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RESEARCH ARTICLE

Evaluation of Reproductive Performance Parameters and Breeder Perceptions in Dairy Cattle Farms in Balıkesir Province

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Abstract

This study aimed to determine the reproductive parameters of dairy cattle on farms in the Balıkesir province, and to examine farmers' perceptions of the impact of these parameters on livestock health and farm economics. The study population included 505 farms that were registered with the Balıkesir Cattle Breeders' Association and had forage crop cultivation recorded in the Farmer Registration System. Using stratified random sampling with a 95% confidence level and a 5% margin of error, 86 farms were selected for the study. This sample was distributed into three groups based on the number of milking cows. Primary data were collected through face-to-face surveys with the 86 selected farms in 2024. The average days open across the farms was 137.22 ± 30.26 days, the average calving interval was 417.22 ± 30.26 days, the average conception rate was 57.00 ± 7.65%, and the average number of inseminations per pregnancy was 1.80 ± 0.27. Likert analyses revealed high perception scores for days open in both the livestock health and farm economy aspects. Although breeders are aware of reproductive parameters, this does not translate into improved farm performance due to poor monitoring processes and a focus on parameters that provide short-term cash flow.

Keywords: Dairy cattle, reproductive performance, dairy farmer perception, days open, calving interval, Balıkesir

Balıkesir İli Süt Sığırcılığı İşletmelerinde Döl Verimi Parametreleri ve Yetiştirici Algılarının Değerlendirilmesi

Öz

Bu araştırma, Balıkesir ilindeki ihtisaslaşmış süt sığırcılığı işletmelerinde gerçekleşen döl verimi parametrelerini belirlemek ve yetiştiricilerin bu parametrelerin hayvan sağlığı ile işletme ekonomisi üzerindeki etkisine ilişkin algılarını değerlendirmek amacıyla yürütülmüştür. Çalışmanın ana kitlesini, Balıkesir Damızlık Sığır Yetiştiricileri Birliği 'ne kayıtlı olan ve aynı zamanda Çiftçi Kayıt Sistemi 'ne yem bitkisi ekimi kaydı bulunan 505 işletme oluşturmuştur. Bu ana kitle içerisinden, tabakalı tesadüfi örnekleme yöntemi kullanılarak %95 güven düzeyi ve ana kitle ortalamasının %5'i hata payı esas alınarak 86 işletme örneklem olarak belirlenmiştir. Örnek hacmi, işletmelerin sağmal inek sayılarına göre oluşturulan üç tabakaya dağıtılmıştır. Araştırmanın birincil verileri, seçilen 86 işletme ile 2024 yılında yüz yüze gerçekleştirilen anketlerden elde edilmiştir. İşletmeler genelinde servis periyodu 137.22 ± 30.26 gün, buzağılama aralığı 417.22 ± 30.26 gün, gebe kalma oranı 57.00 ± 7.65% ve gebelik başına tohumlama sayısı 1.80 ± 0.27 olarak belirlenmiştir. Likert analizlerinde servis periyodu hem hayvan sağlığı hem de işletme ekonomisi boyutunda yüksek algı puanları almıştır. Yetiştiricilerin döl verimi parametreleri konusunda farkındalık düzeyleri yüksek olsa da bu farkındalık, takip süreçlerindeki yetersizlikler ve kısa vadeli nakit akışı sağlayan parametrelere odaklanılması nedeniyle işletme performansına yansımamaktadır.

