

Performance of Saburai Goat Kids Based on Type of Birth and Sex in Tanggamus District, Lampung Province

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ABSTRACT

Research was conducted to compare Saburai goat production performance of single birth type, twin, and triplets in Tanggamus District, Lampung Province. This research was conducted using a survey method and sample determination using purposive sampling method. The observed variables include birth weight and goat weaning weight with criteria: born in January-July 2017 period, goat recording, and breeder/farmer incorporated in group. The observations showed that the average birth weight of Saburai goat kids single, twin, and triplets in sequence had a value of 3.16 ± 0.30 , 2.92 ± 0.20 , 2.60 ± 0.21 kg and weaning weight 14.01 ± 0.64 , 13.80 ± 0.64 , 12.06 ± 0.21 kg. The conclusion was that Saburai male goat kids have superior weight compared to Saburai female goats in all three types of births.

Key Words: Performance, Type of Birth, Sex, Saburai Goat Kids

INTRODUCTION

Saburai goat is the goat of the crossing result by grading up between Boer goat and Peranakan Ettawah (PE). The goats were designated as the genetic resources of Lampung Province based on the decision of the Minister of Agriculture No. 395/Kpts/PK.040/6/2015 (Adhianto *et al.* 2017). The population of Saburai goat in Tanggamus Regency is 25.651 heads (Disnakkeswan Kabupaten Tanggamus 2015). The area designated as Saburai goat development site, Tanggamus District, is obliged to increase the population and productivity of the Saburai goat that it manages. Increasing population and productivity of goats can be reached through selection. Selection can be taken if the recording (recording) performance or performance target of the selection conducted intensively. Performances targeted for selection on goat-type goats such as Saburai goats include pre-weaning growth, yearling weight (Adhianto *et al.* 2015; Sulastri *et al.* 2002), weaning weight and post weaning weight (Hardjosubroto 1994).

Does have prolific nature if kids in a birth are more than two (Devendra 1985). The factors that influence the number of kid are age, body weight, type of birth, buck used, season, and level of nutrition. Based on this, a study was conducted to observe the performance of Saburai goat kid based on different types of births, single, twins, and triplets in Tanggamus District, Lampung Province. The benefits obtained are facilitating the selection process for breeding programs

MATERIAL AND METHODS

Time and place

This study was conducted from June to September 2017. The study sites were in Tanggamus District, Lampung Province.

Material

The material used in this study is Saburai goat kids and recording. The tools used in this study include stationery, digital camera, digital scale capacity 50 kg with accuracy of 0.02 kg.

Method

The method used in this research is survey method that is observation directly in the field. Sampling is done by purposive sampling, that is sampling based on certain considerations (Sugiyono 1999). Considerations used in this study are observations made on goat kids born from January to June 2017, breeder/farmer that have a recording, breeders/farmer are incorporated in livestock groups.

The study was conducted through the procedures as follows: pre-survey to Tanggamus District, determine the sample observation, collected data via questionnaires and recording, weighing to goat kids, and observations maintenance management, data tabulation and processing, analysis the data using T-test.

Observed variables

Variables observed in this study were birth weights and weaning weight of Saburai goat kids.

RESULTS AND DISCUSSION

Performance Saburai goat kids by type of birth

Birth weight

The result of research on birth weight of Saburai goat is presented in Table 1. The results showed that the different types of births causing a variation in the birth weight of the goat kids. T-test results showed, birth weight of single Saburai goat (3.16 ± 0.30 kg) is significantly higher ($P < 0.01$) than twins (2.92 ± 0.20 kg) and triplets (2.60 ± 0.21 kg).

Table 1. Birth weights and weaning weight of Saburai goat kids

| Parameter | Type birth | | |
|-------------------------|--------------------|--------------------|-------------------|
| | Single | Twins 2 | Twins 3 |
| Number of sample (head) | 30 | 60 | 45 |
| Birth weight (kg) | 3.16 ± 0.30^a | 2.92 ± 0.20^b | 2.60 ± 0.2^c |
| Weaning weight (kg) | 14.94 ± 0.56^a | 13.80 ± 0.64^b | 12.60 ± 0.2^c |

Values with different superscripts on the same line show a significant effect ($P < 0.01$)

This is due to differences in the ability of the goats to obtain nutritional intake from the doe during the pregnancy period. A single goat can absorb feed full from its doe, whereas in twins and triplets will be competition in absorbing feed from its doe during embryonic growth in the uterus. Birth weight is influenced by genetic, gender, and (Mahmilia & Doloksaribu 2010).

The average birth weight of goat in single was higher than twins and triplets in accordance with the results of Nasich's (2011) study that the mean birth weight of Boerawa goat kids in single birth highest at 3.56 kg, followed by twin 2.88 kg, and triplets of 1.40 kg (Table 2). The same was reported by Nurgiartiningsih *et al.* (2006) that birth weight of single birth 3.26 kg, twins 3.10 kg, and triplets 2.51 kg (Table 2).

