International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 08 Issue 04 April 2025
DOI: 10.47191/ijcsrr/V8-i4-32, Impact Factor: 8.048
IJCSRR @ 2025
www.ijcsrr.org

Reproduction Performance Madura Cattle in Ganding Distric and Lenteng Distric, Sumenep Regency

Arlieza Rizki[1], Kuswati[2], Sri Wahjuningsih[3]
[1] Student of Animal Science Faculty, Brawijaya UniversityJl. Veteran Malang, 65145, Indonesia
[2,3] Lecturers of Animal Science Faculty, Brawijaya University Jl. Veteran Malang, 65145, Indonesia

ABSTRACT: This research aimed to evaluate the reproductive performance of female Madura cattle in Ganding and Lenteng Districts, Sumenep Regency. The research utilized a total of 126 female Madura cattle, comprising 50 individuals from Lenteng District and 76 from Ganding District. The variables examined included breeding system, service per conception , conception rate, days open, and calving interval. The collected data were analyzed descriptively. The findings revealed that within the breeding system, 92.36% of the cows were bred through artificial insemination, while 7.49% were bred naturally with bulls. The service per conception value was recorded at 1.49, days open averaged 108.97 ± 26.89 days, and the calving interval was 388.04 ± 27.85 days. The reasearch concluded that Madura cattle in Ganding and Lenteng Districts exhibit good reproductive performance concerning service per conception. However, the extended days open and calving interval indicate the presence of prolonged intervals between calvings, suggesting areas for improvement in reproductive management.

KEYWORDS: Madura Cattle, Reproductive Performance, Service per Conception.

INTRODUCTION

Madura cattle are one of Indonesia's native plasma breeds that play an important role in the livestock sector, especially in East Java Province, including Sumenep Regency. These cattle are known for various advantages, such as resistance to the hot tropical climate, the ability to survive on limited feed, disease resistance, and good meat quality (Herviyanto et al., 2020). Additionally, Madura cattle require less feed compared to imported cattle, making them more efficient and economical to maintain for small-scale farmers (Hastutiek et al., 2019). Sumenep Regency, particularly Ganding District and Lenteng District, has great potential to become areas for developing Madura cattle. As regions with significant livestock populations, these two districts play a strategic role in meeting the needs for breeding stock and beef in East Java.

Optimizing the reproductive performance of Madura cattle is a key focus to support the sustainability and increase the productivity of livestock in this area. Reproductive performance in livestock, especially in female cattle, is a crucial factor in the efficiency of beef cattle production. Aspects of reproduction, such as services per conception, conception rate, calving interval, and days open, directly affect livestock productivity and the profits obtained by farmers (Agung et al., 2018). Improving reproductive performance not only impacts a larger livestock population but also enhances the welfare of farmers through increased income.

Artificial insemination is one of the reproductive technologies that have proven effective in enhancing livestock reproductive performance. However, the success of this technology depends on various factors, including good reproductive management and the quality of breeding cattle. Therefore, assessing the reproductive performance of female Madura cattle in Ganding District and Lenteng District is essential to support the efforts in developing Madura cattle as a regionally superior commodity. This research aims to evaluate the reproductive performance of female Madura cattle in Ganding District and Lenteng District, Sumenep Regency, as an initial step to increase productivity and support the sustainable development of Madura cattle.

MATERIALS AND METHODS

Materials

This research was conducted from August to September 2022 in Lenteng District and Ganding District, Sumenep Regency, East Java Province. The subjects of observation in this study were 50 Madura cows from Lenteng District and 76 Madura cows from Ganding District.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 08 Issue 04 April 2025
DOI: 10.47191/ijcsrr/V8-i4-32, Impact Factor: 8.048
IJCSRR @ 2025
www.ijcsrr.org

Methods

This research employed a survey methodology. Sample selection was conducted using purposive sampling, specifically selecting cows that have calved at least twice as the subjects of the research. The data utilized in this study comprised primary data obtained through direct interviews with farmers using structured questionnaires. Additionally, supplementary data were collected from inseminator records to ensure the accuracy and completeness of information related to cattle reproductive performance.

Data Analysis

The obtained data were analyzed using descriptive analysis, presented in the form of means and standard deviations. The variables observed included the mating system, service per conception, calving interval, and days open.

Service per Conception

The data required to calculate S/C include the number of matings needed by a Madura cow to achieve one conception, divided by the number of cows in heat within the group. Susilawati (2011) explains that the percentage of Service per Conception is determined using the following formula:

$$\text{Service per Conception} = \frac{\text{Number of matings (services) required}}{\text{Number of pregnant cows}}$$

Calving Interval

The data needed to calculate the calving interval are the number of days required by a Madura cow from one birth until the next birth.