Anahtar Kelimeler: Süt sığırcılığı, döl verimi parametreleri, yetiştirici algısı, servis periyodu, buzağılama aralığı, Balıkesir

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Introduction

Livestock farming has strategic importance for the national economy in several respects: it helps meet society's need for healthy nutrition, creates employment in rural areas, reduces production risks while providing producers with a regular source of income, contributes to the development of livestock-based industries, and contributes to foreign trade balance (Aktürk et al., 2010). In dairy cattle farms, however, economic success is not determined by milk yield alone. Reproductive performance parameters such as age at first insemination, age at first calving, days open, calving interval, live birth rate, calving rate, conception rate, number of inseminations per pregnancy, and dry period directly influence annual calf production, the lactation cycle, milk income, and replacement costs. Departures from target values therefore lead not only to lower productivity, but also to higher veterinary expenses, repeated insemination costs, and premature culling (Bartlett et al., 1986; Kumuk et al., 1999; Kaygısız et al., 2008; De Vries, 2017; Bayramoğlu and Esen, 2025).

At dairy farms, the economic effect of reproductive performance problems is often seen with the days open and calving interval. Prolonged days open increase the calving interval, resulting in a lower annual calf yield. This results in a reduction in calf yield and the replacement of the herd, while increasing the economic cost of lactation productivity (Tankal and Tüzemen, 2022; Bayramoğlu and Esen, 2025). A decrease in the conception rate and an increase in the number of inseminations per pregnancy are additional measures of the same process. Because of this, reproductive performance parameters should be considered not only as technical records but also as management factors that impact the dairy farm's financial status and decision-making processes.

Reproductive performance measures are also early warning signs of livestock health. Problems observed during the postpartum period, poor monitoring of estrus, delays in artificial insemination, and problems during calving can reduce both conception rates and livestock welfare. Prolonged days open and calving intervals are often the result of many variables, such as reproductive health, nutrition, record-keeping, and veterinary services (Karakulle, 2018; Güngör and Zülkadir, 2020). Consequently, in reproductive management, it is essential to focus not only on the result values, but also on the on-farm internal factors that lead to these values.

The successful management of reproductive performance is related to the dairy farmer's perception as well as technical skills. Which factors the dairy farmer considers more important, which parameters are considered critical, and which factors are prioritized directly influence dairy farm management decisions. In other words, high knowledge does not always turn into effective management. It is important to recognize the gap between perception and practical application (Kaya and Bayramoğlu, 2024) to properly target record-keeping systems and management advice (Aydın Eryılmaz et al., 2020).

Balıkesir is one of Turkey's leading provinces in dairy cattle farming. However, there is little field research that examines both reproductive parameters and dairy farmers' perceptions on dairy farms in the area. This study was intended to help fill this gap. The study's objectives are as follows: (i) to determine the reproductive parameters at selected dairy farms in Balıkesir city, (ii) to determine the goal values reported by dairy farmers for these parameters, (iii) to measure dairy farmers' perceptions related to the parameters' impact on livestock health and dairy farm economics, and (iv) to discuss the correlation between perception and observed performance and suggest applicable policy and recommendations.

The main hypothesis of the study is that, while livestock farmers have a high level of perception of the importance of reproductive performance parameters, this perception is not fully applied to dairy farm management.

Materials and Method

Research Area and Material

The main source of data for this study was face-to-face surveys of dairy farms in Balıkesir Province conducted in 2024. The dairy farms were selected based on two requirements: they had to be registered with the Balıkesir Cattle Breeders' Association and have records of forage crop cultivation in the Agricultural Registration System. Using these two metrics together, the study was limited to dairy farms that maintain dairy cattle farming as a regular production activity and have achieved a certain level of expertise in forage crop farming at the farm size. Breeding performance reports from the Balıkesir Dairy Cattle Breeders' Association and relevant literature were utilized as secondary data. Since association membership and a registered organizational structure are considered important factors

in organizing and managing dairy cattle farms (Tatlıdil and Aktürk, 2009), the selection of farms required membership in the Breeding Association; in addition, the fact that success in livestock farms depends to a significant extent on breeders' record-keeping practices was taken into consideration (Aktürk and Akkuş, 2025).

