-descript buffalo, 270 non-descript buffalo having more than 4 years age old to be selected.

Result: The average daily milk yield, peak milk yield, total lactation milk yield, lactation length and dry period in non-descript buffaloes were 6.45±0.16 liters, 7.6±0.14 liters, 2007.66±45.83 liters, 302.86±0.34 days and 146.66±0.48 days, respectively. The average age at first calving, calving interval, service period, gestation period and number of calving were 45.96±0.18 months, 449.30±0.53 days, 128.86±0.31 days, 303.66±0.49 days, 2.72±0.12 numbers, respectively and autumn season of calving was more than another season.

Key words: Buffalo, Konkan region, Milk production, Non-descript, Reproduction performance.

INTRODUCTION

According to the 2019 livestock census, India possesses 192.49 million cattle and 109.85 million buffaloes, which is about 36 and 20.5 per cent, respectively of the total livestock contributed in the world. The dairy industry in India has made significant progress in the last few decades, buffaloes play an important role in alternative livestock production.

Livestock housing conditions and all animal husbandry practices exert a considerable influence on animal behaviour, health and production. Integrating various aspects such as improved housing, nutrition, breeding and milking together are known to produce remarkable improvements in growth, reproduction and production performance (Patel *et al*., 2019).

The vast majority of buffaloes is non-descript in Konkan region. Today, India is the largest producer of milk in the world and the national per capita milk availability is 394 g/ day (Anonymous, 2019). The poor productivity of non-descript buffalo is mainly due to lack of proper knowledge for balance feeding of fodders. Majority of buffalo owners feed their buffaloes with roughages and concentrate but they should not have consciousness about quality and quantity of feed and also should not follow proper management practices which lead the dairy business uneconomical. Buffaloes are economically important in particular region and also buffalo milk are nutritionally rich. The farmers are keeping buffaloes for milk production (Momin *et al*., 2016).

Age at first calving is one of the most important characters of dairy animals as the life time milk production of an animal can be increased by reducing the age at first calving. Lactation milk yield is a well-established quantitative character of great economic importance to ensure high economic returns from dairy enterprises. An ideal calving interval of 12-14 months is desirable whereas a longer or shorter calving interval is unprofitable for the dairyman (Yadav *et al.,* 2007).

The dry period is a directly observed economic character of very high practical significance in dairy farming. Calving interval is the sign of sound reproductive status of milch animals. A milch animal is supposed to be economical if she has shorter dry period and lower calving interval. Thus, the dry period and the calving interval are the important economic traits that determine the milk production efficiency of buffaloes (Sanker *et al.,* 2014).

As per national level during 2017-2018, the average yield of milk per day per animal is given as indigenous buffalo 6.19 kg/day and non-descript buffalo 4.21 kg/day (Anonymous, 2019).

Department of Animal Husbandry and Dairy Science, College of Agriculture, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli-415 712, Maharashtra, India.
[1]Krishi Vigyan Kendra, Lanja, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli-415 712, Maharashtra, India.

Corresponding Author: P.D. Chendge, Department of Animal Husbandry and Dairy Science, College of Agriculture, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli-415 712, Maharashtra, India. Email: pdchendge@gmail.com

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There is variation for selection and improvement for milk performance. Milk production of non-descript buffalo are averagely lower than other recognized buffaloes. But it shows high adaptability in different agro-climatic condition in India. Efforts should be made for improve the milk production performance of non-descript buffalo. In Konkan region, buffalo population should be rarely used only to get female buffalo for milk production. Female buffalo are only source of milk production and hence, to improve the non-descript buffalo population for milk production and reproduction performance. Therefore, the present investigation on milk production and reproduction performance of non-descript buffaloes was undertaken.

MATERIALS AND METHODS

Location and period of study

The non-descript buffalo population of the Raigad district was studied through sample survey in Konkan region of the Maharashtra state. The survey was carried out under Dr. B. S.K.K.V. Dapoli university during the period of January, 2021 to February, 2021.

