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DISTRIBUTION OF BIRTHS OF BAFRA SHEEP REARED IN THE MEDITERRANEAN REGION DURING THE DAY

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Abstract: In this study, the distribution of birth data during the day (24 hours) of 651 lambs born in 2019-2022 of Bafra sheep reared in a private sheep farm in Kızıllı village of Antalya province was investigated. In the study, the effects on the distribution of births during the day and the characteristics of lambs such as birth type, sex, difficult and normal births, and dam's lactation number were investigated. The 24 hours were divided into four equal periods such as 06:01-12:00 = 1, 12:01-18:00 = 2, 18:01-00:00 = 3, and 00:01-06:00 = 4 to evaluate the distribution within the day. $\chi 2$ (Chi-square) test analysis was used to determine whether the characteristics such as, birth type, sex, difficult and normal births, and dam's lactation number affected the distribution of births during the day. As a result of the analysis, the distribution of a total of 651 lamb births during the day was observed as 260 heads (39.9%) at 06:01-12:00, 199 heads (30.6%) at 12:01-18:00, 109 heads (16.7%) at 18:01- 00:00, and 83 heads (12.7%) at 00:01-06:00, respectively. In the first and second time periods between 06:01 and 18:00, 70.5% (459 heads) of lamb births occurred. The ratio and number of lambs in sex distribution were determined as 45.8% male (298 head) and 54.2% female (353 head), respectively. The number and rate of lamb births of ewes in the first lactation comprised 366 heads and 56.2%, respectively. According to the $\chi 2$ test of the time periods of the births, the effect of the lamb's birth type ($P<0.05$), difficult and normal births ($P<0.05$) and dam lactation number ($P<0.01$), were statistically significant while the effect on the lamb's sex was found to be insignificant. As a result, considering the distribution of births during the day, it was seen that they were concentrated during the daytime hours. Being more careful in herd management during these hours will increase the profitability of Bafra sheep, which is one of the sheep breeds with high fertility.

Keywords: Bafra sheep, Distribution of births, Birth type, Dystocia

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1. Introduction

Sheep breeding is an important livestock activity in Türkiye due to reasons such as meadow-pasture conditions, climate and geographical structure, providing employment, reversing migration from village to city, fertility, suitability for socio-economic structure and being an alternative to beef (Güngör and Akçapınar, 2013; Aytekin et al., 2015). Domestic breeds constitute the majority of the sheep population reared in Türkiye. One of the methods to increase fertility in sheep breeding is to increase the genetic value of sheep or to improve the genotype (Sönmez et al., 2009). For this purpose, as a result of the back crossing of the Chios breed (sire line) bred in the coastal areas of the Aegean region and the Karayaka breed (dam line) in the Black Sea coastal regions, a new type called Bafra sheep, which is 75% Chios and 25% Karayaka in terms of milk and reproduction, has been obtained. Breed registration of the Bafra breed has also been made, and its breeding is becoming widespread in many regions of Türkiye due to its adaptability (Sönmez et al., 2009; Güngör and Akçapınar, 2013).

Another way to increase productivity is to provide better environmental conditions. Knowing the animal behavior makes it possible to optimize the most suitable environmental conditions. Animal behaviors; they are the physical reactions against certain stimuli with the effect of genotype and environment (Metin and Kaliber, 2011). Knowing animal behaviors enables understanding an animal's distinctive features and how it reacts to the environment (Özçalık, 2010). It is also important to optimize both productivity and animal welfare. Behavior is an important criterion in the evaluation of animal welfare and is an indicator of the quality of life perceived by the animal (Bracke and Hopster, 2006). Achieving the desired welfare levels of animals may increase with its reflection on the yields to be obtained from animals (Akbaş, 2013). Thus, considering the reactions of the animals, the most efficient methods that can result in problem-free animal breeding can be determined (Zülkadir and Karabacak, 2013). In addition, recognizing the behavior of sheep will provide some important advantages for animal breeding, care, feeding and herd management. Also, taking reproductive behavior into account will lead to an increase in fertility in animal production. Increasing the fertility of the offspring depends on the provision of suitable conditions as soon as possible after birth and the successful first hours of