Sampling Method

The sample size was determined by stratified random sampling. The total number of farms to be surveyed was calculated using the formula proposed by Çiçek and Erkan (1996), with a 5% margin of error and 95% confidence limits:

$$n = \frac{(\sum N_h S_h)^2}{N^2 D^2 + \sum N_h S_h^2} \qquad D^2 = \frac{d^2}{z^2} \tag{1}$$

The optimum allocation formula proposed by Yamane (1967) was then used to distribute the calculated sample size among the strata:

$$n_h = n \times \frac{N_h S_h}{\sum N_h S_h} \tag{2}$$

In choosing the areas to survey, priority was given to regions where dairy farming is widespread, dairy processing companies are located, and milk collectors are actively purchasing milk. Based on these criteria, the study area covered Altıeylül, Balya, Bigadiç, İvrindi, Karesi, Kepsut, and Susurluk districts.

Farms were grouped into three strata according to the number of milking cows: 5-12 cows (Group I), 13-30 cows (Group II), and 31 or more cows (Group III).

The final sample included 86 farms. With optimum allocation, this total was distributed as 21 farms in Group I, 34 farms in Group II, and 31 farms in Group III.

Data Collection

Data were collected through a structured questionnaire. The questionnaire included information on the socio-demographic characteristics of the farm manager (age, education, and family labor), herd structure and livestock inventory, reproductive performance parameters, the target values stated by producers for each parameter, and perception questions concerning the effects of these parameters on animal health and the farm economy.

The reported parameter values were checked against Balıkesir Cattle Breeders' Association records in order to improve reliability. The parameters examined were age at first insemination, age at first calving, calving rate, live birth rate, conception rate, number of inseminations per pregnancy, dry period length, twinning rate, days open, and calving interval. Livestock Unit (LU) values were used to express herd inventory on a common scale.

Breeder perceptions were evaluated in two dimensions: effect on animal health and effect on farm economy. For each reproductive performance parameter, a five-point Likert scale was used, ranging from 1 = "very low effect" to 5 = "very high effect." The scores are presented as means for descriptive interpretation. Because the scale is ordinal, non-parametric tests were used for statistical comparisons.

Data Analysis

The Friedman test was used to examine variations in perceived significance, and the Kendall W coefficient to measure the effect size. In addition, the Wilcoxon signed-rank test was used to analyze whether the same parameter was perceived differently in the livestock health and dairy farm aspects, and the effect size was calculated using the formula $r = Z/\sqrt{N}$. The correlation between the livestock health and dairy farm economics aspects was analyzed using Spearman's rank correlation. The level of statistical significance was set at $\alpha = 0.05$.

Results and Discussion

Characteristics of Farm Managers

Table 1 shows the main characteristics of the farm managers. The average age for all farms was 48.43 years, with group averages ranging from 47.29 years in Group I to 49.68 years in Group III. This age structure suggests that dairy cattle farming in the study area is largely carried out by middle-aged and older producers. Similar findings have been reported for the Eastern Mediterranean Region, Balıkesir Gönen, and Iğdır (Boz, 2013; Şahin and Gürsoy, 2016; Özdemir et al., 2021).

Table 1. Characteristics of farm managers

Characteristic	Group I (n=21)	Group II (n=34)	Group III (n=31)	Overall (n=86)
Average age (years)	47.29	48.00	49.68	48.43
Family labor (persons)	2.33	2.65	3.58	2.91
Primary school (%)	57.1	41.2	51.6	48.8
Middle school (%)	4.8	0.0	3.2	2.3
High school (%)	38.1	52.9	38.7	44.2
Undergraduate and above (%)	0.0	5.9	6.5	4.7

With respect to education, 48.8% of producers had completed only primary school, 44.2% had completed high school, and only 4.7% had an undergraduate or higher degree. The small proportion of university-educated managers is important because education may affect systematic record keeping, data-based herd management, and the effective use of extension services. This pattern is not specific to Balıkesir; similar distributions have been reported in other dairy farming regions (İkikat Tümer, 2021; Şahin and Gürsoy, 2016).

