

## BIRTH WEIGHTS AND GROWTH PERFORMANCES OF HAIR GOAT KIDS RAISED IN DENIZLI PROVINCE OF TURKEY

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### Abstract

*The aim of this study was to determine birth weights and growth performances of hair goat kids till 5 months (150 days) of age at the extensive breeding conditions in Denizli province of Turkey. The analyzed data from hair goats in 54 breeders' flock (4 multiplier and 50 base flocks) was collected in years 2011 and 2012. The least square means for kids' birth weight were found as 3.29 kg. The differences created by flock type, birth type and sex, except years, on birth weight of kids were found statistically significant ( $P < 0.01$ ). The least square means for live weight of kids at an average age of 150 days were 27.15 kg. This traits was significantly affected by sex ( $P < 0.05$ ) and age of kids ( $P < 0.01$ ) only. The average daily gain of kids for first five months of life was 156.32 g. Among the investigated factors, only the age of kids have a significant effect ( $P < 0.01$ ) on average daily gains (ADG) of kids. The numbers of researches conducted on hairy goats are very limited. Therefore, these results will be a guide for other researches on this goat breed.*

**Key words:** Hairy goat, kid, birth weight, growth rate, average daily gain.

### INTRODUCTION

Hair goats constitute the majority of the existence of the goats in Turkey. 7.126.862 heads of the goats from total 7.277.953 heads of the goats raised in 2011 in Turkey are hair goats (TUIK, 2013). The goat breeders make this production at almost zero expense excepting of their efforts by using natural resources. Hair goat, which is a natural part of the ecosystem and especially mild temperature zone, is one of the important gene pool for our country as it is an important means of living of the interior part of the forest and forest side villages (Anonymous, 2008a; Kaymakçi et al., 2008; Dellal et al. 2010; Kaymakçi et al. 2010a).

Hair goat raised in each part of Turkey is commonly raised in Aegean region. Within this region, Denizli province is one of the provinces that the goat is most commonly raised. It attracts attention that hair goat constitutes the majority of the existence of the goats in Denizli province.

The goats are extensively raised in high regions, in forest-side maquis shrubland. Five hundred fifty six breeders are registered to

Denizli Province Association of Denizli Province Sheep and Goat Breeders established in the year of 2006 in Denizli Province with 84830 heads of goats.

In the warmer months of the summer season, the breeders immigrate to higher areas called as upland from the places they are found and they come back to their villages in the autumn. There is not the habit of common flock management. Each family provides the management of their own flock. As hair goat is generally raised in the region for meat production, it's quite important to define the growing properties in the goats. When growing properties are called in goats, birth weight, average daily weight gain and marketing weight come to the forefront. These characteristics are affected by some factors such as gender, birth type, birth time, and breeding type (Goodwin, 1971, Hassan, 1987; Osinowo et al., 1990; 1992; 1993).

The characteristics of hair goat in our country have not completely been defined. The definition of some of the characteristics of hair goats within the scope of "National Genetic Improvement Project for Small Ruminants at Breeders' Conditions" put into operation in the

year of 2005 by General Directorate of Agricultural Research and Policy within the body of Republic of Turkey Ministry of Food Agriculture and Livestock and also sub-projects regarding breeding of hair goats are put in to operation in 2011 throughout the country. "Denizli Province Hair Goat Breeding Project" started in Denizli Province take part in these projects. In this project, which is based on breeding program regarding open nucleus breeding system and structured directly in breeder conditions, it has been targeted to determine the characteristics of production of hair goats and breed them. In this research article, it has been aimed to define some growth properties of the goats born in 54 hair goat enterprises (4 elite, 50 basis) in Denizli Province within the scope of this project.

## MATERIALS AND METHODS

Hair goats born between the years of 2011 and 2012 in 54 enterprises that raise hair goats in Denizli province have constituted the animal material of the research. The distribution of births months have been given in Figure 1. Birth weights of the goats have been determined by sensitive digital hand scales within 24 hours following the birth.

