Quantitative characteristics of weaned Saburai goats in Tanggamus Regency, Lampung Province

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Abstract. This study aims to determine the quantitative characteristics of Saburai goats in Gisting and Sumberejo district, Tanggamus regency. This research was conducted in June–July 2019 in Tanggamus regency. This study uses a survey method and the research sample is determined by purposive sampling. Testing data in this study using t-test. As an observation unit, there were 71 male and 79 female Saburai goats when weaning. The variables in this study were body length, shoulder height, chest circumference, chest width, ear width, ear length, and body weight. Data from observations and analysis of variances uses a 5% significance level. The results showed that the quantitative characteristics of male Saburai goats in Tanggamus regency, body length (48.21±3.13 cm), shoulder height (48.46±3.31 cm), chest circumference (53.54±2.53 cm), chest width (15.89±1.75 cm), ear width (7.32±0.98 cm), ear length (13.82±1.77 cm) and body weight (20.31±3.42 kg). Quantitative characteristics of Saburai goats female in Tanggamus regency, body length (45.29±3.61 cm), shoulder height (44.35±3.40 cm), chest circumference (49.54±4.54 cm), chest width (15.00±1.59 cm), ear width (7.49±1.59 cm), ear length (13.37±2.28 cm) and body weight (18.32±3.32 kg). Comparison of quantitative characteristics of male and female Saburai goats in Gisting district was not significantly different (P>0.05) with quantitative characteristics of male and female Saburai goats in Sumberejo district. From the results of this study concluded that the characteristics of the saburai goats in Gisting and Sumberejo were not different.

1. Introduction
Lampung province is also a province with the highest goat population compared to other regions outside of Java. Its population reaches 1,297,872 heads [1]. The Saburai goat is one of the local goats designated by the Ministry of Agriculture as a native goat breed from Lampung province through decree number 359/Kpts/PK.040/6/2015 [2,3].

Saburai goats has been established as one of the Indonesian germplasm to be maintained, improved and developed. An increase of its population is expected to provide many benefits to the farmers and also in an effort to meet the needs of meat, both at local and national levels. Saburai goats have advantages including easy maintenance, high adaptability to various environmental conditions and high growth rates. The average weaning age of Saburai goat kids is 3.92 months [5,4].

Saburai goat seedling developed in this area comes from the goat breeding selection program. Selection is an act to select goats with superior genetic quality in economic performance. One thing that can be observed is the quantitative traits of the Saburai goat itself. The quantitative traits of the Saburai...
goat that can be observed is body length, chest circumference, chest width, shoulder height, ear length, and ear width. The purpose of this study to determine the quantitative characteristics of weaned Saburai goats kids in Gisting and Sumberejo district, Tanggamus regency. Quantitative performance needs to be observed continuously to obtain certainty in the quality standards of the Saburai goat.

2. Materials and methods

2.1 Materials
This research was conducted from June to July 2019 at the Saburai goat development area at Tanggamus regency, Lampung province. The instrument used in this study was a camera unit for documenting the goat being observed, measuring tape, scale and writing instruments. The research material consisted of 71 male and 79 female of weaned Saburai goat kids (weaning aged 3–4 months).

2.2 Methods
The method used was a survey method where the research sample was determined by purposive sampling. Observations on quantitative data of male and female Saburai goats at 3–4 months of weaning at the research location.

The variables observed in this study were quantitative traits of male and female Saburai goats. Quantitative properties observed included measuring body length, shoulder height, chest circumference, chest width, ear width, ear length, and body weight.

3. Results and discussion
Quantitative characteristics are properties that cannot be grouped directly, but must be done by weighing, or measuring using a measuring instrument, and can be written in numbers. According to Mulliadi (1996) that body size with other body components is a biological balance so that it can be used to estimate the shape of the body from a specific characteristic of animal [6].

Quantitative characteristics of Saburai goats obtained from research results in Tanggamus regency can be seen in tables 1, table 2, and table 3.