Climatic and weather condition

In Raigad district, it is characterized by high rainfall, ranging from 250 to 400 cm per annum, which distributed from June to September. The average minimum temperature is about 26.2°C, maximum temperature is about 41.7°C, humidity about 70 to 80 per cent. It lies in between 18.5158° N Latitude and 73.1822°E longitude, having an occupies total geographical area about 7148 km^2. The terrain is hilly, undulating and characterized by lateritic type of soil.

Source and sampling of data

Total sample size was 200 hundred buffalo owners and 400 non-descript buffaloes were selected in Mahad, Mangoan, Roha, Poladpur and Tala tahsils of Raigad district, in that 270 non-descript buffalo having more than 4 years age were selected as milk production and reproduction performance purpose.

Statistical analysis

The data collected were properly arranged, grouped and were analyzed by using suitable statistical techniques *i.e*., least square method to avoid non-orthogonally of the data.

RESULTS AND DISCUSSION

Milk production performances

Daily milk yield

The daily milk yield of non-descript buffaloes in different tahsils of the Raigad district have been furnished in Table 1.

The daily milk yield of non-descript buffaloes recorded in Mahad, Mangoan, Roha, Poladpur and Tala tahsils were 6.79 ± 0.14, 6.6 ± 0.13, 6.4 ± 0.13, 5.84 ± 0.26 and 6.61 ± 0.15 liters, respectively. The average daily milk yield observed in non-descript buffaloes was 6.45 ± 0.16 liters in Raigad district. Different findings were also reported by other authors Karim *et al.* (2013) reported that daily milk yield was 3.33±0.68 liters/day and 3.43±0.744 liters/day in Pirojpur and Borguna district of Bangladesh, respectively in Indigenous buffalo. Due to in Raigad district, buffalo owners feds concentrate mixture *viz.* cotton oil cake and gul pendh at the time of milking regularly, hence, daily milk production was better. The present finding was higher than the results reported by Sahu *et al.* (2017) in the Sambalpuri buffaloes was 2.95 ± 0.08 liters.

Peak milk yield

The peak milk yield of non-descript buffaloes recorded in Mahad, Mangoan, Roha, Poladpur and Tala tahsils were 7.79 ± 0.14, 7.60 ± 0.13, 7.40 ± 0.14, 7.6 ± 0.15 and 7.61 ± 0.15 liters, respectively. The average peak milk yield observed in non-descript buffaloes was 7.6 ± 0.14 liters in Raigad district. The result which is minutely higher than Siddiquee *et al.* (2010) observed that the average peak milk yield of buffaloes in Trishal and Companiganj sub-districts were as 5.03±0.678 kg and 1.50±0.717 kg, respectively in Indigenous buffalo, due to daily milk yield slightly maximum in non-descript buffalo than buffalo in Trishal and Companiganj sub-districts of Bangladesh. And similar result in Panicker *et al.* (2016) reported that the overall average peak milk yield was 6.00 ± 0.03 kg of Nagpuri buffalo under field condition.

Lactation milk yield

The means of total lactation milk yield of non-descript buffaloes recorded in Mahad, Mangoan, Roha, Poladpur and Tala tahsils were 2059.45±41.39, 1997.87±40.03, 1986.86±58.09, 1992.45±44.98 and 2001.68±44.70 liters, respectively. The average total lactation milk yield was

Table 1: Tahsil wise average milk production performance of non-descript buffaloes in Raigad district.

	No. of animals	Daily milk yield (liters)	Peak milk yield (liters)	Lactation milk yield (liters)	Lactation length (days)	Dry period (days)
Mahad	60	6.79±0.14	7.79±0.14	2059.45±41.39	303.25±0.31	147.58±0.35
Mangoan	57	6.6±0.13	7.60±0.13	1997.87±40.03	302.81±0.33	147.54±0.36
Roha	61	6.4±0.13	7.40±0.14	1986.86±58.09	302.70±0.32	146.23±0.52
Poladpur	45	5.84±0.26	7.6±0.15	1992.45±44.98	302.44±0.37	146.33±0.58
Tala	47	6.61±0.15	7.61±0.15	2001.68±44.70	303.09±0.36	145.64±0.6
Average		6.45±0.16	7.6±0.14	2007.66±45.83	302.86±0.34	146.66±0.48

2007.66 ± 45.83 liters observed in Table 1. Closely similar report was also made by Das and Balaine (1985) observed that average lactation milk yield was 1764.45±9.51 kg in Indian buffaloes. Thiruvenkadan *et al.* (2010) also observed that the average lactation milk yield of Murrah buffalo was 1686.2 ± 44.4 kg in the coastal region of India.

