Comparison  Productivity of PE and Boer Goats Based on Body Size and Semen Macroscopic

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ABSTRACT

This study aims to provide an overview of the productivity of PE goats and Boer goats as material for determining policies and programs for goat development in Indonesia. This research was conducted on November 29, 2021-December 29, 2021 at ASP Farm, Karangploso District, Malang. The material used was body size and semen macroscopic data from 10 PE goats and 10 Boer goats. The tools used are Artificial Vagina (AV), scale tube, pH meter, meter, measuring range and measuring stick. The research method uses a qualitative descriptive method. The results of the study observing the body size of PE goats were very significantly different from Boer goats (P<0.01). The average body length, chest circumference and shoulder height of PE goats were 88.4 cm, respectively; 92.1 cm; 90.2 cm and the male Boer goat is 76.7 cm; 87.2 cm; 79.3 cm. For the results of the macroscopic analysis of semen there was no significant difference except for the volume. For PE goats the average value of semen volume = 1.16 ml; color= 2,20; odor= 3.0; consistency = 2.40; and pH = 6.80. while the average volume of Boer goat semen = 0.96 ml; color= 2.60; odor= 3.0; consistency = 2.80; and pH= 7.0. The conclusion of this study is that PE goats are better than Boer in terms of body size and semen macroscopically.

1. Introduction

Goats have sufficient role _ important Because besides being able to produce protein-rich meat, it can also be used as income for breeders. In Indonesia there are many types of goats, including the Ettawa breed (PE) goat and the Boer goat. The PE goat is a breed of goat resulting from crossbreeding between Kacang goats and Ettawa goats. PE goat farming is currently growing very rapidly because it is a dual-purpose livestock, that is, apart from meat, it can also produce milk. PE goats have function as cattle that can produce milk and meat [1]. While the Boer goat, has the advantage of being able to produce meat, has a large live weight, and very good growth [2].

Cattle goats in Indonesia experience enhancement population up to 7.4 %. It can used as our motivation to develop goat livestock in Indonesia which has quality ok . One of the steps that can be taken is by selection of livestock or males for artificial insemination (AI). The artificial insemination program is largely determined by the quality of the males. Good male quality can be seen through body size and semen quality. Results of body measurements goat is information which can be used as the main ingredient in the development of the productivity of these livestock. According to [3], the
A benchmark for assessing livestock reproduction and production is with do measurement body. Male and a good brood is needed for increase quality genetics on goat by artificial insemination [4]. Eligible criteria used for choose good guy is with see size body, quality sperm and national purity. To determine the quality of semen can be done by macroscopic observation [5]. Semen macroscopy is method for know cement quality with use eye naked. States that cement quality can be seen with macroscopic observations (observations with how to see the volume, color, smell, consistency, and pH) [6]. Based on this background, it is necessary to observe body size and semen quality of PE and Boer goats in smallholder farms. This study aims to compare the productivity of male PE goats and male Boer goats based on body size and macroscopic semen in order to provide an overview of the productivity of male goats in smallholder farms as material for determining goat development policies and programs in Indonesia.

2. Method

Material used including data on body size and macroscopic semen of 10 male PE goats aged 2 years and 10 male Boer goats aged 2 years, vaseline or lubricant, hot water with a temperature of ± 45°C. The tools used to collect semen are the Artificial Vagina (AV), or artificial vagina, a pH meter to check the pH of the semen, a scaled tube to see the volume and consistency of the semen, as well as a meter, calipers and measuring stick to determine body size in goats. The research method uses a qualitative descriptive method to determine the productivity of male goats based on body size and macroscopic semen. The method of data collection was determined by measurement and direct observation (with the criteria of male PE goats and male Boer goats). Data for male body size goat (High shoulder, Length body and chest circumference) and macroscopic semen (volume, pH, color, odor, and consistency).