Table 1. Quantitative characteristics of weaned Saburai goats in Tanggamus regency.

| Quantitative traits       | Sex          |
|---------------------------|--------------|
|                           | Male         | Female       |
| Body length (cm)          | 48.21±3.13   | 45.29±3.61   |
| Shoulder height (cm)      | 48.46±3.31   | 44.35±3.40   |
| Chest circumference (cm)  | 53.54±2.53   | 49.54±4.54   |
| Chest width (cm)          | 15.89±1.75   | 15.00±1.59   |
| Ear width (cm)            | 7.32±0.98    | 7.49±1.15    |
| Ear length (cm)           | 13.82±1.77   | 13.37±2.28   |
| Body weight (kg)          | 20.31±3.42   | 18.32±3.32   |

3.1. Body length
The results showed that the average body length of Saburai male goats when weaning in Gisting (48.94±2.40 cm) was not significantly different from Sumberejo district (47.92±2.40 cm). The observations of females Saburai goats also showed that the results were not significantly different between Gisting (45.76±3.96 cm) and Sumberejo district (44.85±3.23 cm). This can be due to the two locations having similarities in the origin of goat, besides that it can also be seen from the management of their maintenance, environmental conditions that do not differ between Gisting and Sumberejo districts. According to Siregar (1994) animal growth is influenced by genetic and environmental factors affecting growth both in terms of quality and quantity of carcasses [7].
Table 2. Quantitative characteristics of weaned Saburai male goats in Gisting and Sumberejo district

| Quantitative traits          | Gisting       | Sumberejo    | p-value |
|------------------------------|---------------|--------------|---------|
| Body length (cm)             | 48.94±3.54    | 47.92±2.40   | 1.799   |
| Shoulder height (cm)         | 49.19±1.57    | 47.87±4.16   | 1.690   |
| Chest circumference (cm)     | 54.13±2.42    | 53.05±2.55   | 1.805   |
| Chest width (cm)             | 16.28±1.46    | 15.56±1.92   | 1.740   |
| Ear width (cm)               | 7.38±1.01     | 7.28±0.97    | 0.394   |
| Ear length (cm)              | 13.97±1.75    | 13.69±1.79   | 0.653   |
| Body weight (kg)             | 21.16±3.19    | 19.62±3.48   | 1.927   |

Table 3. Quantitative characteristics of weaned Saburai female goats in Gisting and Sumberejo district

| Quantitative traits          | Gisting       | Sumberejo    | p-value |
|------------------------------|---------------|--------------|---------|
| Body length (cm)             | 45.76±3.96    | 44.85±3.23   | 1.122   |
| Shoulder height (cm)         | 45.05±4.09    | 43.71±2.48   | 1.781   |
| Chest circumference (cm)     | 50.03±4.05    | 49.10±4.96   | 0.907   |
| Chest width (cm)             | 15.11±1.75    | 14.90±1.45   | 0.563   |
| Ear width (cm)               | 7.53±1.13     | 7.46±1.19    | 0.241   |
| Ear length (cm)              | 13.39±2.22    | 13.34±2.35   | 0.103   |
| Body weight (kg)             | 18.92±3.17    | 17.76±3.40   | 1.574   |

The body length of this study is greater when compared to the body length of the saburai goat reported from the Animal Husbandry and Animal Health Service of Lampung Province, where the body length of the male when weaning is 47.86±19.14 cm while the female is 44.31 ± 1.46 cm [8]. This result also shows greater performance compared to the results of the study reported by Candra [9]. This may be due to different maintenance management, climate and environmental conditions at the time of data collection.

3.2 Shoulder height
The results showed that the average shoulder height of Saburai goats at weaning time in Gisting (49.19±1.57 cm) did not differ from Sumberejo (47.87±4.16 cm) as well as Saburai female goats in the Gisting (45.05±4.09 cm) and Sumberejo district (43.71±2.48 cm). This is caused by the Saburai goats in the two sub-districts having different pedigrees but coming from the same grading up stage. According to Hardjosubroto (1994), that each individual will inherit half of the characteristics of his parents from both the male and female parent [10].

The data of this study when compared with the data of the Department of Animal Husbandry and Animal Health of Lampung province [8] the height of the shoulder of the male Saburai goat when weaning was lower (47.6 ±18.09 cm) compared to this study (48.46±3.31 cm), as well as the female Saburai goats (44.07±1.46 cm) while in this study (44.35±3.40 cm).

