



Assesment of Some Udder and Teat Traits of Honamlı Goats in Terms of Dairy Characters

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Abstract

Study was conducted to evaluate the dairy characters of Honamlı goats by using ADGA scoring system. For this aim, eight Honamlı goat flocks reared under local breeder condition in Antalya and Burdur provinces were used. Five goats from each flock totally 40 goats with the highest score were defined. Some udder and teat characteristics of these goats were determined during six months (March-August). While Honamlı goats would be given in the acceptable category for dairy character with their numerical final scores (70-79); relatively higher values were detected from the flocks in Antalya province than Burdur ones ($P<0.05$). The udder characteristics increased in April based on course of lactation of Honamlı goats in the best flocks (Antalya province) were determined as follows, udder depth, udder circumference, udder width, teat length, teat diameter, the distance between teats and the distance to floor from the teat 21.73 cm, 46.97 cm, 17.06 cm, 8.05 cm, 3.08 cm, 14.47 cm and 37.22 cm, respectively.

It was thought that results of study were important to be an introduction for following studies that is going to be potential goats having dairy characteristics among Honamlı goats.

Keywords: goat, Honamlı, udder, teat, dairy character

Introduction

Mankind has been evaluating the milk of goats for approximately 11 thousand years now.¹ Having an important place in Anatolian cultural and social life, goat breeding also takes place on land generally unsuitable for agriculture and Livestock.² Honamlı goats, which are named after the Honamlı nomads, are considered as one of a native goat breed that reared for their meat, milk, and wool.³ They officially registered by Turkish Ministry of Food, Agriculture and Livestock as an original goat breed in the year of 2015.⁴ Recently, there has been an obvious increase in the demand for goat milk and products in developed and developing countries due to its nutritional value and economic

importance.

There are many factors affecting milk yield in goats. These factors involve breed, age, feeding, body structure, live weight, and udder structure.⁵ In some studies, it is reported that milk yield is affected positively by live weight,⁶ as well as udder and teat characteristics especially in dairy goats.⁷

Body sizes that are used for identifying the animals numerically, forming an opinion about their body structure and determining their breed characteristics show an alteration seasonally and are under the effect of factors like age, gender, delivery method, genotype and feeding style. Similarly, the process of determining body sizes which also includes the comparison of breeds and animals from the same breed is important for finding the early selection cri-

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teria for certain yields and improving the animals.^{8,9} Phenotypic evaluations aimed at determining future breeding animals in terms of required yields were applied frequently in the 1960s.¹⁰ In addition, a linear scoring system has started to be used since the beginning of the 1980s.¹¹ Linear evaluations which contain individual evaluation of animals to reveal their yield potential for genetic progress¹² to be conducted with selection enable to reach higher levels of heredity compared to subjective evaluation.¹³

The aim of the current study was to investigate some udder and teat traits such as udder depth, udder circumference, udder width, teat length, teat diameter, distance between teats and distance to floor from the teat of Honamlı goats in terms of dairy characters.

Material and Methods

Animals and Data Collection

The present study was carried out in Honamlı goat flocks reared under local breeder condition in Antalya and Burdur provinces. So, no additional care or feeding conditions were provided to the animals. At the beginning of this study, a detailed survey was done to determine Honamlı goats having a different udder structure, deeper chest, long and thin legs and thus, displaying dairy characteristics especially in some of the Honamlı goat flocks reared by the local breeder condition. So, the eight Honamlı goat flocks were detected and then five goats from each flock totally 40 goats with 2 years old age and having the first pregnancy with the highest score according to the scoring in terms of general appearance, dairy character, body capacity and mammary by applying ADGA score card were defined. For eliminating and also avoid the potential effects of factors such as age, lactation period, birth type etc., the goat at the same case were chosen for udder and teat measurements.

In the study, some the udder and teat characteristics such as udder depth, udder circumference, udder width, teat length, teat diameter, the distance between teats and the distance to floor from the teat¹⁴ of these goats were determined during six months (March-August).

The study was approved by the Mehmet Akif Ersoy University Local Ethics Committee on Animal Experiments (26.09.2014, resolution number: 99).