Likewise, Pawar *et al*. (2012) studied that average total lactation milk yield were recorded by 2229.87± 93.7 kg, of Murrah buffaloes.

Lactation length

The data with respect to lactation length of non-descript buffaloes in different tahsils of Raigad district have been presented in Table 1.

The lactation length in non-descript buffaloes was observed in Mahad, Mangoan, Roha, Poladpur and Tala tahsils as 303.25±0.31, 302.81±0.33, 302.70±0.32, 302.44±0.37 and 303.09±0.36 days, respectively. The average Lactation length in non-descript buffaloes was 302.86±0.34 days in Raigad district. Lactation length observed corroborated with the previous finding on close related to Thiruvenkadan *et al.* (2010) observed that lactation length were 312.8±5.7 days of productive trait of Murrah buffalo maintained in the coastal region of India. Present results are in close agreement with Karim *et al.* (2013) reported that the productive parameter including lactation length in Mothbaria Upazila of Pirojpur district were 286.12±11.27 days and 290.44±10.92 days in of Pathorghata Upazila of Borguna district, respectively in Indigenous buffalo.

Dry period

The dry period of non-descript buffaloes in Table 1 was recorded in Mahad, Mangoan, Roha, Poladpur and Tala tahsils as 147.58±0.35, 147.54±0.36, 146.23±0.52, 146.33±0.58 and 145.64±0.6 days, respectively. The average dry period observed in non-descript buffaloes was 146.66±0.48 days in Raigad district. Similar observation of longest average of dry period noticed by Sanker *et al.* (2014) observed that over all dry period was found to be 144.34±0.77 days in different grades of buffaloes *viz*., graded Murrah (130.48±1.32 days), Diara buffaloes (151.60±1.30 days) and non-descript buffaloes (150.93±1.30) respectively.

Reproduction performances

Age at first calving

It is observed in Table 2 that the age at first calving in non-descript buffaloes in Mahad, Mangoan, Roha, Poladpur and Tala tahsils were 45.6±0.18, 45.84±0.17, 45.96±0.16, 46.17±0.20 and 46.25±0.20 months, respectively. The average age at first calving observed in non-descript buffaloes was 45.96±0.18 months have been indicated in Table 2. The similar result finding in accordance of Das and Balaine (1985) observed that average age at first calving was 44.32±0.30 months in Indian buffalo herd maintained at military dairy farm at Jullundur and Ferozepur and pregency testing farm a Hissar. On contrary, the higher age at first calving was reported by Siddiquee *et al.* (2010) in Trishal and Companiganj sub-district of Bangladesh were 59.35±0.922 and 59.85±2.954 months, respectively. Karim *et al*. (2013) also observed that age of first calving of indigenous buffalo were 50.88±1.71 months and 51±1.8 months in Pirojpur and Borguna district of Bangladesh, respectively. Sahu *et al.* (2017) observed that age at first calving was 1488.42±3.24 days in the Sambalpuri buffaloes of India.

Calving interval

The means of calving interval in non-descript buffaloes recorded in Mahad, Mangoan, Roha, Poladpur and Tala tahsil were 450.5±0.32, 450.08±0.45, 448.52±0.52, 448.88±0.74 and 448.51±0.64 days, respectively. The average calving interval observed in non-descript buffaloes was 449.30±0.53 days have been indicated in Table 2. The result might be similar to Sanker *et al.* (2014) noticed that over all calving interval was 450.24±1.53 days in different grades of buffaloes *viz*., graded Murrah (424.32±2.60 days), Diara buffaloes (464.21±2.57 days) and non-descript buffaloes (462.19±2.55), respectively. Nava-Trujillo *et al.* (2018) observed that calving interval was 453.55 days of water buffaloes in farm is located in the Catatumbo County, Zulia State, Venezuela.

