RESEARCH ARTICLE

International Journal of Agriculture, Environment and Food Sciences 2023; 7(4): 900-906
DOI: https://doi.org/10.31015/jaefs.2023.4.20

Determination of the growth and survival characteristics of the kids of damascus goat x kilis goat F1 under breeding conditions

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Citation: Sireli, H.D., Kurtay, T., Turan, M. (2023). Determination of the growth and survival characteristics of the kids of damascus goat x kilis goat F1 under breeding conditions. International Journal of Agriculture, Environment and Food Sciences, 7 (4), 900-906

Received: *July 08, 2023*
Accepted: *October 12, 2023*
Published Online: *December 26, 2023*

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Available online at
https://jaefs.com/
https://dergipark.org.tr/jaefs

Abstract

This study aimed to investigate the survival rate and growth performance of the kids of Damascus x Kilis goat F1 bred under intensive conditions. 37 male and 33 female kids of 54 dams (Damascus x Kilis F1 goats) in an enterprise of intensive dairy goat breeding in the Bismil district of Diyarbakır province were used in the study. The birth weight of kids and their monthly weights up to 7 months of age were determined. In the study analyzing the growth and development characteristics of kids of Damascus x Kilis F1 goats up to 210 days of age, it was determined that their mean live weights on the 0th (birth), 30th, 60th, 90th, 120th, 150th, 180th, and 210th days were 3.96±0.124, 7.47±0.306, 10.99±0.506, 13.71±0.592, 15.54±0.643, 24.08±1.019, 22.22±1.033, and 27.51±1.168 kg for males, respectively; whereas, the mean live weights of females were 3.40±0.128, 6.46±0.312, 9.61±0.490, 12.29±0.584, 15.79±0.772, 22.40±0.856, 22.60±0.809, and 24.11±0.937 kg, respectively. Given the type of birth, the mean live weights were found to be 4.12±0.124, 7.42±0.338, 11.29±0.549, 13.89±0.691, 16.51±0.764, 24.08±1.132, 24. 31±1.146 and 26.92±1.269 kg in singleton kids, and 3.28±0.103, 6.58±0.289, 9.42±0.418, 12.20±0.459, 14.83±0.608, 22.51±0.745, 22.74±0.753, and 24.90±0.915 kg in twins, respectively. Also, in the study the effect of sex and birth type on various period weights was analyzed and it was found that birth type had a significant effect ($P<0.005$) on birth weight, and live weights on the 60th and 90th days, while the effect of sex was insignificant. When the survival capacity of the kids was analyzed, the kids were observed to die at the time of birth, but there was no death in the later periods and the survival capacity was found to be 100% from birth until the 210th day.

Keywords: Intensive Breeding, Damascus Goat, Kilis Goat, Growth, Survival Rate

INTRODUCTION

Goat breeding is an important animal husbandry activity for people living in the rural areas both economically and socially (Kaymakçı and Engindeniz, 2010). In Turkey, goat breeding is carried out especially in high-altitude bush pastures where extensive breeding system is applied. However, intensive breeding systems and genotypes suitable for such system have become widespread in recent years (Ertuğrul, 1996). Especially in recent years, intensive or semi-intensive enterprises producing cheese and milk have been operating in Western Anatolia (Taşkın et al., 2013; Taşkın et al., 2017). Damascus goat originates from Nubian goat and is a breed with high milk yield and high fertility which is mostly bred in the provinces

along the Syrian border in Turkey. In studies conducted on these goats, lactation milk yield was reported as 300-600 liters, lactation duration as 250-280 days, and the rate of the number of kids litter size as 150-200% (Keskin et al., 2004; Keskin et al., 2016; Gül et al., 2016). Kilis breed, on the other hand, is the goat breed with the highest fertility and milk yield in Turkey, which is mostly bred in the provinces of Urfa, Gaziantep, Kilis and Hatay on the Syrian border of Turkey and mated with Syrian Damascus goats and Hair goats under natural conditions. Damascus goat is a significant breed that can be utilized in the improvement of our domestic goat breeds with low fertility and therefore Hair goats for milk yield and fertility (Kaymakçı, 2013). Kilis goat is a dairy breed with the highest milk yield in Turkey. Lactation period can be between 210-260 days, and lactation milk yield can be between 200-300 kg in public herds and 400-500 kg in elite herds. As a result of the studies, it was reported that the lactation milk yield of Kilis goats was 294-408 kg and the twinning rate was 10-34% (Keskin et al., 2004; Atac and Burcu, 2014; Gül et al., 2016). Additionally, Keskin and Tüney (2015) found the twinning rate to be 22% in their study.