Statistical Analyses

All statistical analyses were carried out using Minitab 16.1 statistical package.¹⁵ The normality test was applied to data and also the coefficient of variation was calculated between 18-20. According to that the data were considered having normal distribution with acceptable heterogeneity. One-way ANOVA was used to determine the differences between flocks on udder and teat traits. Tukey analysis was

used to control for significance of differences between subgroups ($P < 0.05$). Therefore, two sample T Test was applied in order to compare flocks separated for provinces.

Results

During stages of determining the herds containing dairy animals within the scope of the study, it was observed that there were animals with many different udder structures in Honamlı goat flocks reared by the locals, which shows a parallelism with the aforementioned literature. According to the interviews conducted with breeders and the observations of the study team, it was suggested that the aforementioned udder structures could be collected under three basic categories (Figure 1).

In the study, Honamlı goats would be given in the acceptable category for dairy character with their numerical final scores (70-79); relatively higher values were detected from the flocks in Antalya province than Burdur ones (Table 1). Tables (2-7) show some udder and teat sizes of goats determined within the scope of the study. Among the relevant characteristics; udder depth, udder circumference and udder width of goats in Antalya (first four flocks) and Burdur (last four flocks) for March were determined respectively as 21.62 cm, 46.80 cm and 16.95 cm and 21.40 cm, 46.47 cm, and 16.59 cm. The differences between province for udder measurements (except udder circumference) were significant ($P < 0.05$). Teat length, teat diameter of the determined goats, as well as the distance between teats and distance from teat to the floor for the same month were found averagely as 7.94 cm, 2.98 cm, 14.35 cm and 37.30 cm for the first four flocks. On the other hand, these teat measurements were found respectively as 7.52 cm, 2.75 cm, 14.95 cm, and 37.04 cm for goats in the last four flocks. While there were significant differences for teat length and the distance between teats ($P < 0.05$), nonsignificant differences were found for the other teat traits ($P > 0.05$). The similar situation for teat traits was appeared in the second measurement period (April). Values regarding udder and teat (except for the distance from teat to the floor) which increased in April depending on the course of lactation began to relatively decrease as from May. For this measurement month and the other ones, The highest values were observed in the first flock whereas the lowest values were observed in the seventh flock. Generally, While the significant differences were found for udder depth and udder circumference both flocks in Antalya and the flocks in Burdur ($P < 0.05$) provinces, the significant levels were detected as changeable for other traits. Among the aforementioned flocks; udder depth, udder circumference, udder width, teat length, teat diameter, the distance between teats, and distance from teat to the floor in June in the first flock were



Figure 1. Udder types in Honamlı goats (A: Funnel; B: Sheep shape udder; C: Too divided)

Flocks	General appearance	Dairy strength	Body capacity	Mammary system	Total Score
Flock 1	27	16	7	28	78
Flock 2	26	16	7	26	75
Flock 3	27	16	6	27	76
Flock 4	25	15	7	27	74
Flock 5	26	15	6	27	74
Flock 6	26	15	6	26	73
Flock 7	26	14	6	26	72
Flock 8	26	16	7	26	75

Table 1. Mean scores of goats according to ADGA scoring system

Table 2. Udder and teat measurements of goats (March) (cm) (\pm)