Days Open

The data required to calculate days open are the length of time (in days) that a Madura cow takes to become pregnant again after giving birth.

RESULT AND DISCUSION

Farmer Characteristics

Table 1. Characteristics of Farmers in Ganding District and Lenteng District

No	Characteristics	Percentage
2	Age (year)	53,39±10,77
	21-40	12 %
	41-60	67 %
	>60	22 %
3	Education Level (%)	
	- Elementary school	77
	- Junior high school	7
	- Senior high school	2
	- Higher Education	1
	- Never attended school	14
4	Breeder Experience (%)	
	- <1 years	1
	- >1-<5 years	3
	- 5-10 years	20
	- >10 years	76

Based on the data presented in Table 1, the average age of farmers in Ganding District and Lenteng District is 53.39 ± 10.77 years, with the majority (67%) falling within the 41-60 age range. According to the World Health Organization (WHO), the productive working age range is 15-64 years, indicating that most farmers in this region are still within their productive years (WHO, 2020). However, 22% of the farmers fall into the non-productive age category, relying on younger family members to support livestock maintenance activities. The lack of interest among the younger generation in farming is attributed to perceptions that farming is strenuous, lacks entertainment, offers limited leisure time, and provides low income (Dantas et al., 2018).

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 08 Issue 04 April 2025
DOI: 10.47191/ijcsrr/V8-i4-32, Impact Factor: 8.048
IJCSRR @ 2025
www.ijcsrr.org

The productive age of farmers presents a strategic opportunity for increasing livestock production. Agus and Widi (2018) state that the age of farmers significantly influences their commitment to running farming businesses. As farmers age, they become more prepared to face challenges and seek alternative solutions. Rehman and Mumtaz (2023) add that farmers within the productive age range possess good physical and cognitive conditions, enabling them to acquire enhanced skills and knowledge through extension services and the introduction of technology. Additionally, 76% of the farmers have more than 10 years of farming experience, indicating high skill levels and increased productivity with experience. This experience often correlates positively with knowledge and farming skills, allowing farmers to improve business efficiency (Ayal and Mamo, 2024). However, older farmers tend to adhere to traditional practices, making it difficult to adopt new methods in livestock business development.

The education level of farmers in Ganding District and Lenteng District remains low, with 77% of farmers having only completed primary education and merely 1% holding a university degree. This low education level hampers livestock business development due to limited capacity to adopt new innovations and technologies (Mckay, 2020). Additionally, low education impacts farmers' ability to assimilate information related to better management practices, thereby slowing the adoption of livestock technologies (Menconi, Grohmann, and Mancinelli, 2017). Furthermore, 96.48% of Madura cattle farmers in the study area also engage in cultivating food crops and tobacco, making livestock farming a supplementary activity to generate additional income and serve as a form of savings. According to Mastuti, Setiawan, and Basriwijaya (2023), farmers choose to engage in livestock farming as a risk mitigation strategy against crop failures and as an additional income source to meet household needs. During the dry season, agricultural residues such as rice straw, bran, and corn cobs are used as the primary feed due to the difficulty in obtaining fresh forage.

MATING SYSTEM

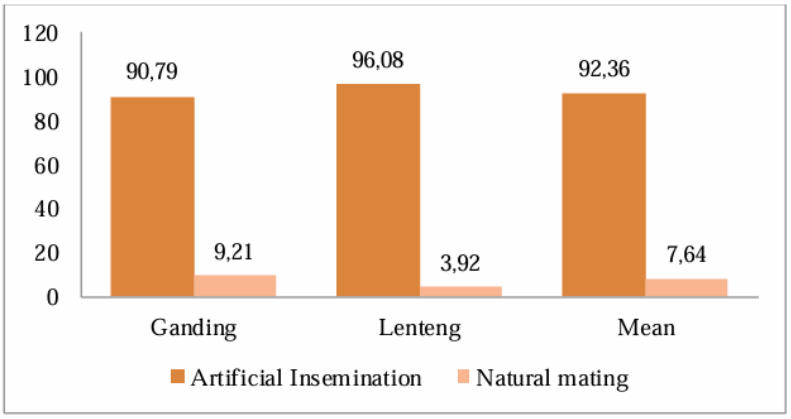

Figure 1. Mating System

Most farmers in Ganding District and Lenteng District have implemented artificial insemination (AI) technology in livestock breeding, with an adoption rate reaching 92.36%. The high usage of AI indicates that both districts have successfully implemented AI programs on a large scale as an effort to improve livestock quality. Artificial insemination plays an important role in increasing livestock productivity through faster genetic improvement, thereby producing animals with better production and reproductive potential (Silva and Pimentel, 2017).