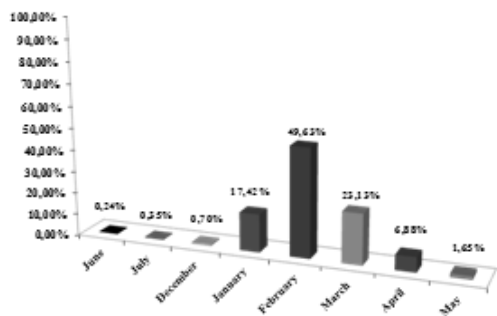


Figure 1. The distribution of births by months

When the goats reach to the age of 5 months, their living weights have been determined by electronic scale having 50 gr sensitivity. As there is a wide variation between the enterprises in terms of birth times live weight control made in certain times in goats has been analyzed by classifying as to be 150 days. The average daily weight gain of the goats has been calculated for the process between the birth and 150<sup>th</sup> day.



Figure 2. Photographs of Hair goats raised in Denizli province of Turkey

GLM procedure has been used in SAS (SAS, 1999) package statistic program in order to obtain smallest squares averages and make variance analysis of properties discussed.

## RESULTS AND DISCUSSIONS

Birth weights, 150<sup>th</sup> day live weights and average daily weight gain at the 150<sup>th</sup> day have been determined in order to determine growth properties of the goats. The findings regarding birth weights of the goats in all the flocks have been given in Table 1. As a result of analysis of general average birth weight of the kids has been found as 3.29 kg.

It has been informed that birth weight in Saanen goats is 3.22 kg (Bolacali and Küçük, 2011), birth weight in Saanen x Hair goats cross-breeds (G1) is 2.82 kg (Simsek et al. 2007), birth weight in Damascus goats is 4.17 kg (Taskin et al., 2000), and birth weight in colored Angora goat and Ankara goat x colored Angora goat is respectively 2.17 kg and 2.13 kg. When the related literature is evaluated, it's seen that the value obtained for birth weight in hair goat in this study is lower than Damascus goats and higher than the others. This situation can arise from the difference of the breeding conditions in addition to difference of the breeds. Excepting the years, the difference in sexuality, birth type and stratus is statically found significant ( $P < 0.01$ ) in the differences arisen between the layers, the maintenance and management differences in the farms come to the forefront as determinant. There has been a very small difference between the years. There is superiority in terms of birth type and males in terms of gender. It is an expected situation in addition that it is in accordance with the literature (Taskin et al., 2000; Bolacali ve Küçük, 2011, Simsek et al., 2007; Odabasioglu et al., 2007).

Table 1. Least square means for birth weight, 150th day weight and average daily gain of Hair goat kids

Factors	N	Birth Weight (kg)	Weight at 150 days of age (kg)	Average Daily Gain (g)
<b>Years</b>		<b>P=0.219</b>	<b>P=0.331</b>	<b>P=0.408</b>
2011	1976	3.31±0.025	27.24±0.219	156.83±1.391
2012	2643	3.28±0.024	27.05±0.208	155.81±1.321
<b>Flock Type</b>		<b>P=0.000</b>	<b>P=0.691</b>	<b>P=0.579</b>
Multiplier	476	3.16±0.037	27.21±0.324	156.89±2.061
Base	4143	3.43±0.016	27.08±0.139	155.75±0.883
<b>Birth Type</b>		<b>P=0.000</b>	<b>P=0.946</b>	<b>P=0.716</b>
1,00	3952	3.42±0.019	27.15±0.166	156.63±1.054
2,00	667	3.17±0.033	27.14±0.286	156.01±1.816
<b>Sex</b>		<b>P=0.000</b>	<b>P=0.011</b>	<b>P=0.041</b>
Male	2484	3.46±0.024	26.90±0.207	155.05±1.314
Female	2135	3.13±0.025	27.39±0.220	157.59±1.402
<b>Reg (Linear)</b>				
Age of kids	-	-	0.112±0.008***	-0.284±0.053***
Birth Weight	-	-	0.239±0.132 <sup>NS</sup>	1.373±0.839 <sup>NS</sup>
<b>General</b>	<b>4619</b>	<b>3.29±0.022</b>	<b>27.15±0.190</b>	<b>156.32±1.209</b>