One of the issues frequently discussed in livestock raising is the gains in live weight of animals. Growth refers to the weight gains in animals due to biological events that generally take place directly proportional to age. Growth is a process that begins in the embryonic stage and continues until the mature age (Tozlu Çelik and Olfaz, 2018). Different mathematical methods have been used to define growth.

Monitoring the growth and development of living organisms during some periods in the growth process would provide significant benefits to breeders for the organization of herd management, care and feeding. This would allow them to easily respond to the problems identified during such periods (Şahin et al., 2014).

The effect of birth weight on both survival rate and growth in living organisms is known. It is very important to control the birth weight and weaning weight continuously in order to increase their survival rate and to provide growth (Savaş, 2007). Therefore, monitoring growth and development in livestock raising and its utilization for improvement are also very important for the business economy (Kozaklı et al., 2022).

Damascus breed is preferred by breeders because the Damascus breed has high milk and fertility productivity, good adaptation abilities, and sufficient fattening properties. The reason why Kilis goats are hybridized with Damascus goats instead of pure breeding is that they are preferred by breeders to further increase the existing milk and reproductive productivity of Kilis goats. This study aimed to investigate the survival rate and growth performance of the kids of Damascus x Kilis F_1 goats bred under intensive conditions.

MATERIALS AND METHODS

Materials

In this study, 37 male and 33 female kids of 54 dams (Damascus x Kilis F_1 goats) in an enterprise of intensive dairy goat breeding in the Bismil district of Diyarbakır province were used.

Methods

The goat breeds available in the farm where the study was carried out are Kilis and Aleppo breeds. Flushing was applied in the farm during the mating period, one month before the matings. Matings were carried out by hand crossing method. For this purpose, estrus was detected by releasing search goats into the herd twice a day, early in the morning and late in the evening. Goats detected to be in heat were mated twice in a controlled manner with the same goats, in the morning and in the evening. Selenium and vitamin E supplementation were performed after umbilical cord care following birth, and birth weight, date of birth, type of birth, sex, and the number of dams were recorded by attaching a plastic ear tag after the birth weights were determined with a 10-gram precise scale within the first 24 hours. After birth, kids were provided with colostrum. The kids were kept with their mothers for the first week and then detached from their mothers. Since there was one milking practice daily in the enterprise, the kids were allowed to suck their mothers after milking, and after the suckling process, the kids were detached from their mothers, and dry alfalfa grass and kids' growth feed were supplied in the kid pens. The kids were weaned on the age of 90 days and began to be fed according to the standard feeding (dry vetch grass and goat feed prepared within the enterprise).

When the kids reached the age of 4 months, males and females began to be raised in separate paddocks. The live weights of the kids were weighed every month from birth to 7 months of age with a 10-gr precision scale in order to determine their growth and survival rate. The day before the weighing, the kids were fasted in the evening and weighed early in the morning. A ration prepared with barley, wheat, cottonseed meal, corn and vetch grass was regularly given to the animals in the enterprise, and marble powder and vitamin solids were added to the ration. The ration contains an average of 2700 kcal and 15% protein.

Fertility criteria according to the mating and lambing outcomes reported below were used in the study. Accordingly, the criteria were calculated as follows (Kaymakçı, 2006).

Pregnancy rate (%) = Pregnant goat / Goat under a billy-goat

Infertility rate (%) = Infertile goats/ Goat under a billy-goat

Fertility rate (%) = Breeding goat / Goat under a billy-goat

Twinning rate (%) = Twinning goat / Kidding goat

Fecundity = Born kids / Goats under a billy-goat

Litter size= Born kids/Kidding goat

The growth performances of the kids at various periods were analyzed using the GLM (General Linear Model) procedure, the significance of the differences between the group means was checked by the Duncan multiple comparison test, and the survival rates were determined by the Chi-Square (c^2) method (SAS 1995).

RESULTS AND DISCUSSION

Table 1 shows the fertility criteria of the crossbred Damascus x Kilis F_1 goats in the study. Accordingly, the obtained fertility criteria were as follows: pregnancy rate of 92.6%, infertility rate of 7.4%, fertility rate of 92.6%, twinning rate of 37%, fecundity rate of 1.29%, and litter size of 1.12%.