The success of the artificial insemination program in this region is inseparable from the farmers' ability to accurately detect estrus, which is a crucial factor in the effectiveness of the insemination process. Additionally, the presence of inseminators in each district provides adequate technical support to the farmers. However, approximately 7.49% of Madura cattle farmers in Ganding District and Lenteng District still use natural mating methods, particularly for Sonok cattle.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 08 Issue 04 April 2025
DOI: 10.47191/ijcsrr/V8-i4-32, Impact Factor: 8.048
IJCSRR @ 2025
www.ijcsrr.org

SEVICE PER CONCEPTION

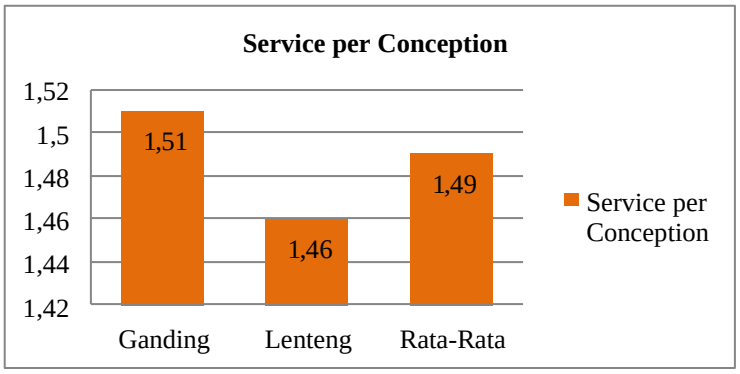

Figure 2. Number of Service per Conception Madura Cattle

Service per Conception is one of the indicators used to calculate the number of insemination services required for Madura cattle to achieve conception. The research results indicate that the average Service per Conception for Madura cattle at the study locations is 1.49 times. According to Susilawati (2013), a good Service per Conception value ranges between 1.6 and 2.0, where a lower Service per Conception value signifies higher fertility rates. This suggests that the S/C values of Madura cattle in Ganding District and Lenteng District fall into the very good category. Conversely, high Service per Conception values can lead to economic losses for farmers because more than one artificial insemination is required. Additionally, an increase in Service per Conception extends the calving interval, thereby reducing efficiency in breeding efforts and necessitating improvements in mating management among farmers.

The average Service per Conception value in this study is better compared to previous research by Siswijono, Nurgiartiningsih, and Hermanto (2014), who reported a Service per Conception value of 1.5 for Madura cattle in Bangkalan and Sampang Regencies; Nurlaila et al. (2018), who found a Service per Conception value of 1.59 for Sonok cattle in Pamekasan Regency; Kutsiyah (2017), who reported a Service per Conception value of 1.68 on Sapudi Island; Rasyad et al.
(2022), who recorded a Service per Conception value of 1.53 for double-dose AI acceptors and 1.71 for single-dose AI in Madura cattle in Lenteng District; and Jakfar and Agustina (2024), who recorded a Service per Conception value of 1.18 in Pegantenan District.

DAYS OPEN

Table 2. Number of Days Open Madura Cattle

Regency	*Days Open* (days)
Lenteng	102,32 ±28,77
Ganding	113,37±24,81
Total	108,97±26,89

Days open is the period from calving until the cow becomes pregnant again. The research results indicate that the average days open for Madura cattle in Ganding District is 113.37 ± 24.81 days, which is longer compared to days open in Lenteng District at 102.32 ± 28.77 days. The days open values obtained in this study are lower than those reported for Sonok cattle in Pamekasan Regency by Nurlaila et al. (2018), which was 5.53 ± 0.65 months, but much higher than the results of Hartati et al. (2021) on Madura cattle at the Grati Beef Cattle Research Location in Pasuruan, which showed days open of 78.1 ± 22.1 days. The high days open values at the study locations are caused by the weaning period factor. Madura cattle farmers in Ganding and Lenteng Districts have not yet implemented early weaning of calves, with weaning typically occurring at 4 months of age. The prolonged weaning period leads to postpartum anestrus. Early weaning of calves can stop the milk secretion process, causing the hypothalamus to stimulate the anterior pituitary to secrete Gonadotropin-Releasing Hormone (GnRH), which then affects the secretion of Follicle-Stimulating Hormone (FSH) and Luteinizing Hormone (LH), thereby promoting follicle development and the estrus period (Anwar et al., 2022).