\*\*P<0.001, NS: NonSignificant

On the contrary to the other regions, weaning in the hair goats is made in later period (when the goats is 6-8 months). Weaning age is also evaluated as marketing period in the region. Live weight average of 5 months belonging to 4619 heads of kids evaluated in the study has been found as 27.15 kg. Live weights in 5 months obtained in the study and when average daily weight gain increases in this period is evaluated, the effect of gender on live weight is statistically significant (P< 0.05).

The effect of other factors evaluated on 150<sup>th</sup> day live weight and average daily weight gain increase is not significant. The coefficient of linear regression on 150<sup>th</sup> day live weight and average daily weight gain is statically significant (P< 0.01). The linear regression of birth weight on live weight and average daily weight gain is not statically significant.

In the research made in Ankara goats by Öztürk and Goncagül (1994), live weight of 6<sup>th</sup> month has been informed as 21.7 kg. In another study made in Ankara goats, live weight of 6-months has been informed as 20.85 (Yurtseven et al., 1998). Average live weight at 150<sup>th</sup> day of Saanen goats has been informed as 17.37 kg by Bolacali and Küçük (2011). When the findings regarding 150<sup>th</sup> day live weights have been evaluated, it attracts attention that general live

weight average is relatively higher than some breeds that are raised in our country.

In addition to this, female goats has shown higher performance (P< 0.05) than males. This finding is not in accord with the literature (Yurtseven et al., 1998; Taskin et al., 2000; Bolacali and Küçük, 2011; Simsek et al., 2007; Odabasioglu et al., 2007; Öztürk and Goncagül, 1994).

The effect of the year that is evaluated, flock type (base, multiplier), birth type and gender factors on average daily weight gain increases isn't statistically significant. The superiority shown in females in terms of 150<sup>th</sup> day live weight has shown a similar situation for this property. Average daily weight gain increases obtained between 0-150 days has found higher than the values informed in the studies made in Saanen and Saanen crossbred goats Bolacali and Küçük, 2011; Karadag and Köycü, 2011). This difference can be attributed to breed difference and breeding system.

## CONCLUSIONS

When it is thought that hair goats constitute the majority of the goat population of our country, it is mentioned that the studies regarding the definition of this breed is in limited number. When the researches made related to the subject are examined, it is seen that these are in

experimental level and the population is not in the formation to be able to define. Another respect is that the studies made have more focused on crossbreeding studies than definition of the breed. Reduction policy has been followed regarding hair goat population in our country within the last 15-20 years period in the context of goat forest relationship and intensive goat raising has been supported. While these practices are being done, the breeders who make a living from this breed have been ignored. Positive policies regarding hair goat population has been put in place with the attempts of non-governmental organizations and Ministry of Food, Agriculture and Livestock.

The most important of them is "National Genetic Improvement Project for Small Ruminants at Breeders' Conditions", which was put in practice in 2011 by General Directorate of Agricultural Research and Policy (TAGEM) with these sub-projects put into practice in so many parts of the country, descriptive information of hair goats, which are our gene resource, started to be suggested in a wide population. The sub-project, which is called "Denizli Province Hair Goat Breeding Project" put into practice in 2011 in Denizli Province within the scope of these projects, is quite important in terms of defining the properties and specificities of hair goats at breeders' conditions.

The data evaluated in this article include the performance qualifications belonging to the goats obtained in the first 2 years (2011 and 2012) of this project that its first step will continue 5 years. The superiority suggested on behalf of females in terms of live weight and average daily weight gain come to the forefront as an interesting finding to be required to put emphasis on. Consequently, when it is compared with the other genotypes that the breeding is made in our country in terms of the properties taken into consideration, it is seen that hair goats have a potential not to be underestimated.

When this situation is taken into consideration, making similar researches and increasing the data regarding the subject will provide significant contribution to the literature.

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