Services period

The service period of non-descript buffaloes in Table 2 was recorded in Mahad, Mangoan, Roha, Poladpur and Tala

Table 2: Tahsil wise average reproduction performances of non-descript buffaloes in Raigad district.

Tahsils	No. of animals	Age at first calving (months)	Calving interval (days)	Service period (days)	Gestation period (days)	No. of calving	Season of calving (months)			
							Summer (March-April)	Rainy (June-July)	Autumn (Sep-Oct)	Winter (Dec-Jan)
Mahad	60	45.6±0.18	450.5±0.32	128.35±0.28	303.75±0.48	3.36±0.11	18.33	21.68	29.99	30.00
Mangoan	57	45.84±0.17	450.08±0.45	128.36±0.30	303.42±0.45	2.84±0.11	19.30	22.8	35.1	22.8
Roha	61	45.96±0.16	448.52±0.52	129.06±0.25	303.19±0.45	2.22±0.11	26.23	18.1	29.52	26.15
Poladpur	45	46.17±0.20	448.88±0.74	129.11±0.37	304±0.55	2.46±0.13	18.76	24.45	33.34	24.45
Tala	47	46.25±0.20	448.51±0.64	129.44±0.33	303.93±0.52	2.72±0.12	21.28	24.33	38.41	15.9
Average		45.96±0.18	449.30±0.53	128.86±0.31	303.66±0.49	2.72±0.12	20.78	22.09	33.27	23.86

tahsils as 128.35±0.28, 128.36±0.30, 129.06±0.25, 129.11±0.37 and 129.44±0.33 days, respectively. The average service period observed in non-descript buffaloes was 128.86±0.31 days in Raigad district. The result are nearly close to Banerjee (1998) in Murrah buffalo 144.11 days.

Gestation period

The gestation period of non-descript buffaloes in Table 2 was recorded in Mahad, Mangoan, Roha, Poladpur and Tala tahsils as 303.75±0.48, 303.42±0.45, 303.19±0.45, 304±0.55 and 303.93±0.52 days, respectively. The average gestation period observed in non-descript buffaloes was 303.66±0.49 days in Raigad district. The result is slightly different in Sahu *et al.* (2017) in Sambalpuri buffaloes. Due to the difference in performance of the animals among different periods might be attributed to differences in management practices, sires used for breeding, environmental conditions such as ambient temperature, humidity, rainfall and variations in feed and fodder availability. Banerjee (1998) reported 307-314 days gestation period in Murrah buffalo and 308.5±0.24 days gestation period in Surti buffalo.

Number of calving

The number of calving observed in non-descript buffaloes in Mahad, Mangoan, Roha, Poladpur and Tala tahsils as 3.36±0.11, 2.84±0.11, 2.22±0.11, 2.46±0.13 and 2.72±0.12. The average number of calving in non-descript buffaloes was 2.72±0.12 have been indicated in Table 2. Present finding of results are nearly same which is reported to Thalkar and Kasal (2018) observed that number of calving was 3.728±0.067 in Purnathadi in Akot tahsil of Akola district of Maharashtra state and 3.694 ± 0.054 in Ellichpuri strain of Nagpuri buffaloes in Partwada, Achalpur tahsil of Amaravati district.

Season of calving

The results indicated in Table 2 that in non-descript buffaloes, an average season of calving were Summer (March-April), Rainy season (June-July), Autumn (Sep-Oct) and Winter (Dec-Jan) season in proportion of 20.78, 22.09, 33.27 and 23.86 per cent, respectively. The higher average season of calving of non-descript buffaloes was recorded as autumn season (Sep-Oct) 33.27 per cent, in Raigad district. The result is almost same as Siddiquee *et al.* (2010) observed that calving season in Trishal and Companiganj sub-district of Bangladesh was both august to January. But might different in Thiruvenkadan (2011) observed that season of calving Murrah buffaloes were Winter (Jan-Feb), Summer (Mar-May), South-west monsoon (Jun- Sep) and North-east monsoon (Oct- Dec) at coastal region of Tamil Nadu, India. And same as Chaikhun *et al.* (2013) studied that the highest percentage of season of calving in Murrah buffaloes were mainly observed in August, September and October (11.2%, 19.3% and 16.8%, respectively). These results are in line with the results of present findings.