the offspring's life depending on the relationship between the born offspring and the dam. Because the period from the beginning of the birth up to a few hours is a period during which there is intense stress for the dam and the lamb and various complications can occur, and the bond established between the dam and the lamb with the beginning of the birth affects the survival power of the lamb (Konyalı et al., 2004; Öztürk, 2012). It is important for breeders to know when the births take place or in what time period, to have a strong bond with the dam, to increase the viability of the born offspring, to provide a suitable environment for birth, and to implement the breeding systems in ideal criteria for animal welfare in herd management.

This study aims to examine the birth distribution of Bafra sheep with multiple births reared in Antalya province, reveal the practices that can contribute to herd management by using this distribution, and present this information to the breeders.

2. Materials and Methods

2.1. Materials

The animal material of the study consisted of the birth records of 651 lambs born in 2019-2022 in Altepe Bafra Sheep Breeder (ABSB) Farm located in Antalya province Kızıllı village located at 37° 6' 46.3860'' North and 30° 42' 50.2776'' East coordinates. No experimental animals were used in this study, and the records kept in the enterprise were taken into consideration.

2.2. Method

Reproduction management in the ABSB enterprise is in the form of three lambing in two years, and additional feeding is applied in order to ensure pregnancy and increase the viability of the lambs. In this context, 1 kg/day alfalfa hay and 500 g/day barley grain are given per animal. The application continues for four weeks until the mating and 4-4.5 weeks after the mating. After mating of sheep, for about 2-2.5 months, per animal is fed with only 1 kg/day alfalfa hay. According to the results of the pregnancy examination performed with ultrasound after 2.5 months, the pregnant animals are given 1 kg/head/day of dried alfalfa grass for the first month, and ryegrass dried grass instead of alfalfa hay and in addition to this, 600 g of concentrate starting from 200 g barley is given for one and a half month before the birth. Half of the concentrated feed is given as grain barley in the morning and the remaining half is given as concentrate feed in the afternoon. After giving birth and suckling their lambs, the ewes are fed with 1 kg/head/day alfalfa hay and 1 kg milk feed for two months. At the end of two months, the lambs are weaned and their dams are taken out to dry in preparation for the next mating season. 1 kg/head/day of barley straw and alfalfa are given to the dried animals. Sheep showing signs of giving birth are taken to the individual delivery compartment that has been prepared beforehand in the sheepfold (Figure 1). During the lambing period, the herd housed in the sheepfold is observed hourly and 24/7 (day/hour) by camera throughout the day until the birth is completed. Earrings of the born lambs were prepared; data on date of birth, time of birth, type of birth and sex were recorded. To evaluate the data on the distribution of births during the day, a day was divided into 4 equal time periods of six hours each. The time periods are set as 06:01-12:00=1, 12:01-18:00 =2, 18:01-00:00=3 and 00:01-06:00=4. In the birth data of Bafra sheep; the birth distributions of the characteristics such as birth type (single=1, twin=2, multiples=3, quadruplets=4, quintuplets=5), sex of lambs (male, female), veterinary-assisted birth; difficult birth (1), normal birth without any intervention (2) and the number of lactation (1, 2, 3, 4) were evaluated according to the time periods during the day.

Figure 1. Individual birth sections in Altepe Bafra Sheep Breeder Farm.

2.3. Statistical Analysis

Whether there is a dependency between the time period and other traits was checked with the help of the chi-square test. The "chisquare" package of the R software was used for all analyses (R Core Team, 2020).

3. Results and Discussion

3.1. Distribution of Births during the Day

The distribution of births according to the 24-hour period of the day is given in Table 1.