Table 1. Fertility Measures of Damascus x Kilis F_1 Crossbred Goats

Parameters	n	% rate
Number of Goats Giving Birth	54	-
Number of Kids Born	70	-
Number of Kids Died	9	-
Number of Goats Giving Birth to Twins	20	-
Number of Kids Alive	61	-
Number of Kids Born Twin	31	-
Number of twin Kids	40	-
Number of Singleton Kids	30	-
Pregnancy rate	-	92.6
Infertility Rate	-	7.4
Fertility	-	92.6
Twinning Rate	-	37
Fecundity	-	1.29
Litter size	-	1.12

Table 2. Descriptive Values of Sex and Birth Types of Damascus x Kilis F_1 Kids

Sex			Birth Type		
	n	%		n	%
Male	32	52.5	**Single**	37	49.2
Female	29	47.5	**Twin**	33	50.8
General	61	100.0	**General**	70	100.0

When the sex factor was taken into consideration in the kids of crossbred Damascus x Kilis Goat F_1 in Table 2, it was found that 52.5% of the kids were male and 47.5% were female. When the birth type factor was analyzed, it was reported that 49.2% of the kids were singletons and 50.8% were twins. Özdemir and Keskin (2018) reported the twin rates as 35.9% and 27.1%, respectively, in their study in Kilis and Gaziantep provinces. Gül et al., (2016) reported twinning rates as 10.56, 11.11 and 33.90, respectively, in their studies conducted with Kilis goats in 2012, 2013 and 2014. Keskin et al., (2017), in their studies conducted with Kilis goats in 2013, 2014 and 2015, reported the twinning rates as 30.4, 31.4 and 29.7, respectively.

Table 3 shows the analyses of the period weights of the kids of Damascus x Kilis F_1 by birth type and sex factors. It was reported that the difference between the period weights in terms of the sex factor was insignificant ($P<0.05$); the birth weights of singletons and twins were 4.12±0.124 and 3.28±0.103 kg, respectively; the weights on the 60th day were 11.29±0.549 and 9.42±0.418 kg, respectively; and the weights on the 90th day were 13.89±0.691 and 12.20±0.459 kg, respectively, for the birth type factor; and the difference between the weight means on the 30th, 120th, 150th, 180th, and 210th days was significant ($P<0.05$), but the difference between the mean weights of the 30th, 120th, 150th, 180th, and 210th days were insignificant ($P<0.05$).

Table 4 shows the live weight gains of the kids of Damascus x Kilis F_1 goats in different periods by birth type and sex factors. The differences between the weights of male and female kids in different periods were insignificant ($P<0.05$) in terms of sex factor. Given the birth type, the live weight gains on the 120th and 210th days (0.093±0.153; 0.073±0.143 and 0.090±0.01; 0.074±0.01) were statistically significant ($P<0.01$) and the live weight gains on the 150th and 180th days were statistically significant (0.222±0.177; 0.225±0.014 and 0.008±0.0005; 0.006±0.0005) ($P<0.05$). The differences between the live weight gains on the 30th, 60th, and 90th days were insignificant. The high gain in live weight on the 150th day can be associated with the fact that it coincides with the mating season (September–October) and exposure to supplementary feeding (flushing), as well as the active sexual cells during this period.

The survival rate of the kids was examined and showed that most of the existing mortality took place at the time of birth. The survival rate from birth to the 210th day was 100%.

The birth weights of males and females were found to be 3.96±0.124 and 3.40±0.128 kg, respectively when taking sex into consideration in this study. When the results from the studies by different researchers were analyzed, it was found that the values were higher than those by Erten and Yılmaz (2013), Gökdal et al., (2013), Tekin and Öğeç (2017), and Şimşek and Bayraktar (2006) and lower than those by Gök et al., (2015). In the study of Gül et al., (2022) it was stated that the birth weight of Kilis male kids was 3.6± 0.01 kg, while the female birth weight was 3.5±0.01 kg. Gül et al., (2016) reported that there was no significant difference in terms of birth weight and gender in their study. Given the birth type, it was found that the mean birth weights of kids were 4.12±0.124 kg and 3.28±0.103 kg for singletons and twins, respectively. These results were higher than the values of Şimşek et al., (2007), Erten and Yılmaz (2013), Gökdal et al., (2013) and