Flocks	Udder depth	Udder circumference	Udder width	Teat length	Teat diameter	Distance between teats	Distance to floor from the teat
Flock 1	22.03 ^a ±0.08	47.11 ^a ±0.13	17.23 ^a ±0.15	8.15 ^a ±0.30	3.19±0.16	14.03 ^b ±0.42	37.70±0.43
Flock 2	21.22 ^b ±0.18	46.32 ^b ±0.18	16.70 ^b ±0.33	7.77 ^b ±0.23	2.80±0.27	15.06 ^a ±0.21	37.14±0.30
Flock 3	21.70 ^{ab} ±0.23	47.0 ^a ±0.22	17.04 ^{ab} ±0.31	8.02 ^{ab} ±0.11	3.06±0.39	14.13 ^b ±0.20	37.13±0.24
Flock 4	21.56 ^b ±0.11	46.75 ^b ±0.34	16.83 ^b ±0.22	7.8 ^b ±0.27	2.88±0.41	14.20 ^b ±0.31	37.25±0.36
P	0.033*	0.028*	0.041*	0.037*	0.062 ^{ns}	0.039*	0.076 ^{ns}
Flock 5	21.72 ^a ±0.09	47.05 ^a ±0.12	16.77±0.18	7.72 ^a ±0.17	2.84±0.19	15.00±0.16	37.33 ^a ±0.22
Flock 6	21.18 ^b ±0.22	46.28 ^b ±0.21	16.60±0.13	7.49 ^b ±0.23	2.77±0.30	14.89±0.31	36.89 ^b ±0.27
Flock 7	21.03 ^b ±0.07	45.88 ^c ±0.23	16.28±0.32	7.36 ^b ±0.11	2.68±0.27	15.09±0.26	36.70 ^c ±0.13
Flock 8	21.66 ^a ±0.24	46.65 ^{ab} ±0.10	16.71±0.19	7.55 ^b ±0.14	2.74±0.15	14.80±0.31	37.22 ^{ab} ±0.34
P	0.047*	0.022*	0.055 ^{ns}	0.040*	0.179 ^{ns}	0.201 ^{ns}	0.038*
Mean of Antalya (Flock 1-4)	21.62±0.16	46.80±0.23	16.95±0.25	7.94±0.23	2.98±0.31	14.35±0.28	37.30±0.33
Mean of Burdur (Flock 5-8)	21.40±0.15	46.47±0.17	16.59±0.21	7.52±0.17	2.75±0.23	14.95±0.25	37.04±0.23
P	0.041*	0.075 ^{ns}	0.036*	0.029*	0.243 ^{ns}	0.031*	0.066 ^{ns}

Table 3. Udder and teat measurements of goats (April) (cm) (\pm)

Flocks	Udder depth	Udder circumference	Udder width	Teat length	Teat diameter	Distance between teats	Distance to floor from the teat
Flock 1	22.18 ^a ±0.12	47.30 ^a ±0.19	17.35 ^a ±0.22	8.26 ^a ±0.15	3.30±0.21	14.15 ^b ±0.14	37.58±0.26
Flock 2	21.36 ^b ±0.26	46.51 ^c ±0.24	16.83 ^b ±0.16	7.89 ^b ±0.12	2.91±0.30	15.18 ^a ±0.10	37.08±0.15
Flock 3	21.81 ^{ab} ±0.30	47.19 ^{ab} ±0.15	17.14 ^a ±0.28	8.14 ^{ab} ±0.20	3.14±0.18	14.22 ^b ±0.07	37.04±0.21
Flock 4	21.58 ^b ±0.16	46.88 ^b ±0.43	16.92 ^b ±0.19	7.95 ^b ±0.18	2.97±0.34	14.34 ^b ±0.19	37.19±0.13
P	0.039*	0.020*	0.037*	0.041*	0.053 ^{ns}	0.045*	0.060 ^{ns}
Flock 5	21.90 ^a ±0.23	47.17 ^a ±0.08	16.89±0.20	7.84 ^a ±0.12	2.94±0.20	15.07±0.14	37.24 ^a ±0.16
Flock 6	21.27 ^b ±0.11	46.40 ^b ±0.09	16.76±0.16	7.64 ^b ±0.14	2.91±0.19	14.97±0.30	36.76 ^b ±0.17
Flock 7	21.11 ^b ±0.14	45.97 ^c ±0.18	16.41±0.23	7.52 ^b ±0.09	2.80±0.14	15.18±0.18	36.58 ^b ±0.23
Flock 8	21.79 ^a ±0.13	46.76 ^{ab} ±0.07	16.83±0.17	7.66 ^b ±0.23	2.89±0.12	14.93±0.22	37.16 ^a ±0.21
P	0.035*	0.018*	0.142 ^{ns}	0.047*	0.327 ^{ns}	0.470 ^{ns}	0.043*
Mean of Antalya (Flock 1-4)	21.73±0.21	46.97±0.22	17.06±0.23	8.05±0.17	3.08±0.26	14.47±0.12	37.22±0.18
Mean of Burdur (Flock 5-8)	21.51±0.17	46.57±0.11	16.72±0.19	7.67±0.15	2.88±0.17	15.04±0.20	36.94±0.19
P	0.038*	0.045*	0.057 ^{ns}	0.035*	0.189 ^{ns}	0.024*	0.203 ^{ns}