CONCLUSION

It is clearly showing that milk production performance that the non-descript buffaloes were much good milk yielder female and better reproductive performance. Farmers did not much attention of animals are reared for drought work purpose.

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REFERENCES

Anonymous (2019). 20th Livestock Census 2019. All India Report. Ministry of Agriculture. Dept. of Animal Husbandry, Dairying and Fisheries. Government of India.

Banerjee, G.C. (1998). A Textbook of Animal Husbandry. Oxford and IBH publishing Co. Pvt. Ltd. New Delhi. ISBN 978-81-204-1260-6. Pp. 697-708.

Chaikhun, T., Hengtrakunsin, R. and Mitchaothai, J. (2013). Reproductive performance of murrah buffaloes under intensive farming system in Thailand. Buffalo Bulletin. 32(2): 568-571.

Das, D. and Balaine, D.S. (1985). Production performance of Indian buffaloes. Buffalo Bulletin. 4(4): 63-66.

Karim, M.R., Hossain, M.Z., Islam, M.R., Parvin, M.S. and Matin, M.A. (2013). Reproductivity, productivity and management system of indigenous buffalo (*Bubalus bubalis*) cows in coastal areas of Pirojpur and Borguna district of Bangladesh. Progress. Agric. 24(1 and 2): 117-122.

Momin, M.M., Khan, M.K.I. and Miazi, O.F. (2016). Performance traits of buffalo under extensive and semi intensive bathan system. Iranian J. of Applied Anim. l Sci. 6(4): 823-83.

Nava-Trujillo, H., Escalona-Muñoz, J., Carrillo-Fernández, F. and Parra-Olivero, A. (2018). Effect of parity on productive performance and calving interval in water buffaloes. J. of Buffalo Sci. 7: 13-16.

Panicker, V.C., Sirothia, A.R. and Upadhyay, S.R. (2016). Production performance of Nagpuri buffalo under field condition. Buffalo Bulletin. 35(4): 715-722.

Patel, N.S., Patel, J.V., Parmar, D.V., Ankuya, K.J., Patel, V.K., Madhavatar, M.P., Thakkar, N.K., Prajapati, R.K. and Prajapati, K.B. (2019). Survey on housing practices of buffaloes owners in Patan district of Gujarat, India. J. of Ento. and Zoology Studies. 7(2): 635-640.

Pawar, H.N., Ravi Kumar, G.V.P.P.S. and Narang, R. (2012). Effect of year, season and parity on milk Production traits in Murrah buffaloes. J. of Buffalo Sci. (1): 122-125.

Sahu, S., Nayak, G.D. and karna, D.K. (2017). Phenotypic characteristics of Sambalpuri buffaloes of India. Buffalo Bulletin. 36(4): 615-621.

Sanker, S., Kumar, D., Mandal, K.G., Taggar, R.K. and Das, A.K. (2014). Factors influencing the dry period and calving interval in different grades of buffaloes. Buffalo Bulletin. 33(1): 120-126.

Siddiquee, N., Faruque, M.O., Islam, F., Mijan, M.A. and Habib, M.A. (2010). Morphometric measurements, productive and reproductive performance of buffalo in Trishal and Companiganj Sub-Districts of Bangladesh. Int. J. BioRes. 1(6): 15-21.

Thalkar, M.G. and Kasal, Y.G. (2018). Productive and reproductive performance of Purnathadi and Ellichpuri strain of Nagpuri buffaloes. Plant Archives. 18(1): 1122-1124.

Thiruvenkadan, A.K. (2011). Performance of Murrah buffaloes at coastal region of Tamil Nadu, India. Indian J. of Anim. Sci. 81(10): 1080-1083.

Thiruvenkadan, A.K., Panneerselvam, S., Rajendran, R. and Murali, N. (2010). Analysis on the productive and reproductive traits of Murrah buffalo cows maintained in the coastal region of India. Applied Anim. Husb. and Rural Dev. 3: 1-5.

Yadav, B.S., Yadav, M.C., Singh, A. and Khan, F.H. (2007). Study of economic traits in Murrah buffaloes. Buffalo Bulletin. 26(1): 10-14.