Table 3. Live Weight Averages (kg) of Halep x Kilis F_1 Kids at Various Periods

Factors	n	Birth	30th days	60th days	90th days	120th days	150th days	180th days	210th days
Single	37	4.12±0.124 [a]	7.42±0.338	11.29±0.549[a]	13.89±0.691[a]	16.51±0.764	24.08±1.132	24.31±1.14 6	26.92±1.269
Twin	33	3.28±0.103[b]	6.58±0.289	9.42±0.418[b]	12.20±0.459[b]	14.83±0.608	22.51±0.745	22.74±0.753	24.90±0.915
Sex									
Male	32	3.96±0.124	7.47±0.306	10.99±0.506	13.71±0.592	15.54±0.643	24.08±1.019	22.22±1.033	27.51±1.168
Female	29	3.40±0.128	6.46±0.312	9.61±0.490	12.29±0.584	15.79±0.772	22.40±0.856	22.60±0.809	24.11±0.937

*The difference between group means with different letters is significant (P<0.05).

Table 4. Live Weight Increases of Damascus x Kilis F_1 Kids at Various Periods for Birth Type and Sex

Factors	n	30th days $\bar{X}\pm S_{\bar{x}}$	60th days $\bar{X}\pm S_{\bar{x}}$	90th days $\bar{X}\pm S_{\bar{x}}$	120th days $\bar{X}\pm S_{\bar{x}}$	150th days $\bar{X}\pm S_{\bar{x}}$	180th days $\bar{X}\pm S_{\bar{x}}$	210th days $\bar{X}\pm S_{\bar{x}}$
Birth Type								
Single	37	0.169**±0.**113	0.077**±0.00**7	0.061±0.075	0.093±0.153[a]	0.222±0.177[a]	0.008**±0.00**05[a]	0.090**±0.01**[a]
Twin	33	0.143**±0.00**8	0.056**±0.00**4	0.066**±0.0**49	0.073**±0.**143[b]	0.225±0.014[b]	0.006**±0.00**05[b]	0.074**±0.01**[b]
General	**70**				**0.095±0.005** **0.089±0.003**			
Sex								
Male	32	0.161**±0.**104	0.070**±0.00**6	0.064**±0.00**6	0.065**±0.00**8	0.251±0.017	0.007**±0.00**4	0.109**±0.**144
Female	29	0.150**±0.**100	0.063**±0.00**6	0.063**±0.00**6	0.125±0.181	0.194±0.125	0.005**±0.00**3	0.051**±0.**145
General	**61**				**0.098±0.004** **0.086±0.003**			

*The difference between the group means with different letters is significant (P<0.05).

*The difference between the group means with different letters is significant (P<0.01).

Tekin and Öğeç (2017). The data obtained in the study were higher than the birth weights of the Kilis single kids but lower than the twin birth weights of Gül et al., (2022). Keskin et al. (2017), semi-intensive birth weights of Kilis goat kids reared under these conditions were reported as 3.56± 0.02 kg. It can be seen that the values obtained in this study are similar to the values obtained in our study.

The mean live weights of the kids of Damascus x Kilis F_1 goats on 30th day were found to be 7.47±0.306 kg and 6.46±0.312 kg for males and females, respectively in the study. The mean live weight on the 30th day in this study was reported to be higher than those obtained by Şimşek et al. (2007) and Erten and Yılmaz (2013) for males and similar to those obtained by Erten and Yılmaz (2013) for females. The values in this study were higher than those obtained by Gökdal et al., (2013) for both males and females. Given the birth type, the mean live weights

on the 30th day were reported to be 7.42±0.338 kg and 6.58±0.289 kg for singletons and twins, respectively, and it was reported that the mean live weights on the 30th day for singletons and twins in this study were lower than the values obtained by Şimşek et al. (2007) for male kids and higher than the values obtained by Şimşek et al. (2007) for female kids. It was also reported to be higher than the values obtained by Erten and Yılmaz (2013) for males and similar to the values obtained for females. Also, the values in this study were lower than those obtained by Gökdal et al., (2013), Tüfekçi and Olfaz (2016), and Şimşek and Bayraktar (2006).