Livestock Inventory

Table 2 presents herd structure and livestock inventory by group. On average, the farms had 30.85 milking cows, 85.29 animals in total, and an LU value of 52.78. The number of milking cows ranged from 9.14 in Group I to 58.77 in Group III, showing that the sample represents small, medium, and large-scale farms.

Table 2. Herd structure and livestock inventory by groups

Animal type	Group I (n=21)	Group II (n=34)	Group III (n=31)	Overall (n=86)
Female/Male calf	7.81	16.71	54.68	28.22
Heifer and young bull	7.48	9.56	28.45	15.86
Female/Male yearling	3.43	5.62	20.26	10.36
Milking cow (head)	9.14	18.79	58.77	30.85
Total number of animals (head)	27.86	50.68	162.16	85.29
Livestock Unit (LU)	17.65	31.64	99.75	52.78

When considering the results concerning dairy farms, it is noted that the use of family labor increases in parallel with livestock size. However, livestock size alone does not guarantee successful management. It is especially important to maintain regular records, monitor estrus, conduct postpartum checks and fertility regularly to achieve optimal reproductive performance. The lack of record-keeping discipline in small-scale dairy farms can lead to delays in detecting reproductive failures (Boz, 2013; Torgut et al., 2019). Thus, while technical skills are likely to improve in parallel with livestock size, a regular livestock record-keeping system is required for all livestock size groups. In fact, studies carried out in the different regions of Turkey have also reported that the level of record-keeping depends on the farm-management approach (Kılıç et al., 2026).

Actual Reproductive Performance Parameters

Table 3 gives the actual reproductive performance parameters by group. The mean age at first insemination was 16.76 ± 1.28 months, and the mean age at first calving was 25.76 ± 1.28 months. These values are reasonably close to management targets for heifers. However, the low importance assigned by breeders to these parameters should be considered carefully in terms of long-term herd management. For comparison, first insemination age was reported as 16-17 months in a study conducted in Nevşehir, while Koçaş Agricultural Enterprise reported 18.04 months for first breeding and 27.70 months for first calving (Duru, 1999; Sezer et al., 2020). In this regard, heifers in Balıkesir entered the reproductive cycle at a somewhat younger age than these reference values.

Table 3. Mean reproductive performance parameters by groups

Parameter	Group I (n=21)	Group II (n=34)	Group III (n=31)	Overall (n=86)	Standard Deviation
Age at first insemination (months)	16.81	16.76	16.71	16.76	1.28
Age at first calving (months)	25.81	25.76	25.71	25.76	1.28
Calving rate (%)	90	91	91	91	3.05
Live birth rate (%)	91	93	92	92	3.15
Conception rate (%)	57	57	56	57	7.65
Number of inseminations per pregnancy	1.80	1.80	1.80	1.80	0.27
Dry period (days)	64.05	63.09	63.23	63.37	4.69
Twinning rate (%)	1.71	1.71	1.97	1.80	1.41
Days open (days)	141.00	140.56	131.00	137.22	30.26
Calving interval (days)	421.00	420.56	411.00	417.22	30.26

The overall mean days open were 137.22 ± 30.26 days, which is well above the target range of 61-100 days (Duru and Tuncel, 2004). Group III farms had a lower days open, at 131.00 days, whereas Groups I and II both exceeded 140 days. At the descriptive level, this suggests that larger farms may be somewhat more effective in estrus detection, record use, and insemination management.

The overall calving interval was 417.22 ± 30.26 days about 52 days longer than the 365-day benchmark associated with one calf per year. Values reported from other regions include 398.47 days in Burdur, 403 days in Kayseri, 440.52 days in Devrekani (Kastamonu), 387.48 days in Yenişehir (Bursa) and around 401 days in Holstein breeding herds in Türkiye (Kumlu and Akman, 1999; Akkaş, 2007; Sarıözkan et al., 2012; Karakulle, 2018; Güngör and Zülkadir, 2020). The Balıkesir value falls within this range, but it is still above the target and therefore indicates room for improvement.