According to Table 1, while the most intense (39.9%) lamb birth occurred between 06:01-12:00 hours, which is the 1st time period, the least lamb birth (12.7%) occurred in the 4th time period, between hours 00:01-06:00. Of the birth of 651 lambs, 459 (70.5%) occurred between 06:01-12:00 and 12:01-18:00 in the 1st and 2nd time periods, while 192 heads (29.5%) were born in the 3rd and 4th time periods between the hours of 18:01-00:00 and 00:01-06 00. Öztürk (2012) reported that births in Akkaraman sheep were the most intense (31.2%) between 16:00 and 22:00, and the lowest (15.6%) between 22:00 and 04:00.

Table 1. Distribution of birth during the day

Time Period	n	%
06:01-12:00 (1)	260	39.9
12:01-18:00 (2)	199	30.6
18:01-00:00 (3)	109	16.7
00:01-06:00 (4)	83	12.7
Total	651	100

Karabacak and Zülkadir (2014) stated that 54% of births occurred between 04.01-16.00 and 46.07% between 16.01-04.00 in Anatolian Merinos. Büyüktekin et al. (2015) stated that 53.10% of births occurred between 04:00- 16:00, and 46.90% occurred between 10:00-04:00 in Akkaraman sheep. The same researchers also reported that the distribution of lamb births during the daytime was 56.95% between 06:00-18:00, and 43.5% in the night time between 18:00-06:00. Karabacak et al. (2015) reported that 47.30% (238 heads) of births occurred between 05:01-17:00 during the day and 52.70% (265 heads) at 17:01-05:00 at night in 503 Anatolian Merinos. Ramirez et al., (1995) determined in their study on 90 Murciano-Granadina goats that over 90% of births were between 06.00-18.00 hours and 9% between 18.00-06.00 hours. As reported by Konyalı et al. (2004), 88.1% of births in 32 heads of Turkish Saanen goats occurred between 06.00-18.00, 4.8% and 7.1% of them occurred between 18.00-24.00 and 24.00-06.00, respectively. Erduran and Yaman (2014) reported that the birth rate of 189 Saanen goats was 78.2% and 21.8% between 04:01-16:00 and 16:01-04:00, respectively. The results of the present study are consistent with some of the above-mentioned research results while they are inconsistent with others. Probably the most important reason for this is the high twin or multiple births seen in Bafra sheep. Besides; this distribution may change according to the noise pollution of the enterprise. The sheep may prefer to give birth at quieter times of the day, or perhaps the presence of the workers, their movements or the sounds they make may have created an environment of trust (no threat of predators etc.). Because in this study, the births were mostly from the hours when the working hours started at 06.01 until 18.00. In addition, it may be due to the fact that other studies were carried out in different breeds, under different care and feeding conditions, in different regions, with changes in herd management and different mating methods.

3.2. Distribution of Births during the Day According to Birth Types

The results of the distribution of births during the day by birth type are presented in Table 2.

Table 2 shows that the highest number of births (260 births) occurred between 06.01-12.00 hours. In this interval, twin births were the highest with 42.3%, followed by triplets, singletons, quadruplets and quintuplets, respectively. In general, the order of the number of births in other time periods was observed in twin, triplet, quadruplet, singleton and quintuple births. In the study, the number and rate of lambs in the distribution of multiple births were 568 heads and 87.2%, respectively. As can be seen in Table 2, the number and proportions of twin lambs were the highest with 272 heads and 41.8%, the number and rates of lambs of triplets, quadruplets and singletons were 183 heads and 28.1%, 88 and 13.5% and 83 heads 12.7%, respectively. Quintuplet lambs showed the lowest values. The total rate of lambs with twins (41.8%) and triplets (28.1%) was 69.9% according to the time periods of the day. In addition, quintuple births were never seen between 00:01-06:00 in the time frame of births. The differences observed in the distribution of births during the day showed significant differences according to the birth type ($P<0.05$). Erduran and Yaman (2014) reported that the distribution of births during the day in Saanen Goats was between 10.01-16.00 at the peak time in both single (58.16%) and twin (44.51%) births. Births that occurred between 04.01-10.00 were in the second rank. This was followed by the 16.01-22.00 time frame, while the lowest birth density was between 22.01-04.00. Öztürk (2012) stated that the distribution of births according to singleton and twin birth types in Akkaraman sheep was highest in the range of 16.00-22.00 with 30.6% and 37.5%, respectively, and the lowest in the range of 22.00-04.00 (16.2% for singles and 8.3% for twins). Karabacak et al. (2012) determined that in the distribution of births during the day in Akkaraman sheep, single births were highest with 30.1% between 10.01-16.00, while the lowest between 16.01-22.00, and twin births were the highest (38.5%) in the time period of 16.01-22.00, and the lowest (15.4%) between 22.01-04.00 and 04.01-10.00. The similarities or differences in the literature reports may also be due to the yield aspects of the animal, such as the type of birth that shows differences between species and breeds.