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 08 Issue 04 April 2025
DOI: 10.47191/ijcsrr/V8-i4-32, Impact Factor: 8.048
IJCSRR @ 2025
www.ijcsrr.org

According to Evans et al. (2022), female beef cattle begin their estrous cycle and are bred again within 45–60 days after calving to maintain an optimal calving interval. To establish an efficient breeding operation and ensure that cows can calve each year, the maximum days open value should not exceed 3 months. Therefore, the days open for Madura cattle in Ganding District and Lenteng District can still be shortened through improvements in reproductive management. Reducing days open will minimize the time it takes for cows to become pregnant again after calving, thereby increasing reproductive efficiency and overall livestock productivity.

CALVING INTERVAL

Table 3. Number of *Calving Interval* Madura Cattle

Regency	***Calving interval*** **(days)**
Lenteng	391,63 ±26,33
Ganding	382,58 ±29,45
Total	388,04 ±27,85

Calving Interval refers to the time interval between one calving and the next in female cattle. Research findings show that the average calving interval for Madura cattle in Ganding and Lenteng Subdistricts is 388.04 ±27.85 days (Table 3). This calving interval is higher compared to the findings of Hartati et al. (2021), who reported a calving interval of 358.1 ±22.1 days for Madura cattle in the Grati Beef Cattle Research Station, Pasuruan. However, it is lower than the findings of Nurlaila et al. (2018), who observed a calving interval of 14.50 ±1.83 months in Sonok cattle in Pamekasan Regency. The differences in calving intervals between the two subdistricts are likely due to variations in postpartum mating intervals and the number of services per conception. Additionally, the length of the days open period in this study also contributed to the extended calving interval. The ideal calving interval ranges from 12 to 14 months, or approximately 365-426 days, which allows farmers to produce one calf per year.

Feed is a crucial factor in achieving optimal reproductive efficiency in breeding females. Nutritional intake before and after calving can influence the duration of the postpartum anestrus interval and calving interval, subsequently affecting subsequent conception and pregnancy rates (Diskin and Kenny, 2016). The feed provided to Madura cattle in Ganding and Lenteng Subdistricts predominantly consists of natural grass without the addition of concentrate feed. The protein content in natural grass is insufficient, as cattle require 13-20% protein for reproductive needs (Sonjaya et al., 2020). This is one of the reasons why the calving interval exceeds the optimal limit of 12 months.

CONCLUTION

The research concludes that the mating system is predominantly dominated by artificial insemination (92.36%). The reproductive performance of Madura cattle shows good results, as indicated by an average Service per Conception value of 1.49. However, reproductive performance still faces challenges in the variables of days open and calving interval. The average days open is 108.97 ±26.89 days, while the average calving interval is 388.04 ±27.85 days, both of which exceed the optimal limits. To improve reproductive efficiency, it is necessary to enhance reproductive management practices, including early weaning and providing high-quality feed.

REFERENCES

1. Agung, P. P., Saputra, F., Zein, M. S. A., Wulandari, A. S., Putra, W. P. B., Said, S., and Jakaria. 2018. Genetic diversity of Indonesian Cattle Breeds Based on Microsatellite Markers. Asian-Australasian Journal of Animal Sciences. 32(4): 467-476.
2. Agus, A and Widi, T. S. M. 2018. Current Situation and Future Prospects for Beef Cattle Production in Indonesia- A review. Asian-Australian Journal Animal Science. 31(7): 976-983.
3. Anwar, R., S. Bintara, Budisatria I.G.S. , Widayati D. T., Baliarti E. 2022. Post Partum Estrus of Brahman Cross Cows Inseminated with Limousine Straw in Smallholder Farm. In 9th International Seminar on Tropical Animal Production (ISTAP 2021). 18: 323-327.