Table 2. Birth weight goat kids based on typed of birth

| Performance | Type of birth | Average | Source |
|-------------------|---------------|-----------|---------------------------------------|
| Birth weight (kg) | Single | 3.26 | Nurgiartiningsih <i>et al.</i> (2006) |
| Birth weight (kg) | Twins two | 3.1 | Nurgiartiningsih <i>et al.</i> (2006) |
| Birth weight (kg) | Triple twin | 2.51 | Nurgiartiningsih <i>et al.</i> (2006) |
| Birth weight (kg) | Single | 3.56±0.69 | Nasich (2011) |
| Birth weight (kg) | Twin-twin | 2.88±0.61 | Nasich (2011) |
| Birth weight (kg) | Triple twin | 2.63±0.43 | Nasich (2011) |
| Birth weight (kg) | Twin four | 1.40±0.32 | Nasich (2011) |

The birth weight of the single type of Saburai goat kids in this study (Table 1) had greater than the Sulastri & Qisthon (2007) studies of 2.87±0.15 kg (Table 3) but had a lower birth weight than research Kostaman & Utama (2003) of 4.29 kg (Table 3). This was due to the differences in time and the samples observed so that there were genetic differences and environmental conditions between the samples of this study with the research of Sulastri & Qisthon (2007) and Kostaman & Utama (2003).

Table 3. Performance of Saburai goats

| Performance | Average | Source |
|--------------------------------|------------|---------------------------|
| Birth weight (kg) | 4.29 | Kostaman (2003) |
| Birth weight (kg) | 2.87 | Sulastri & Dakhlan (2006) |
| Birth weight (kg) | 2.87±0.15 | Sulastri & Qisthon (2007) |
| Weaning weight (kg) | 14.28 | Sulastri & Dakhlan (2006) |
| Weaning weight (kg) | 21.01±1.35 | Sulastri & Qisthon (2007) |
| Pra-weaning daily weight (kg) | 0.22±0.08 | Sulastri & Dakhlan (2006) |
| One year weight (kg) | 38.38±0.94 | Sulastri & Qisthon (2007) |
| Post-weaning daily weight (kg) | 0.07±0.01 | Sulastri & Qisthon (2007) |

Based on Table 1, the average birth weight has different values due to genetic factors and environmental factors of the does. This statement is consistent with the statements of Devendra & Burns (1994) that the diversity of birth weight is due to genetic and environmental factors, whereas the diversity of life weights is caused, among others, by national differences, number of births, feed, crosses, and interactions of its genotypes. The genetic differences in birth weight of Saburai goat were the result of this study with other studies in the same location due to genetic differences between bucks (Boer goats) and does (Boerawa F1) which resulted in Saburai goats.

The birth weight is also affected by the does intake of feed. The feed given to livestock is only forage and there is no additional concentrate in almost all farmer groups in Tanggamus Regency. This is different from Ginting (2009) statement during lactation period (1-6 weeks after birth), the does need very high nutrients, as it is needed to produce milk for her kids. During the feeding period other than forage feed should be given concentrate feed. Forage is given infinitely, approximately 20% of its body weight. The parent should be given a good quality forage that is young age with a lot of leaves. Forage is given at least 2 times a day. Concentrate is given as much as 200-300 g per head per day (Ginting 2009). Forage feed given is of sufficiently good quality such as *Leucaena*, *Indigofera*, red timeandra, white *Callyandra*, coffee leaves, and grasses. The feed given usually depends on availability in the field so it is not always the same.

Weaning weight

Weaning Weight in general can be used as livestock selection criteria. The high weaning weight is expected to result in higher gain rates. Weaning weight is closely related to birth weight. The higher the birth weight, the weaning weight will also be higher (Pitono *et al.* 1992).

The average age of weaning of Saburai goats in Tanggamus district ranged from 65-98 days. Based on T-test results, it can be seen that the average weaning weight of single Saburai single goat 14.94 ± 0.56 kg is significantly different ($P < 0.01$) higher than the goat kids twin-type 13.80 ± 0.64 kg and goat breeding type triplets twin 12.06 ± 0.21 kg. The weight weaning of twin and triple birth types lower than the single birth type is due to twins and triplets competing in obtaining the mother's milk during the feeding period while the single goat does not have to compete for the mother's milk. This is in accordance with the statement Hardjosubroto (1994) that weaning weight is influenced by the type of birth.

The results showed that the mean weaning weight of Saburai goat on single birth type (Table 1) had lower weaning weight lower than that of Nasich (2011) (Table 4). This is due to the difference of data retrieval time and sample source observed so that there are genetic differences and environmental conditions between the sample of this study with the research of Nasich (2011). In addition, there are deficiencies in the management of livestock raising in Tanggamus Regency, especially in the provision of drinking water. Facts on the farmyard do not provide a special place to hold drinking water. This is not in line with Ginting (2009) statement that drinking water is essential to ensure the ongoing metabolic processes in the body, regulate body temperature and to produce milk. Drinking water is needed by goat approximately 1.5-2.5 liter per day. Livestock gets water intake from food, especially forage consumed, but this amount is not sufficient, especially in hot areas or if cattle are herded daily. Therefore, drinking water should be available in the cage at all times. Drinking water should always be clean and avoid being contaminated by urine, feces or dirt, as contaminated drinking water is usually not consumed by livestock (Ginting 2009).