3.3. Distribution of Births during the Day by Lamb Sex

The distribution of births during the day by lamb sex is given in Table 3.

According to the sex of male lambs in Table 3, 40.27% of total 298 male lambs were born between 06.01 and 12.00, and 32.21% were between 12.01 and 18.00, while 72.48% of male lambs were born between 06.01-18.00 in these two-time intervals. 27.52% of the remaining male lambs were born between 18.01-06.00. On the other hand, 39.66% of 353 female lambs were born between 06.01-12.00 and 29.18% between 12.01-18.00. The sum of these two time periods is 68.84%. Of female lambs, 21.16% were born between 18.01-06.00. This result coincides with the birth times of male lambs. According to the χ^2 test, the distribution of births during the day did not differ according to the sex of the lamb. In a study of Karabacak et al. (2012) on Akkaraman sheep, they found that out of total 119 lambs, the distribution of male and female lambs was 57.9% between 04.01-16.00, while the total share of both sexes was 42% between 16:01-04:00.

Zülkadir and Karabacak (2013) reported that the most intense births were in the 23.01-05.00 time period, and male and female lamb birth rates in Akkaraman sheep were 38.04% and 47.06%, respectively, and male and female lamb birth rates in Awassi sheep was 45% and 34.55%. The same researchers found the lowest birth rates in Akkaraman male lambs between 17.01-23.00 as 16.30%, and in female lambs in the range of 11.01-17.00 as 10.29%, and in Awassi breeds the lowest birth rate in the same time period in male and female lambs, between 17.01- 23.00, as %10.00 and 14.55% respectively. Büyüktekin et al. (2015) reported that in the distribution of Akkaraman sheep during the day, 51.25% were male (1069 heads) out of 2086 lambs, while 48.75% were female (1017 heads). The same researchers stated that the highest birth rate between 06:00-18:00 hours was 28.19% male lambs and 28.76% female lambs. Karabacak et al. (2015) found that the distribution of births during the day in Anatolian merino sheep was most intense between 23.01-05.00 hours, with 29.04% and 35.06% in male (97 heads) and female (122) lambs, respectively, and the lowest between 11.01-17.00 hours with male and female lamb numbers and rates with 72 (21.56%) and 67 (19.25%) lambs, respectively.

3.4. Distribution of Births during the Day According to Difficult and Normal Births

The distribution of deliveries during the day according to difficult and normal deliveries is given in Table 4.

According to Table 4, 26.1% of 651 births were difficult delivery. While 65.88% of these difficult deliveries were most intense between 06.01-18.00, it was the lowest with 10% in the 00.01-06.00 range. When we look at normal deliveries, 72.14% of them are in the range of 06.01-18.00, as in difficult births. 27.86% of normal deliveries were realized between 18.01-06.00. The rates of difficult and normal births in total cases were 26.1% and 73.9%, respectively. According to the results of the χ^2 test, the variation in the distribution of births during the day compared to difficult and normal births was statistically significant ($P<0.05$). There is no literature on classifying and evaluating the distribution of births during the day according to difficult or normal births. However, regarding difficult births, Konyalı et al. (2004) reported that 64% of the births were twins in their study on goats and 63% of these births were completed without assistance. According to Ali, (2011), the causes of difficult birth in sheep and goats can be maternal and fetal origin (multiple birth, lamb/kid size, fetal development disorder, anomalies, etc.).