The number of inseminations per pregnancy was 1.80 ± 0.27 in all groups. This value is lower than the 2.5 reported by Tankal and Tüzemen (2022) and it is consistent with the 1.80 reported by Sarıözkan et al (2012) and the 1.81 values reported by Gül and Karaca (2022) and Güngör and Zülkadir (2020).

The mean dry period was 63.37 ± 4.69 days, slightly above the 60-day recommendation (Duru and Tuncel, 2004). In some cases a moderately longer dry period may be justified as preparation for the next lactation. However, unnecessarily long dry periods also create costs through lost milk production and additional feed use. Producers therefore need to consider both the health-related and economic implications of dry period length.

A calving rate of about 90% is generally accepted as satisfactory in dairy cattle production (Kaya et al., 1998). In the present study, the calving rate was 91 ± 3.05% and the live birth rate was 92 ± 3.15%. By comparison, Atay et al. (1996) reported a calving rate of 94.26%, Kaygısız (1997) reported 97.17%, and Bakır and Çetin (2003) reported 85.30%. Live birth rates can be improved through better calving management, calf survival practices, and postpartum care (Erdem et al., 2007; Erdem et al., 2022). Reported live birth rates were 93% in Karacabey (Alpan and Arıtan, 1970) and 96.2% in Erzurum (Kopuzlu, 2003).

Comparison of Actual Values and Producer Targets

Table 4 compares the target values stated by producers with the actual values recorded for each parameter. In this table, "producer target" refers to the value that the breeder considers ideal, rather than to a technical optimum. For example, the 100% target for conception rate should be interpreted as an aspirational upper limit from the producer's point of view, not as a realistic management standard under biological and farm conditions.

Table 4. Comparison of actual values and breeder targets

Parameter	Actual value	Producer target	Direction of difference
Age at first insemination (months)	16.76	15.51	Actual value 1.25 months higher
Age at first calving (months)	25.76	24.51	Actual value 1.25 months higher
Days open (days)	137.22	85.12	Actual value 52.10 days higher
Calving interval (days)	417.22	365.00	Actual value 52.22 days higher
Calving rate	91.00	100	Actual value 9 percentage points lower
Number of inseminations/pregnancy	1.80	1.50	Actual value 0.30 higher
Conception rate (%)	57.00	100.00	Actual value 43 points lower
Dry period (days)	63.37	60.00	Actual value 3.37 days higher
Twinning rate (%)	1.80	3.12	Actual value 1.12 points lower

Table 4 shows the significant performance gap at the days open. While dairy farmers reported an ideal target of 85.12 days for days open, the current value was 137.22 ± 30.26 days. This result shows that the days open is not just a single reproductive parameter but has an effect on calving interval, lactation cycle, calf yield, and the dairy farm's profitability.

The reported 100% conception rate goal shows that dairy farmers see pregnancy rate as an absolute measure of dairy farm performance. But in reality, the conception rate is the combined result of many factors, such as nutrition, heat detection, time of insemination, sperm quality, postpartum health and the environment. Instead of focusing on a single ideal percentage goal, a more practical and useful approach would be to regularly record and monitor the dairy farm management factors that impact the conception rate.

The producer target for twinning rate was higher than the actual value, which is a noteworthy result. Some breeders appear to consider twin births positively because of the possibility of additional

calf income in the short term. Nevertheless, twin pregnancies should be evaluated separately because of their possible effects on dystocia, offspring viability, metabolic load on the dam, and subsequent reproductive performance.

Breeder Perceptions Regarding Reproductive Performance Parameters

Table 5 presents the Likert scores for breeder perceptions in both dimensions. Days open received high scores for both animal health and farm economy. Breeders ranked it as the most influential reproductive parameter for animal health and the scores also show that they regard a prolonged days open as an important economic problem.