It was reported in the study that the mean live weights of the kids of Damascus x Kilis F_1 goats on the 60th day were 10.99±0.506 kg and 9.61±0.490 kg for males and females, respectively. Accordingly, it was reported that the mean live weights on the 60th day were similar to the values obtained by Şimşek et al., (2007) for male kids and lower than the values obtained by Şimşek et al. (2007) for female kids; the values obtained by Erten and Yılmaz (2013) for male kids were higher, and the values obtained by Erten and Yılmaz (2013) for female kids were similar. Given the birth type, the mean live weights of the kids of Damascus x Kilis F_1 goats on the 60th day were 11.29±0.549 and 9.42±0.418 kg for singletons and twins, respectively. The mean live weights of singletons and twins on the 60th day in this study were lower than the values obtained by Şimşek et al., (2007) and Şimşek and Bayraktar (2006) but higher than the values obtained by Erten and Yılmaz (2013). Gul et al., (2016) in their studies conducted with Kilis goats in 2012 and 2013, found that the birth rates were 16.8±0.22, 16.5±0.21 in single-born males, 15.7±0.16, 15.4±0.17, respectively, in single-born females, and 15.0±0.19, 14.9 ± 0.28, respectively, in twin-born males. In females born with twins, they reported 14.4 ± 0.21, 14.5 ±0.35, respectively. Keskin et al., (2017) reported the 60th day live weight as 11.9±0.08 in 2013, 12.8±0.08 in 2014 and 12.1 ±0.06 in 2015. In another study, Keskin et al., (2022) reported in their study with Kilis goats in 2016, 2017, 2018, 2019 and 2020, 60th day live weights in males and females, respectively; 12.9±0.05; 12.4±0.04; 12.1± 0.04; 11.5±0.03; 11.5±0.04; 11.1±0.04 and 12.4±0.06; 11.7±0.05; 12.1±0.04; 10.8±0.05 in terms of birth type, again 13.2±0.05; 12.3±0.04; 12.6±0.04;

11.4±0.03; 11.5±0.03 and 12.2±0.07; 11.6±0.06; 12.2±0.07; 10.8±0.04; 10.8±0.05. It is seen that the values obtained in other studies are higher than the values obtained in our study (Gül et al., 2022).

In the study, it was reported that the mean live weights of the kids of Damascus x Kilis F_1 goats on the 90th day were 13.71±0.592 kg and 12.29±0.584 kg for males and females, respectively, and the mean live weights on the 90th day were lower than the values obtained by Gökdal et al., (2013) for males and similar to the values obtained by Gökdal et al., (2013) for females. Furthermore, the values for males and females in this study were lower than the values obtained by Şimşek et al., (2007), Şimşek and Bayraktar (2006); Gök et al., (2015), but higher than the values obtained by Erten and Yılmaz (2013) for males and similar to their values for females. Given the birth type, the mean live weights on the 90th day were 13.89±0.691 kg and 12.20±0.459 kg for singletons and twins, respectively, and the mean live weights on the 90th day for singletons and twins obtained in this study were lower than the values obtained by Şimşek et al., (2007) and Gökdal et al., (2013), Erdem et al., (2022) but higher than the values obtained by Erten and Yılmaz (2013) for singletons, and similar to their values for twins.

In the study, it was reported that the mean live weights on the 120th day were 15.54±0.643 kg and 15.79±0.772 kg for males and females, respectively. The mean live weight on the 120th day was higher than the values obtained by Erten and Yılmaz (2013) for both sexes, but lower than the values obtained by Tekin and Öğeç (2017) for both sexes. Given the birth type, the mean live weights on the 120th day were 16.51±0.764 kg and 14.83±0.608 kg for singletons and twins, respectively in this study, and the mean live weights on the 120th day for singletons and twins were higher than the values obtained by Erten and Yılmaz (2013) for males and females, but lower than the values obtained by Tekin and Öğeç (2017) for both sexes. In addition, Erdem et al., (2022) determined the 120th day live weight in males as 19.91±0.54 in males and 15.50±0.58 in females in their study on Damascus goats.

In the study, it was reported that the mean live weights on the 150th day were 24.08±0.019 kg and 22.40±0.856 kg for males and females, respectively. The mean live weight on the 150th day in this study was higher than the values obtained by Erten and Yılmaz (2013) and Gökdal et al. (2013) for both sexes. Given the birth type, the mean live weights on the 150th day were reported to be 24.08±1.132 kg and 22.51±0.745 kg for the kids born as singletons and twins, respectively. The mean live weights on the 150th day in this study were higher than the values obtained by Erten and Yılmaz (2013) for singletons and twins, similar to the values obtained by Gökdal et al., (2013) for singletons but higher than the values obtained by Gökdal et al. (2013) for twins.