Table 2. Distribution of births during the day according to birth types

Birth Type	Time Period				Total
	06:01-12:00 n (%)	12:01-18:00 n (%)	18:01-00:00 n (%)	00:01-06:00 n (%)	n (%)
Single	46 (17.7)	17 (8.5)	10 (9.2)	10 (12.0)	83 (12.7)
Twin	110 (42.3)	88 (44.2)	48 (44.0)	26 (31.3)	272 (41.8)
Triplet	66 (25.4)	60 (30.2)	26 (23.9)	31 (37.3)	183 (28.1)
Quadruplets	28 (10.8)	24 (12.1)	20 (18.3)	16 (19.3)	88 (13.5)
Quintuplets	10 (3.8)	10 (5.0)	5 (4.6)	0 (0)	25 (3.8)
Total	260 (39.9)	199 (30.6)	109 (16.7)	83 (12.7)	651 (100.0)
	χ^2= 25.437		DF= 12	P= 0.013	

n= number of animals, χ^2= Chi-square result, DF= degree of freedom, P= significance level.

Table 3. Distribution of births during the day according to sex types of lambs

Sex	Time Period				Total
	06:01-12:00 n (%)	12:01-18:00 n (%)	18:01-00:00 n (%)	00:01-06:00 n (%)	n (%)
Male	120 (46.2)	96 (48.2)	47 (43.1)	35 (42.2)	298 (45.8)
Female	140 (53.8)	103 (51.8)	62 (56.9)	48 (57.8)	353 (54.2)
Total	260 (39.9)	199 (30.6)	109 (16.7)	83 (12.7)	651 (100.0)
	χ^2= 1.247		DF= 3	P= 0.742	

n= number of animals, χ^2= Chi-square result, DF= degree of freedom, P= significance level.

Table 4. Distribution of deliveries during the day according to difficult and normal deliveries lambs

Birth	Time Period				Total
	06:01-12:00 n (%)	12:01-18:00 n (%)	18:01-00:00 n (%)	00:01-06:00 n (%)	n (%)
Difficult	54 (20.8)	58 (29.1)	41 (37.6)	17 (20.5)	170 (26.1)
Normal	206 (79.2)	141 (70.9)	68 (62.4)	66 (79.5)	481 (73.9)
Total	260 (39.9)	199 (30.6)	109 (16.7)	83 (12.7)	651 (100.0)
	χ^2= 13.634		DF= 3	P= 0.003	

n= number of animals, χ^2= Chi-square result, DF= degree of freedom, P= significance level.

Normal and difficult birth rates were 55.9% and 44.1% in the Awassi breed (161 heads), respectively, and 73.7% and 26.3% in the Naidi breed (19 heads). The maternal and fetal birth rate in the 1st lactation was reported as 81.1% and 18.9%, respectively, and as 43.2% and 56.8%, respectively, in multiple (2nd lactation and later) lactation. Kuru et al. (2016) reported that the incidence of difficult delivery in sheep and goats varied between 3-5% on average, and the most common cause of congenital disabilities was fetal congenital disabilities with a rate of 50-60%. They stated that 35 of them were due to obstructions in the birth canal in sheep and 20% of them were due to the pelvic diameter disproportion of the fetus and the maternal in goats. Mostefaı et al. (2019) stated that while the rate of fetal causes in difficult birth is 75%, it is common in 16% of maternal causes, and it constitutes 9% of both fetal and maternal causes. According to Jacobson et al. (2020), risk factors for dystocia in lambs include malpresentation, sickness, or congenital abnormalities, as well as fetopelvic disproportion, uterine inertia, the difficulty of the cervix to fully dilate, and malpresentation. High (fat) or low liveweight ewes, as well as tiny first parity ewes, all enhance the risk of dystocia. Inadequate levels of muscle glycogen, pregnancy toxicity, mineral imbalances causing hypocalcaemia, and a lack of antioxidant nutrients are all possible contributors. For this reason, sheep with single and multiple pregnancies must be fed differently.