Table 4. Udder and teat measurements of goats (May) (cm) (\pm)

Flocks	Udder depth	Udder circumference	Udder width	Teat length	Teat diameter	Distance between teats	Distance to floor from the teat
Flock 1	21.88 ^a ±0.12	47.02 ^a ±0.19	17.06 ^a ±0.22	8.06 ^a ±0.15	3.03±0.21	13.95 ^b ±0.14	37.79±0.26
Flock 2	21.01 ^b ±0.26	46.18 ^c ±0.24	16.52 ^b ±0.19	7.66 ^c ±0.12	2.67±0.30	14.86 ^a ±0.10	37.18±0.15
Flock 3	21.49 ^a ±0.30	46.89 ^a ±0.15	16.76 ^b ±0.28	7.92 ^{ab} ±0.20	2.94±0.18	14.08 ^b ±0.07	37.19±0.21
Flock 4	21.40 ^{ab} ±0.16	46.58 ^{ab} ±0.43	16.64 ^b ±0.17	7.76 ^{bc} ±0.18	2.81±0.34	14.16 ^b ±0.19	37.33±0.13
P	0.027*	0.020*	0.031*	0.018*	0.052 ^{ns}	0.019*	0.106 ^{ns}
Flock 5	21.58 ^a ±0.23	46.92 ^a ±0.08	16.62±0.20	7.63 ^a ±0.12	2.77±0.20	14.91±0.14	37.44±0.16
Flock 6	21.10 ^b ±0.11	46.17 ^{bc} ±0.09	16.48±0.16	7.35 ^b ±0.14	2.64±0.19	14.77±0.30	36.96±0.17
Flock 7	20.89 ^b ±0.14	45.73 ^c ±0.18	16.19±0.23	7.27 ^b ±0.09	2.55±0.14	15.01±0.18	36.85±0.23
Flock 8	21.55 ^a ±0.13	46.54 ^{ab} ±0.07	16.58±0.17	7.48 ^b ±0.23	2.66±0.12	14.69±0.22	37.36±0.21
P	0.040*	0.037*	0.104 ^{ns}	0.032*	0.298 ^{ns}	0.057 ^{ns}	0.097 ^{ns}
Mean of Antalya (Flock 1-4)	21.45±0.21	46.67±0.22	16.74±0.22	7.85±0.17	2.86±0.26	14.26±0.12	37.36±0.18
Mean of Burdur (Flock 5-8)	21.28±0.17	46.33±0.11	16.45±0.19	7.43±0.15	2.65±0.17	14.84±0.20	37.14±0.19
P	0.052 ^{ns}	0.109 ^{ns}	0.061 ^{ns}	0.043*	0.164 ^{ns}	0.023*	0.074 ^{ns}

Table 5. Udder and teat measurements of goats (June) (cm) (\pm)