Table 5. Breeder perception scores for the effects of reproductive performance parameters on animal health and farm economy (Likert: 1=very low, 5=very high)

Parameter	Effect on animal health	Effect on farm economy
Days open	4.66	4.58
Conception rate	4.65	3.79
Dry period	4.00	2.22
Number of inseminations/pregnancy	3.85	3.87
Calving interval	2.99	4.65
Live birth rate	2.95	3.01
Calving rate	2.13	3.02
Twinning rate	2.16	1.42
Age at first calving	1.36	2.09
Age at first insemination	1.41	1.29

In the farm economy dimension the calving interval scored 4.65, one of the highest values among all parameters, whereas its score in the animal health dimension was only 2.99. Producers therefore seem to associate the calving interval mainly with the income cycle and annual calf numbers. However, because a prolonged calving interval usually reflects problems in days open management, postpartum health, estrus detection, and feeding, it should not be evaluated only as an economic indicator.

Conception rate had the second-highest score in the animal health dimension at 4.65, but its score in the farm economy dimension was 3.79. This suggests that producers tend to interpret conception problems mainly as health-related issues and give relatively less attention to their economic consequences such as repeated insemination costs, extended days open, and the resulting effect on the calving interval. In reality, reduced conception success affects profitability through all of these channels at the same time.

The dry period scored 4.00 for animal health and 2.22 for farm economy. Breeders therefore appear to see it mainly as preparation for the next lactation, and hence as a health-related matter. The economic cost of an unnecessarily long dry period through lost milk income and additional feed expenditure seems to be less clearly recognized.

Age at first insemination and age at first calving were ranked last in both dimensions, yet the heifer-rearing period has consequences for future reproductive performance, lifetime milk yield, and replacement costs that are difficult to correct later (Diler et al., 2017; Duru and Tuncel, 2004). Extension and training activities should therefore place more emphasis on heifer development, including first insemination criteria, the relationship between age and liveweight, and the connection between age at first calving and lifetime productivity (Akkaş, 2007).

Evaluation of Breeder Perceptions

The Likert data indicated clear differences in the priority given to the parameters. The Friedman test showed that perceived importance differed significantly among the 10 parameters in both dimensions. In the farm economy dimension, the result was $\chi^2(9) = 627.31$, $p < 0.001$, Kendall's W = 0.729; in the animal health dimension, it was $\chi^2(9) = 626.67$, $p < 0.001$, Kendall's W = 0.729. The high Kendall's W values indicate a strong level of agreement among breeders in ranking the parameters.

The Wilcoxon signed-rank test showed significant differences between health and economy perceptions for 6 of the 10 parameters ($p < 0.001$). The largest difference was observed for the dry period, which breeders rated much higher in terms of animal health (4.00) than farm economy (2.22). The opposite pattern was observed for the calving interval, which was rated as more important for farm economy (4.65) than for animal health (2.99). Significant differences between the two dimensions were also found for calving rate, conception rate, age at first calving, and twinning rate. For days open,

number of inseminations per pregnancy, live birth rate, and age at first insemination, health and economy perceptions were statistically similar.

The rank correlation between the health and economy importance rankings was moderate and positive ($\rho = 0.609$; $p = 0.047$). This shows that breeders do not treat the two dimensions as completely separate, although meaningful differences remain for some parameters. The dry period should therefore be explained as both a health and an economic issue, while the calving interval should be presented as both a reproductive health indicator and a component of the income cycle.

Conclusion and Recommendations

The results support the study's main hypothesis. Although livestock farmers have a high level of knowledge about how reproductive performance parameters affect livestock health and dairy farm profitability, this knowledge is not fully reflected in dairy farm performance. This study has shown that the most important areas in reproductive performance management in dairy cattle farms in Balıkesir province are the days open and as a result the calving interval. In all dairy farms, days open were 137.22 ± 30.26 days, the calving interval was 417.22 ± 30.26 days, and the number of artificial inseminations per pregnancy was 1.80 ± 0.27. These parameters show that there is a continuing need for improvement, especially in the annual calf production target. The 52-day difference between the observed days open and the farmer's target cannot be explained only by a lack of farmer knowledge. The results may be influenced by the following factors: a lack of regular heat detection, poor record-keeping system, difficulties in access to veterinary and insemination services, high feed costs, and labour shortage due to farm size. Additionally, the tendency in some farms to prolong lactation duration in order to sustain short-term milk revenue can be regarded as a management choice that has contributed to deliberately prolonged days open. Although this approach may support cash flow in the short term, it can have a negative impact on annual calf revenue, herd renewability, and long-term farm profitability by delaying the calving interval.