In the present study it was reported that the mean live weights on the 180th day for males and females were 22.22±1.033 kg and 22.60±0.809 kg, respectively, based on the sex factor. The mean live weights of males and females on the 180th day in this study were higher than the values obtained by Erten and Yılmaz (2013) but lower than the values obtained by Gök et al. (2015). Regarding the birth type, the mean live weights on the 180th day were 24.31±1.146 kg and 22.74±0.753 kg for singletons and twins, respectively. Erdem et al., (2022) in their study on Damascus goats, determined the 180th day live weight as 21.73±0.44 in males and 20.39±0.48 in females. Given the birth type, the mean live weight on the 180th day was higher than the values obtained by Erten and Yılmaz (2013), Şimşek and Bayraktar (2006) but lower than the values obtained by Tüfekçi and Olfaz (2016) for both birth types. In this study, the main reasons why the live weight gain is not at the desired level between the 150th days and 180th days are; as this period coincides with August, it can be expressed as an increase in temperatures in the region and a corresponding decrease in feed consumption in animals.

In the study it was reported that the mean live weights of the kids of Damascus x Kilis F_1 goats on the 210th day were 27.51±1.168 kg and 24.11±0.937 kg for males and females, respectively. The mean live weight on the 210th day in this study was higher than the values obtained by Gökdal et al. (2013) for male kids but lower than the values obtained for female kids. Given the birth type, the mean live weights on the 210th day were 26.92±1.269 kg and 24.90±0.915 kg for the singletons and twins, respectively. The mean live weights on the 210th day in this study for singletons and twins were lower than the values obtained by Gökdal et al., (2013) for both birth types. The values of the present study were compared with those obtained in studies by different researchers, and some differences were found. This may be accounted for by using different genotypes in the studies, management, and breeding conditions.

CONCLUSION

Live weight is an important characteristic that should be focused on throughout the life of animals and is one of the major criteria used to identify breed characteristics, early selection, and the determination of growth and fattening studies. The birth weights and weaning weights of the kids significantly affect their live weights in the following periods. Poor birth weights and weaning weights affect their live weights in the following periods and, consequently, their survival rate negatively. Therefore, higher birth and weaning weights are required. This can be achieved by paying attention to feeding in the last period of pregnancy, especially in goats. The differences between the live weights of kids at birth and on the 60th and 90th days in the study were significant ($P<0.05$) when the sex factor was considered, and males were significantly ($P<0.05$) higher than females. When analyzing the survival rates of the kids, it was determined that all of the deaths took place at

the time of birth, there was no death in the following periods, and the survival rate of the kids was 100% from birth until the 210th day.

Consequently, the results obtained in this study, which aimed to determine the growth and survival rate of the Damascus x Kilis F_1 kids in an enterprise of intensive dairy goat breeding, were found to be compatible with the results obtained in many other studies. The study indicated that especially the survival rate performance of the kids was very satisfactory, and it was concluded that this was closely correlated with the breeding methods adopted on the enterprises. In this study, the live weight gain of kids was compatible with the other studies in the literature. Based on the results of this study, it was concluded that breeding selection based on live weights at 2nd and 3rd months of age could produce very accurate results and live weight could be an early selection criterion.

COMPLIANCE WITH ETHICAL STANDARDS

Peer-review

Externally peer-reviewed.

Conflict of interest

The authors declared that for this research article, they have no actual, potential, or perceived conflict of interest.

Author contribution

The contribution of the authors to the present study is equal. All the authors read and approved the final manuscript

Ethics committee approval

Ethics committee approval is not required.

Funding

This study was supported by Dicle University Scientific Research Projects Unit. In the scope of the DÜBAP- Ziraat 18.005.

Data availability

Not applicable.

Consent to participate

Not applicable.

Consent for publication

Not applicable.

Acknowledgments

Authors are thankful to Dicle University Scientific Research Projects Unit for their financial supports. This study was produced from Tuba KURTAY's Master's thesis.

REFERENCES

Atac, F. E., & Burcu, H. (2014). The importance of hair goats in Turkey. Journal of Agricultural Science and Technology. A, 4(4A).