Flocks	Udder depth	Udder circumference	Udder width	Teat length	Teat diameter	Distance between teats	Distance to floor from the teat
Flock 1	21.12 ^a ±0.18	46.33 ^a ±0.26	16.51 ^a ±0.23	7.95 ^a ±0.11	2.88±0.10	13.77 ^b ±0.12	37.97 ^a ±0.21
Flock 2	20.29 ^c ±0.25	45.52 ^c ±0.22	15.88 ^b ±0.11	7.34 ^b ±0.23	2.52±0.20	14.66 ^a ±0.17	37.42 ^b ±0.08
Flock 3	20.68 ^b ±0.15	46.09 ^{ab} ±0.11	16.16 ^b ±0.24	7.55 ^{ab} ±0.18	2.77±0.15	13.89 ^b ±0.10	37.44 ^b ±0.27
Flock 4	20.71 ^b ±0.17	45.89 ^b ±0.13	16.02 ^b ±0.15	7.49 ^b ±0.22	2.60±0.31	13.95 ^b ±0.16	37.68 ^a ±0.19
P	0.028*	0.034*	0.040*	0.044*	0.201 ^{ns}	0.033*	0.046*
Flock 5	20.78 ^{ab} ±0.11	46.15 ^a ±0.23	16.01±0.21	7.37±0.15	2.56±0.23	14.75±0.21	37.78 ^a ±0.30
Flock 6	20.39 ^{bc} ±0.20	45.38 ^b ±0.17	15.89±0.20	7.14±0.11	2.49±0.14	14.58±0.17	37.21 ^b ±0.22
Flock 7	20.15 ^c ±0.18	45.02 ^b ±0.18	15.42±0.24	7.08±0.20	2.37±0.07	14.81±0.23	36.95 ^b ±0.13
Flock 8	20.88 ^a ±0.21	45.91 ^b ±0.12	15.96±0.18	7.33±0.13	2.48±0.21	14.48±0.29	37.84 ^a ±0.10
P	0.011*	0.041*	0.071 ^{ns}	0.208 ^{ns}	0.315 ^{ns}	0.169 ^{ns}	0.030*
Mean of Antalya (Flock 1-4)	20.70±0.19	45.95±0.18	16.14±0.17	7.58±0.19	2.69±0.21	14.06±0.13	37.62±0.18
Mean of Burdur (Flock 5-8)	20.56±0.17	45.61±0.17	15.82±0.21	7.22±0.14	2.47±0.16	14.65±0.22	37.44±0.21
P	0.089 ^{ns}	0.056 ^{ns}	0.047*	0.024*	0.121 ^{ns}	0.018*	0.192 ^{ns}

Table 6. Udder and teat measurements of goats (July) (cm) (±)

Flocks	Udder depth	Udder circumference	Udder width	Teat length	Teat diameter	Distance between teats	Distance to floor from the teat
Flock 1	20.61 ^a ±0.10	45.88 ^a ±0.24	16.07 ^a ±0.26	7.83 ^a ±0.20	2.67±0.08	13.61 ^b ±0.07	38.25±0.19
Flock 2	19.82 ^b ±0.21	45.04 ^b ±0.23	15.34 ^c ±0.09	7.20 ^b ±0.16	2.33±0.17	14.51 ^a ±0.19	37.75±0.16
Flock 3	20.16 ^b ±0.13	45.52 ^a ±0.17	15.77 ^{ab} ±0.16	7.39 ^b ±0.12	2.53±0.22	13.77 ^b ±0.14	37.88±0.23
Flock 4	20.18 ^b ±0.12	45.28 ^b ±0.19	15.64 ^b ±0.14	7.23 ^b ±0.21	2.38±0.30	13.81 ^b ±0.22	37.93±0.14
P	0.034*	0.026*	0.042*	0.021*	0.094 ^{ns}	0.022*	0.302 ^{ns}
Flock 5	20.26 ^b ±0.17	45.70 ^a ±0.25	15.66 ^a ±0.19	7.23±0.11	2.32±0.29	14.60±0.28	38.08 ^a ±0.16
Flock 6	19.95 ^b ±0.21	44.87 ^b ±0.20	15.37 ^{ab} ±0.18	7.01±0.16	2.23±0.16	14.40±0.14	38.02 ^a ±0.23
Flock 7	20.63 ^a ±0.14	44.53 ^b ±0.17	14.96 ^b ±0.20	6.91±0.23	2.19±0.12	14.63±0.25	37.13 ^b ±0.14
Flock 8	20.34 ^b ±0.19	45.52 ^a ±0.13	15.74 ^a ±0.17	7.22±0.08	2.27±0.16	14.36±0.20	37.99 ^a ±0.11
P	0.028*	0.042*	0.033*	0.088 ^{ns}	0.203 ^{ns}	0.182 ^{ns}	0.035*
Mean of Antalya (Flock 1-4)	20.19±0.15	45.43±0.21	15.70±0.15	7.41±0.20	2.46±0.19	13.92±0.15	37.95±0.18
Mean of Burdur (Flock 5-8)	20.29±0.18	45.15±0.19	15.43±0.18	7.09±0.15	2.27±0.18	14.50±0.22	37.80±0.17
P	0.244 ^{ns}	0.070 ^{ns}	0.052 ^{ns}	0.037*	0.069 ^{ns}	0.016*	0.117 ^{ns}