The current study's finding of a difficult birth rate of 26.1% may be related to the high rate of multiple births in Bafra sheep, as well as the literature findings noted above.

3.5. Distribution of Births within the Time of Day According to Lactation Number

The distribution of births within the time of day according to lactation number is shown in Table 5.

In Table 5, the highest number of births occurred in the sheep in the first lactation. While 33.9% of the sheep in the first lactation gave birth between 06.01-12.00, the lowest birth rate during this lactation was 16.7% in the range of 01.01-06.00. However, the lowest birth rate (4.6%) was seen in the 4th lactation. In the fourth lactation, the deliveries were highest at 43.3% between 18.01-00.00 and lowest at 3.3% between 00.01-06.00.

As can be seen from Table 5, sheep with lactation number 1 accounted for the highest proportion of 366 lambs at 56.2%, while the least lamb birth occurred with 30 lambs with 4.6% in lactation number 4. In the time period of the day, 260 (39.9%) lambs were born between 06:01-12:00 at the most, and 83 (12.7%) lambs were born at the least between 00:01-06:00. Lamb birth of sheep with lactation number 1 and 2 was 88.8% with 578 lambs. According to the $\chi 2$ test, it was found significant that the distribution of deliveries during the day differed according to the lactation number ($P<0.01$).

In the literature, few sources (Karabacak et al., 2012; Zülkadir and Karabacak, 2013; Karabacak and Zülkadir, 2014; Karabacak et al., 2015) have been found in the domestic sheep breeds regarding the distribution of births during the day according to the lactation number and maternal age was considered as factor instead of lactation number. However, Karabacak et al. (2012) observed Akkaraman sheep in all time periods of the day; 26.9% (32 heads) of sheep giving birth for the first time, 34.5% (41 heads) in the 3rd lactation, 21.9% (26 heads) in the 4th lactation, 10.9% (13 heads) in the 5th lactation and 5.8% (7 heads) in the 6th lactation. They found that the highest number of births in the time periods between 04.01-10.00 was with 43.75% (14 heads) in the 1st lactation and 36.58% (15 heads) in the 3rd lactation between 10.01-16.00. Zülkadir and Karabacak (2013) reported the number and rates of births in Akkaraman breed at 23.01-05.00, 05.01-11.00, 11.01-17.00 and 17.01-23.00 time periods, respectively, as 67 (41.88%), 38 (23.75%), 26 (16.25%) and 29 (18.13%), and in the Awassi breed as 37 (38.95%), 25 (26.32%), 21 (22.11%) and 12 (12.63%). The same researchers stated that the highest number of births in Akkaraman breed occurred in sheep in the 3rd lactation and they occurred at the rates of 37.31%, 28.95%, 42.31% and 37.93%, respectively, at 23.01-05.00, 05.01-11.00, 11.01-17.00 and 17.01-23.00 hours. In the Awassi breed, they reported 57.14% in the 1st lactation between 11.01-17.00 hours, and those in the 6th lactation and above in the 23.01-05.00, 05.01-11.00 and 17.01- 23.00 time periods, respectively, as 24.32%, 24.00% and 33.33%. Karabacak and Zülkadir (2014) stated that the highest number of births occurred between 04:01-10:00 (27.18%) when considering the distribution of births during the day according to the lactation number in the Anatolian Merino breed.