Erdem, E., Özbaşer, F. T., & Erat, S. (2022). Comparison of Growth and Development Characteristics of Hair and Damascus Kids Reared under Extensive Conditions. Kocatepe Veterinary Journal, 15(1), 84-93. Retrieved from: https://dergipark.org.tr/en/pub/kvj/issue/67858/995521

Erten, Ö., & Yılmaz, O. (2013). Ekstansif Koşullarda yetiştirilen Kıl Keçisi Oğlaklarının Yaşama Gücü ve Büyüme Performanslarının Araştırılması. YYU Veteriner Fakultesi Dergisi, 24 (3), 109 – 112 (in Turkish). Retrieved from: https://dergipark.org.tr/en/pub/yyuvfd/issue/13725/166101

Ertuğrul, M. (1996). Küçükbaş Hayvan Yetiştirme Uygulamaları, 2. Baskı, Small Ruminant Breeding Practices, 2nd Edition, Ankara Üniv. Ziraat Fak. Yayın no:1446, Ders Kitabı: 426, Ankara (in Turkish).

Gök, B., Aktaş, H, A., Halıcı, İ., & Baş, H. (2015). Halk Elinde Koruma Altına Alınan Homanlı Keçisi ve Oğlaklarının Canlı Ağırlıkları ve Bazı Vücut Ölçüleri. Eurasian Journal of Veterinary Sciences, 35 (4) 227-234 (in Turkish). https://doi.org/10.15312/EurasianJVetSci.2015413528

Gökdal, Ö., Atay, O., Özuğur, A.K., & Eren, V. (2013). Growth and survival characteristics of hair goat and its crosses with Saanen and Alpine goats under rural farm conditions. Journal of Animal Production, 54(1):30-37. Retrieved from: https://dergipark.org.tr/en/pub/hayuretim/issue/7607/99711

Gül, S., Keskin, M., & Kaya, Ş. (2022). Effects of Environmental Factors on Growth Performance of Kilis Goat in Gaziantep Province. Livestock Studies, 62(1), 16-20. Retrieved from: https://dergipark.org.tr/en/pub/livestockstudies/issue/68635/1077855

Gül, S., Keskin, M., Göçmez, Z., & Gündüz, Z. (2016). Effects of supplemental feeding on performance of Kilis goats kept on pasture condition. Italian Journal of Animal Science, 15(1), 110-115. https://doi.org/10.1080/1828051X.2015.1132542

Gül, S., Keskin, M., & Gündüz, Z. (2016). Türkiye'de Yetiştiriciliği Yapılan Keçi Irkları. Tarım Türk Dergisi, 59, 64-70.

Keskin, M., Avşar, Y.K., Biçer, O., & Güler, M.B. (2004). A comparative study on the milk yield and milk composition of two different goat genotypes under the climate of the Eastern Mediterranean. Turkish Journal of Veterinary & Animal Sciences, 28(3), 531-536 Retrieved from: https://journals.tubitak.gov.tr/veterinary/vol28/iss3/12/

Keskin, M., Gül, S., Biçer, O., & Daşkıran, İ. (2017). Some reproductive, lactation, and kid growth characteristics of Kilis goats under semiintensive conditions. Turkish Journal of Veterinary & Animal Sciences, 41(2), 248-254. Retrieved from: https://journals.tubitak.gov.tr/veterinary/vol41/iss2/15/

Keskin, M., Gül, S., Can, E., & Gündüz, Z. (2016). Yarı entansif koşullarda yetiştirilen Şam keçileri ile Kilis x Kıl Keçisi melez genotipinin süt ve döl verim özellikleri. Lalahan Hayvancılık Araştırma Enstitüsü Dergisi, 56(1), 20-24. (in Turkish). Retrieved from: https://dergipark.org.tr/en/download/article-file/544575

Keskin, M., & Tüney, D. (2015). Relationship between body condition score and reproductive characteristics in Kilis goat. Journal of Agricultural Faculty of Mustafa Kemal University; 20: 60- 65

Kaymakçı, M. (2006). İleri Koyun Yetiştiriciliği. İkinci Baskı. Bornova-İzmir. ISBN 9944-5334-0-8 (in Turkish).

Kaymakçı, M. (2013). İleri Keçi Yetiştiriciliği. Birinci Baskı. Bornova-İzmir. ISBN. 978-605-85998-0-2 (in Turkish).