Table 7. Udder and teat measurements of goats (August) (cm) (±)

Flocks	Udder depth	Udder circumference	Udder width	Teat length	Teat diameter	Distance between teats	Distance to floor from the teat
Flock 1	20.02 ^a ±0.20	45.22 ^a ±0.20	15.61 ^a ±0.21	7.65 ^a ±0.10	2.44±0.13	13.40 ^b ±0.14	38.53±0.12
Flock 2	19.29 ^b ±0.18	44.69 ^b ±0.21	14.72 ^{bc} ±0.11	7.02 ^b ±0.13	2.12±0.16	14.28 ^a ±0.16	38.11±0.23
Flock 3	19.71 ^a ±0.10	45.03 ^{ab} ±0.14	15.31 ^a ±0.23	7.17 ^b ±0.15	2.29±0.20	13.53 ^b ±0.09	38.04±0.14
Flock 4	19.72 ^a ±0.07	44.79 ^b ±0.31	15.16 ^{ab} ±0.17	7.04 ^b ±0.11	2.21±0.28	13.74 ^a ±0.20	38.24±0.17
P	0.031*	0.040*	0.026*	0.044*	0.070 ^{ns}	0.035*	0.062 ^{ns}
Flock 5	19.73 ^a ±0.15	45.13 ^a ±0.15	15.09 ^{ab} ±0.11	7.07±0.19	2.14±0.22	14.48±0.28	38.51 ^a ±0.21
Flock 6	19.38 ^b ±0.17	44.31 ^b ±0.23	14.81 ^b ±0.14	6.88±0.12	2.09±0.18	14.27±0.20	38.44 ^a ±0.17
Flock 7	20.07 ^a ±0.10	44.02 ^b ±0.19	14.35 ^c ±0.21	6.70±0.26	2.04±0.11	14.51±0.29	37.54 ^b ±0.08
Flock 8	19.86 ^a ±0.14	45.03 ^a ±0.14	15.22 ^a ±0.27	7.01±0.33	2.09±0.10	14.17±0.24	38.40 ^a ±0.11
P	0.027*	0.038*	0.017*	0.090 ^{ns}	0.123 ^{ns}	0.201 ^{ns}	0.018*
Mean of Antalya (Flock 1-4)	19.68±0.14	44.95±0.22	15.11±0.19	7.22±0.13	2.26±0.17	13.72±0.15	38.22±0.16
Mean of Burdur (Flock 5-8)	19.76±0.13	44.61±0.18	14.87±0.19	6.91±0.22	2.10±0.16	14.35±0.22	38.20±0.14
P	0.214 ^{ns}	0.059 ^{ns}	0.122 ^{ns}	0.110 ^{ns}	0.075 ^{ns}	0.037*	0.544 ^{ns}

determined respectively as 21.12 cm, 46.33 cm, 16.51 cm, 7.95 cm, 2.88 cm, 13.77 cm and 37.97 cm. The same udder and teat measurements were respectively 20.02 cm, 45.22 cm, 15.61 cm, 7.65 cm, 2.44 cm, 13.40 cm and 38.53 cm in the last measurement month (August). August values of the lowest flock (seventh flock) were lower than other flocks and were determined respectively as 20.07 cm, 44.02 cm, 14.35 cm, 6.70 cm, 2.04 cm, 14.51 cm, and 37.54 cm.

With regards to the udder and teat traits (except distance between teats), goats in the province of Antalya had higher values than goats in the province of Burdur in all observation periods. While the differences between provinces for udder traits (depth, circumference and width) were not statistically significant in the last three measurement period, the same situation was said for the distance between teats and the distance to floor from the teat traits.