Table 5. Distribution of births within the time of day according to lactation number

Lactation number	Time Period				Total
	06:01-12:00 n (%)	12:01-18:00 n (%)	18:01-00:00 n (%)	00:01-06:00 n (%)	n (%)
1	124 (33.9)	118 (32.2)	63 (17.2)	61 (16.7)	366 (56.2)
2	106 (50.0)	66 (31.1)	32 (15.1)	8 (3.8)	212 (32.6)
3	19 (44.2)	10 (23.3)	1 (2.3)	13 (30.2)	43 (6.6)
4	11 (36.7)	5 (16.7)	13 (43.3)	1 (3.3)	30 (4.6)
Total	260 (39.9)	199 (30.6)	109 (16.7)	83 (12.7)	651 (100.0)
χ^2= 60.614		DF= 9	P= 0.000		

n= number of animals, χ^2= Chi-square result, DF= degree of freedom, P= significance level.

The same researchers reported the highest birth rates of those in the 2nd, 3rd and 4th lactations in the same time period as 28.88%, 31.78% and 29.26%, respectively. Karabacak et al. (2015) found that the highest birth rate was 30.82% between 23.01-05.00 hours, and the highest birth rate (35.61%) was observed in 3 years old of dams. According to the results of the current study, when all lactations are taken into account, it can be stated that 56.2% of the sheep in the first lactation had the highest birth rate, and 33.8% (124/366) of them occurred in the range of 06.01-12.00 and 32.2% in the 12.01-18.00 time period. In other words, 66% of the sheep in the first lactation gave birth during working hours (06.01-12.00 and 12.01-18.00). The birth rate of sheep with two lactation numbers was in the second rank (32.6%). The total share of sheep in the first and second lactation is 88.8%. Accordingly, the sheep's birth in the first and second lactation should be followed more carefully in herd management. In both lactations, a very important part of the births occurred between 06.01-18.00, which can be considered working hours.

4. Conclusion

The distribution of a total of 651 lambs of sheep in the Altepe Bafra Sheep Breeder Farm during the day; 260 lambs were born in the 1st time periods (06:01-12:00), 199 lambs in the 2nd time periods (12:01-18:00), 109 lambs in the 3rd time (18:01-00:00) and 83 lambs were born at the 4th time periods (00:01-06:00). According to the 1st and 2nd time periods, 70.5% of the births took place during the working hours of the enterprise, and the other 29.5% occurred outside of working hours from evening to morning. One factor affecting the enterprise's profitability is fertility, and the first thing that comes to mind when it comes to the sheep farm is lamb delivery. Sucking the dam and lamb as soon as possible after birth and their communication with each other will increase the survival power of the lambs. Increasing the viability of born lambs is possible with proper herd management. Because lamb losses are one of the factors affecting enterprise profitability, minimizing the losses is an important issue. In addition, lamb yield means meat yield. Therefore, the fact that 29.5% of birth distributions occur outside of working hours from evening to morning is a considerable level that cannot be underestimated. In herd management, measures such as knowing the distribution of births during the day, controlling the animals during the peak times of birth, ensuring adequate workforce, monitoring individual care and feeding, employment of labor specific to the birth season outside of working hours will contribute to the prevention of lamb losses and increase the lamb's viability.

Author Contributions

The percentage of the author contribution is present below. The author reviewed and approved final version of the manuscript.

	Ö.Ş.
C	100
D	100
S	100
DCP	100
DAI	100
L	100
W	100
CR	100
SR	100
PM	100
FA	100

C=Concept, D= design, S= supervision, DCP= data collection and/or processing, DAI= data analysis and/or interpretation, L= literature search, W= writing, CR= critical review, SR= submission and revision, PM= project management, FA= funding acquisition.

Conflict of Interest

The author declared that there is no conflict of interest.

Ethical Consideration

Data collection and animal husbandry procedures were carried out in compliance with Law No. 5996's Article 9's rules for animal welfare. This work did not involve the use of animal for laboratory studies. There is no violation of animal right. No approval from research ethics committee was required to accomplish the goals of this study. However, the use of all the animals was with the consent of the participating farmer.

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