Kaymakçı, M., & Engindeniz, S. (2010). Türkiye'de Keçi Yetiştiriciliği: Sorunlar ve Çözümler. Ulusal Keçicilik Kongresi, 1-24. Çanakkale (in Turkish).

Kozaklı, Ö., Ceyhan, A., & Fırat, M.Z. (2022). Akkaraman Kuzularda

Cinsiyete Göre Büyüme Eğrilerinin Farklı Yöntemlerle Modellenmesi: Logistik ve Gompertz Modelleme Örneği. Kahramanmaraş Sütçü İmam Üniversitesi Tarım ve Doğa Dergisi, 25 (4): 916-926 (in Turkish). https://doi.org/10.18016/ksutarimdoga.vi.946895

Özdemir, F., & Keskin, M. (2018). Kilis ve Gaziantep illerinde yetiştirilen Kilis keçilerinin bazı morfolojik ve fizyolojik özellikler bakımından karşılaştırılması. Mustafa KemalÜniversitesi Ziraat Fakültesi Dergisi, 23(1),115-123 (in Turkish). Retrieved from: https://dergipark.org.tr/en/pub/mkuzfd/issue/37413/370694

Şahin., A, Ulutaş., Z, Karadavut., U, Yıldırım A, & Arslan, S. (2014). Comparison of growth curve using some nonlinear models in Anatolian buffaloe calves. Kafkas Üniversitesi Veteriner Fakültesi Dergisi, 20(3): 357-362 (in Turkish). https://doi.org/10.9775/kvfd.2013.10171

Savaş, T. (2007). Oğlak büyütme: sorunlu noktalar üzerinde bir değerlendirme. Hayvansal Üretim, 48: 44-53 (in Turkish). Retrieved from: https://dergipark.org.tr/tr/pub/hayuretim/issue/7619/99840

SAS, (1995). SAS statistical software.

Şimşek, Ü.G., & Bayraktar, M. (2006). Kıl Keçisi ve Saanen x Kıl Keçisi (F1) Melezlerine Ait Büyüme ve Yaşama Gücü Özelliklerinin Araştırılması. Fırat Üniversitesi Sağlık Bilimleri Dergisi, 20 (3), 229-238 (in Turkish).

Şimşek, U.G., Bayraktar, M., & Gürses, M. (2007). Saanen X Kıl Keçisi F1 ve G1 Melezlerinde Büyüme ve Yaşama Gücü Özelliklerinin Araştırılması. Fırat Üniversitesi Sağlık Bilimleri Dergisi, 21 (1): 21 – 26 (in Turkish).

Taşkın, T., Koşum, N., Engindeniz, S., Savran, A.F., Aktürk, D., Kesenkaş, H., Uzmay, A., & Gökmen, M. (2017). İzmir, Çanakkale ve Balıkesir İlleri Keçi İşletmelerinde Sürü Yönetim Uygulamaları Üzerine Bir Araştırma, Ege Üniv. Ziraat Fak. Dergisi, 54(3):341-349. https://doi.org/10.20289/zfdergi.388089

Taşkın, T., Özder, M., & Dellal, G. (2013). Türkiye'de Küçükbaş Hayvancılığının Mevcut Durumu ve Geleceği. 2. Ulusal Süt Zirvesi, 20-21 Mayıs, İzmir.

Tekin, M.E., & Öğeç, M. (2017). The Growth and Survival Ability of Hair Goat Kids Under the Breeder's Condition in Konya Region. Lalahan Hayvancılık Araştırma Enstitüsü Dergisi, 57 (2), 93-98 (in Turkish). Retrieved from: https://dergipark.org.tr/tr/pub/lahaed/issue/39469/465423

Tozlu Çelik, H., & Olfaz, M. (2018). Investigation on survival rate and growth characteristics of pure hair goat and Saanenx hair goat (F_1, B_1, B_2) crossbreds in breeder conditions. Mediterranean Agricultural Sciences, 31(1): 77- 85. https://doi.org/10.29136/mediterranean.408097

Tüfekçi, H., & Olfaz, M. (2016). Possibilities of using Saanen x Hair Goat crossbred (G1) kids as breeding goat at early ages (7-8 months). Anadolu Journal of Agricultural Sciences, 31(2), 301-307**.** https://doi.org/10.7161/omuanajas.260987