Discussion ve Conclusion

Number of studies aiming to reveal the dairy characteristics of native goats in Turkey is limited. There is a gradual increase in the number of enterprises rearing dairy goats in Teke Region which has a particular importance in terms of goat farming and these enterprises which are established with high costs also inspire traditional breeders causing them to want to improve dairy characteristics in their flocks, as well. In this respect, it is important to determine and reveal goats with a higher capability of dairying among Honamlı goats which are reared by the locals. From this point of view, it is seen that mean scores of Honamlı goats determined for “general appearance, dairy characteristics, body capacity and udder structure” within the scope of the study are in the interval of acceptable values (70-79) in terms of dairy characteristics. In addition, as is mentioned above; the need for more detailed studies on this subject should be taken into consideration.

It is reported that both convenience for machine milking and udder type are important for higher milk yield in dairy goat farming and it will be possible to make a selection regarding high milk yield, increase of mastitis resistance and convenience for machine milking in case of determining type characteristics which show a high correlation with milk yield.¹⁶ As machine milking is not common among goats and sheep in Turkey, selection according to udder forms and related studies are not adequately addressed.¹⁷ Some udder and teat measurements of 40 Honamlı goats determined within the scope of the study were specified with monthly measurements in a period of 6 months. In parallel with the genotype in the study; Elmaz et al.¹⁸ determined that the udder width, udder depth, udder circumference, teat length, teat width, the distance between teats and distance from teat to the ground in Honamlı goats

were 14.6 cm, 18.8 cm, 46.3 cm, 5.2 cm, 2.2 cm, 15.1 cm, and 35.7 cm, respectively. Starting from the results in the study; these values were observed to be higher than the aforementioned values, except for the last two characteristics, in general.

In the study investigating some yield characteristics of hair goats which constitute a large part of the goat population in Turkey; udder depth, udder circumference, teat length and teat diameter were measured respectively as 16.8 cm, 41.2 cm, 2.4 cm, and 1.7 cm throughout lactation. Similarly, in the study conducted by Atay et al.¹⁹ with 67 hair goats; teat diameter, teat length, distance between teats, udder depth, udder height and udder circumference were found respectively as 3.37 cm, 5.79 cm, 7.48 cm, 18.66 cm, 34.96 cm, and 40.75 cm. In the study conducted by Erol et al.²⁰ with Ankara goats, whose number is gradually decreasing and which are among important local gene resources, in the herds which were protected as a gene resource by the institute and breeders; it was determined that udder width, depth and circumference were measured respectively as 11.72 cm, 13.63 cm, and 39.75 cm.

In a study that was conducted with Turkish Saanen goats, which are among genotypes obtained by hybridizing local breeds and the Saanen goats which were brought to Turkey for developing the dairy goat farming and in this context forming especially dairy types by using culture breeds and are commonly reared in Turkey, un breeder conditions; udder width and udder circumference were found respectively as 10.45 cm and 34.46 cm. In Akkeçi goats obtained by hybridizing the Kilis goats that are among important native dairy goats in Turkey with the Saanen breed; Ceden²¹ determined udder circumference as 38.73 cm, 37 cm and 44.20 cm, left teat length as 3.77 cm, 4 cm, and 4.50 cm, right teat length as 3.6 cm, 3.50 cm, and 4.40 cm, and udder depth 11.55 cm, 11.50 cm, and 13 cm respectively among udder measurements during the first, second and third lactation. In another study¹⁷ investigating the udder characteristics of Akkeçi; udder depth, udder circumference, teat diameter and teat length were found respectively as 13.97 cm, 47.32 cm, 2.22 cm, and 4.40 cm.

In order to conduct the activity of goat farming successfully, it is important to consider the aspect and way of breeding based on geographical and economic conditions of the region in question and also determine appropriate breeds. Breeders also demand for animals with a higher growth rate and a higher milk yield and it is seen that no selection has been made in the field conditions in terms of dairy characteristics. In this study, one of the characteristics of Honamlı goats was also examined in detail and thus, focal points of future comprehensive studies were determined in terms of these characteristics. It is thought that the study

results are important in terms of identifying possible dairy varieties of Honamlı goats and sharing them with sector stakeholders.

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