Table 4. Weaning weight goat by typed of birth

| Performance | Birth type | Average | Sources |
|---------------------|-------------|------------|---------------|
| Weaning (kg) | Single | 16.40±3.80 | Nasich (2011) |
| Weaning weight (kg) | Twins | 12.47±3.32 | Nasich (2011) |
| Weaning weight (kg) | Triplets | 10.51±2.41 | Nasich (2011) |
| Weaning weight (kg) | Quadruplets | 8.93±3.04 | Nasich (2011) |

Source: Sulastri & Adhianto (2016)

Weaning weights are affected by the parent condition, age of parent, birth type, and weaning age. It is in accordance with the opinion that weaning weight is affected by the doe's condition, the number and condition of the young goat (Sutama 2007), sex, age of parent, birth type, and weaning age (Hardjosubroto 1994), maintenance management and production of doe's milk (Maylinda 2010), genetics, weaning age, health, maintenance management, feeding, milk production (Lu 2002).

Performance Saburai goat kids by sex

The birth weight of the Saburai goat is influenced by type of sex. The results of this study the average birth weight and weaning weight male Saburai goat kids is higher than female Saburai goat kids. This is due to the difference in the rate of growth of the male fetus while still in pregnancy period. Male fetuses grow faster than females (Mahmilia & Doloksaribu 2010).

According to Alfiansyah (2011) androgen hormone found in the male hormonal system is thought to cause male higher than female. The hormone estrogen produced by the female animal will limit the growth of the pipe bone in the process of bone formation in the prenatal phase already taking place on the 50th day of pregnancy, thus the estrogen produced by the female fetus will inhibit the growth of the pipe bone since the hormone estrogen works, the growth of the pipe bone, the place where the meat is attached will decrease, so the rate of muscle growth is limited.

Similar to the birth weight of the Saburai goat, the mean weight of male Saburai male weaning is greater than that of females in each birth type (Table 5). The results of the calculation of the average birth weight and weaning weight of this research are in harmony with the research of Sulastri & Adhianto (2016) i.e. the weight on the male sex is greater than female gender (Table 6). This can be due to hormonal differences between male goats and female goats. Hormones that play a role in the growth of livestock is the hormone testosterone produced by male animals and estrogen hormone produced by the female cattle. According to Soeparno (2005) that this male sex hormone resulted in faster growth in male cattle compared to female cattle, especially after the appearance of secondary sex traits on male cattle. Estrogen is a hormone produced by the ovaries, the placenta, and the adrenal cortex. Estrogen also includes catabolic hormones that, among other things, suppress and inhibit bone resorption. This resulted in weaning weight of female Saburai goat smaller than the male Saburai goat.

Table 5. The growth of Saburai goat by typed of birth

| Parameter | Sex | | | | | |
|---------------------|------------|------------|------------|------------|------------|------------|
| | Male | | | Female | | |
| | Single | Twin 2 | Twin 3 | Single | Twin 2 | Twin 3 |
| Σ sample (head) | 13 | 23 | 23 | 17 | 37 | 22 |
| Birth weight (kg) | 3.42±0.22 | 3.13±0.10 | 2.71±0.11 | 2.96±0.15 | 2.79±0.09 | 2.47±0.21 |
| Weaning weight (kg) | 15.55±0.13 | 14.21±0.61 | 12.73±0.11 | 14.46±0.11 | 13.55±0.52 | 12.50±0.22 |

According to Turner & Bagnara (1976) that the difference in body weight gain and the percentage of carcasses by sex is influenced by hormones. The hormone is somatotropin (STH, GH) which has major activity in bone growth, muscle growth, stimulates protein synthesis and affects lipid metabolism; tetragenodothyrosine (thyroxine) increases the metabolic rate in the body, glycogen increases blood glucose, stimulates protein and fatty catabolism, androgens to increase male sex behavior, estrogen affects female sex behavior, glucocorticoids can stimulate carbohydrate synthesis, lactogen protein breakdown, stimulate growth hormone activity of pituitary and prolactin.

Table 6. Saburai goat growth performance by sex

| Performance | Sex | | Average |
|-------------------------|--------------|--------------|--------------|
| | Male | Female | |
| Birth weight (kg) | 3.26±0.72 | 3.09±0.79 | 3.17±0.73 |
| Weaning weight (kg) | 14.28±4.24 | 12.86±3.60 | 13.5±3.98 |
| Average daily gain (kg) | 122.97±43.68 | 108.16±36.35 | 115.42±40.72 |

Source: Sulastri & Adhianto (2016)

CONCLUSION

It can be concluded that the average birth weight and weaning weight of Saburai goat kids with single birth has greater than that of twins or triplets, average birth weight and weaning weight of male Saburai goat kids was greater than a female Saburai goat.

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DISCUSSION

Question

Can you explain how to get a Saburai? What are the specific characteristics?

Answer

The results of crosses between Boer and PE and grading up to 2 levels, interception of F1 Boer x F1 PE mating results in Boerawa F2. Furthermore, F2 x Boer produces F3 Saburai. its characteristics are similar to Boerawa.