The 57.00 ± 7.65% pregnancy rate is well below the 100% target reported by farmers. But this target reflects the ideal level of pregnancy success that farmers aim for, not a realistic standard from a practical point of view. For this reason, it would be more practical to use measurable intermediate parameters at the dairy farm level instead of unachievable absolute targets. For example, if secondary indicators such as heat detection, pregnancy rate at first insemination, re-insemination interval, first post-partum veterinary check-up and pregnancy check days are tracked regularly, the causes of a decline in the pregnancy rate can be detected earlier. The age at first insemination and the age at first calving are quite close to the ideal values, but if farmers don't focus enough on these parameters, it could negatively affect the success of herd replacement over time. Poor management of first insemination parameters can affect first lactation performance and long-term profitability. For this reason, reproductive management should not be focused only on lactating cows; it should be seen as a complete process that includes calf and young cow raising.

The difference between health and economic considerations regarding the dry period and calving interval shows that dairy farmers tend to consider these two parameters independently. Dry period is generally viewed as a health concern, while calving interval is generally viewed as an economic concern. In reality, both parameters have effects in both respects. An overly long dry period reduces milk income and increases feed costs while a prolonged calving interval has effects on reproductive health and herd replacement. For this reason, these parameters should not be explained to dairy farmers from a one-sided perspective.

According to the research results, the practical suggestions can be summarised as follows:

A data-driven fertility monitoring system should be established. Records regarding days open, calving intervals, insemination dates, pregnancy check dates, dry-off dates and post-calving health records should be regularly maintained at the farm level. Simple, low-cost and mobile-compatible record-keeping systems suitable for use by small and medium-sized farms should be promoted through the Balıkesir Cattle Breeders' Association.

Days open should be at the core of dairy farm management. Post-calving checks, voluntary waiting periods, oestrus monitoring, the timing of the first insemination and the monitoring of repeat inseminations should be standard dairy farm procedures. Dairy farms should be shown, using real figures, what each additional day of days open means in terms of calving intervals and dairy farm profits.

The effect of artificial insemination and pregnancy control services should be improved. Pregnancy rates should not be reduced to only the number of successful or unsuccessful inseminations; heat detection, time of insemination, the use of high-quality sperm, postpartum health, and feeding management should all be considered together. The first insemination age and first calving age received low scores; therefore, these parameters should be included among the priority monitoring indicators in farm records, assessed regularly and incorporated into herd management decisions.

The dry period should not be presented only as a health factor, nor should the calving interval be presented only as an economic factor. The health and economic aspects must be considered together. The effects of each parameter on both livestock health and dairy farm profits must be considered together. It is necessary to develop collective veterinary advisory models for small-scale dairy farms. The fact that days open are longer in Group I and Group II dairy farms shows that these dairy farms have a more significant need for technical support and record-keeping systems. Veterinary advisory services, record-keeping and periodic dairy herd monitoring programmes should be provided via associations, cooperatives, and government agencies.

Overall, dairy cattle farmers in Balıkesir have a strong general awareness of reproductive performance parameters, but this awareness is not yet producing the level of performance indicated by the data. Policy efforts should therefore focus on strengthening the recording, advisory, and extension mechanisms that can turn awareness into routine farm practice.

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Author Contributions Statement

The authors declare that they contributed equally to the article.

Conflict of Interest Statement

The authors declare that there is no conflict of interest between them.

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