International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 08 Issue 04 April 2025
DOI: 10.47191/ijcsrr/V8-i4-32, Impact Factor: 8.048
IJCSRR @ 2025
www.ijcsrr.org

4. Awunyo-Vitor, D., Wongnaa C. A., and Aidoo, R. 2016. Resource Use Efficiency Among Maize Farmers in Ghana. Agriculture and Food Security, 5, 1-10.
5. Ayal, D. Y., and Mamo, B. 2024. Farmer's Climate Smart Livestock Production Adoption and Determinant Factors in Hidebu Abote District, Central Ethiopia. Scientific Reports, 14, 1-14 .
6. Diskin, M. G., and Kenny, D. A.. 2016. Managing The Reproductive Performance of Beef Cows. Theriogenology, 86(1), 379-387.
7. Evans, H. C., Briggs, E. F., Burnett, R. H., Contreras-Correa, Z. E. , Duvic, M. A., Dysart, L. M., and Memili, E. 2022. Harnessing The Value of Reproductive Hormones in Cattle Production with Considerations to Animal Welfare and Human Health. Journal of Animal Science, 100, 1-14.
8. Hartati, Luthfi, M., Khrisna, N. H., Sukmasari, P. K. , Fitrayady, H. P., Widiyawati, R. , and Dikman, D. M. 2021. The Productivity Evaluation of Madura Cattle Under Beef Cattle Research Station Breeding Management. Kafkas Univ Vet Fak Derg, 27 (5), 649-653
9. Hastutiek, P., Yuniarti, W. M., Djaeri, M., Lastuti, N. D. R., Suprihati, E., and Suwanti, L.T . 2019. Prevalence And Diversity Of Gastrointestinal Protozoa In Madura Cattle At Bangkalan Regency, East Java, Indonesia. Veterinary World, 12(2), 198-204.
10. Jakfar, A. dan Agustina, D. K. 2024. Tingkat Keberhasilan Inseminasi Buatan Sapi Madura Di Kecamatan Pegantenan Kabupaten Pamekasan. Maduranch: Jurnal Ilmu Peternakan. 9(1): 33-38
11. Kutsiyah, F. 2017. Dinamika Populasi Dan Produktivitas Sapi Madura di Wilayah Konservasi Pulau Sapudi. Jurnal Penelitian dan Ilmu Peternakan, 15(2), 70-77
12. M. A. M. Silva and Pimentel, L. A. 2017. Genetic Improvement in Cattle Through Artificial Insemination and Artificial Insemination at Fixed Time. Revista de Investigación Agraria y Ambiental. 8(2): 247-259.
13. MacKay, J. R. D. 2020. Discipline-Based Education Research for Animal Welfare Science. Frontiers in Veterinary Science, 7, 1–12.
14. Mastuti, R., Setiawan, R., dan Basriwijaya, K. M. Z. 2023. Factors Supporting the Success of Artificial Insemination in Beef Cattle in East Langsa District Langsa City. JIA (Jurnal Ilmiah Agribisnis): Jurnal Agribisnis dan Ilmu Sosial Ekonomi Pertanian, 8(3), 237-249.
15. Menconi, M. E., Grohmann, D., and Mancinelli, C. 2017. European Farmers And Participatory Rural Appraisal: A Systhematic Literature Review On Experiences to Optimize Rural Development. Journal of Land Use Policy,60,1-11.
16. Nurlaila, S., Kurnadi, B., Zali, M., dan Nining, H. 2019. Status Reproduksi dan Potensi Sapi Sonok di Kabupaten Pamekasan. Jurnal Ilmiah Peternakan Terpadu,6(3),147-154.
17. Rasyad, K., Yekti, A. P. A, Kuswati, dan Susilawati, T .2022. Perbedaan Keberhasilan Inseminasi Buatan Menggunakan Metode Dosis Tunggal dan Ganda pada Sapi Madura. Jurnal Agripet, 22(2),141-146.
18. Rehman, M., and Mumtaz, A. 2023. Challenges in Growth of Livestock and Dairy Development Sector In Punjab: Potential and Innovative Solutions: a Review. Devotion: Journal of Research and Community Service,4(8),15711578.
19. Siswijono, S. B., Nurgiartiningsih, V. M. A., dan Hermanto. 2014. Pengembangan Model Kelembagaan Konservasi Sapi Madura. Jurnal Ilmu-Ilmu Peternakan, 24 (1), 33-38.
20. Sonjaya, H., Rahim, L., Sari, D. K.., Abdullah, A., Gustina, S., and Hasbi. 2020. Estrous and Pregnancy Rate Responses of Postpartum Bali Cattle to Concentrate Supplementation with Different Protein Levels of Rice-Straw As Basal Ration. In IOP Conference Series: Earth and Environmental Science,492,1-8.

Cite this Article: Rizki, A., Kuswati, Wahjuningsih, S. (2025). Reproduction Performance Madura Cattle in Ganding Distric and Lenteng Distric, Sumenep Regency. International Journal of Current Science Research and Review, 8(4), pp. 1855-1860. DOI: https://doi.org/10.47191/ijcsrr/V8-i4-32