3.3 Chest circumference
The results of this study indicate that the average chest circumference of the Saburai goat during weaning at Gisting (54.13±2.42 cm) is not different from Sumberejo district (53.05±2.55 cm), Likewise with female Saburai goats, Gisting (50.03±4.05 cm) and Sumberejo (49.10±4.96 cm), This is caused by the genetic of the Saburai goat resulting from the grading up, age, and temperature of the same environment which is thought to have caused the chest circumference of the male Saburai goats in the two districts showing results that were not significantly different.

Compared with the data of the Department of Animal Husbandry and Animal Health of Lampung province [11] the chest circumference of the male Saburai goat when weaning (44.02±18.05 cm) and the chest circumference of the female Saburai goat when weaning (40.39±1.46 cm), this shows the data
on the chest circumference of Saburai goats when weaning in this study is larger. According to Devendra and Burn (1994), environmental factors greatly influence the weight and body measurements of goats [12]. Results of research Smith Mangoewidjojo [13] showed that the ideal ambient temperature for growth is 18–30°C, goat healthy rectal temperature 38.5–39.7°C (average 39.4°C).

3.4 Chest width
The results showed that the average chest width of male Saburai goats at weaning time in district Gisting (16.28±1.46 cm) did not differ from Sumberejo district (15.56±1.92 cm), as was the case with goats female Saburai in Gisting district (15.11±1.75 cm) and Sumberejo (14.90±1.45 cm). The chest width of the Saburai goats in the Gisting and Sumberejo districts is not significantly different because the implementation of maintenance management or implementation of the Saburai goats in the two districts is the same. In addition, the temperature and humidity in the two districts are the same. According to Sugeng [14] growth is influenced by several factors, such as genetics or heredity and environmental factors such as climate and execution management.

3.5 Ear Width
The results showed that the average ear width of male Saburai goats at weaning time in Gisting (7.38±1.01 cm) did not differ from Sumberejo district (7.28±0.97 cm), as did Saburai goats females in Gisting (7.53±1.13 cm) and Sumberejo (7.46±1.19 cm). This is caused by the similarity of the origin of goat and comes from the same stage of grading up. Based on data from the Department of Animal Husbandry and Animal Health of Lampung province (2015) the ear width of the male Saburai goat when weaning (7.76±1.47 cm) and the ear width of the female Saburai goat (7.68±1.46 cm), this shows the ear widths of male and female Saburai goats in this study were smaller [11].

3.6 Ear Length
The results showed that the average ear length of male Saburai goats at weaning time in Gisting (13.97±1.75 cm) did not differ from Sumberejo district (13.69±1.79 cm), as did goats female Saburai in Gisting (13.39±2.22 cm) and Sumberejo (13.34±2.35 cm). This is caused by the similarity of the origin of goat and the results of the same grading up stage so as to produce nearly the same breeds.

The data in this study were compared with the data of the Department of Animal Husbandry and Animal Health of Lampung province (2015), the ear length of male Saburai goat when weaning (14.77±3.10 cm) and the female Saburai goat (14.48±1.46 cm), this shows that the ear lengths of male and female Saburai goats in this study were shorter than the data of the Animal Husbandry and Animal Health Service of Lampung province [11].

3.7 Body Weight
The results of the study showed that the body weight of the Saburai goat at weaning time in Gisting (21.16±3.19 kg) was not different from Sumberejo district (19.62±3.48 kg). This performance for Saburai female goat in Gisting (18.92±3.17kg) and Sumberejo (17.76±3.40kg) also were not significantly different. This is caused by livestock raising systems and feed management which are not much different, resulting in an average body weight that is not different in the two sub-districts of Saburai goat breeding sources.

In this study the body weight of male and female Saburai goats from the two districts was greater than the data of the Department of Animal Husbandry and Animal Health of Lampung province [11] the body weight of male Saburai goats when weaning (19.67±6.88 kg) and female goats (18.56±1.46 kg)

Things that affect body weight gain are genetic and environmental factors. Genetic factors are factors inherited by their parents and environmental factors include the influence of climate, health, food, and management. Furthermore, it is stated that these two factors cannot work separately but influence each other. If cattle with low genetic potential are in an adequate environment, productivity will increase, if
the genetic potential of livestock is increased. Conversely, if livestock have high genetic potential in an inadequate environment then their productivity cannot reach as expected [15].

4. Conclusion
The quantitative characteristics of Saburai goats when weaning in Gisting district does not differ to Saburai goats from Sumberejo district.

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