3. Result and Discussion

Body size

![Graph of Body Size Differences](https://doi.org/10.30736/jt.v14i2.168)

From the graph it can be seen the difference in body size between male PE goats and Boer goats. PE goats have a higher average than Boer goats. The mean body length of PE goats was 88.4 cm and that of Boer goats was 76.7 cm, the average shoulder height of PE goats was 90.2 and that of Boer goats was 79.3, and the mean chest circumference of PE goats was 92.1 cm and the Boer goat 87.2 cm.
Table 1. Body Size Comparison of PE Goat and Boer Goats

<table>
<thead>
<tr>
<th>Parts of body</th>
<th>Average PE</th>
<th>boers</th>
<th>t count</th>
<th>5%</th>
<th>1%</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Length</td>
<td>88.4</td>
<td>76.7</td>
<td>13.82</td>
<td>2.10</td>
<td>2.88</td>
<td>So real</td>
</tr>
<tr>
<td>Shoulder Height</td>
<td>90.2</td>
<td>79.3</td>
<td>6.79</td>
<td>2.10</td>
<td>2.88</td>
<td>So real</td>
</tr>
<tr>
<td>Chest size</td>
<td>92.1</td>
<td>87.2</td>
<td>13.82</td>
<td>2.10</td>
<td>2.88</td>
<td>So real</td>
</tr>
</tbody>
</table>

*Analysis was performed using unpaired t-test analysis using ms. axel with a count rate of 5% and 1%

**Result of body length analysis = t count > t table (P<0.01); shoulder height = t count > t table (P<0.01); chest circumference = t count > t table (P<0.01).

Body Length

In this study, PE goats had a higher body length than Boer goats. PE goats have a body length of 15.3% higher than Boer goats. The data analysis showed that the average body length of PE goats (88.40 cm) was highly significant (P < 0.01) to that of Boer goats (76.70 cm). Growth of the spine will keep going increase with increase age, and is reflection growth Long body [7], [8].

According to [9] on age > 18-24 months PE goat or crossbreed Ettawa has an average body length of 74 cm. Research states that Boer goats and PE goats have body length values of 70.30 cm and 68.65 cm respectively [10]. The body length of an adult Boer goat is 86.33 cm [8]. In this study, the body length of the PE goat was 88.4 cm and that of the Boer goat was 76.7 cm. When compared, the body length of PE and Boer goats in this study was higher than that of the Ettawa Peranakan (PE) goats. When compared to previous studies, the average body length of PE and Boer goats in this study was still higher.

Shoulder Height

In this study PE goats had better shoulder height measurements than Boer goats. PE goats have a shoulder height measurement of 13.7% higher than Boer goats. Data analysis showed that the shoulder height of PE goats (90.20 cm) was highly significant (P<0.01) with the height of Boer goats (79.30 cm). According to SNI 7352.1:2015 On age > 18–24 months PE goat or crossbreed Ettawa has an average shoulder height of about 78 cm. In this study, the shoulder height of PE goats was 90.2 cm and that of Boer goats was 79.3 cm. When compared, the shoulder height measurements of PE and Boer goats in this study were higher than the SNI body measurements of PE goats or the Ettawa breed. The results of the mean shoulder height of PE and Boer goats in this study were higher than the results of a study conducted by [8], mentioned PE goats have tall 73.21 cm shoulder and Boer goats have tall shoulder 67.92 cm. Male Boer goats have a height at withers of 62.70 cm, while [9], stated that Boer males aged 2 years have a shoulder height of 58 cm.

Chest size

In this study, PE goats had better chest girth measurements than Boer goats. PE goats had a shoulder height measurement of 13.7% higher than Boer goats. The data analysis showed that the shoulder height of the PE goat (90.20 cm) was significant very significant difference or (P<0.01) with the height of Boer goat males (79.30 cm). According to SNI 7352.1:2015 male Ettawa breed goats aged > 18-24 months have an average chest circumference of 78 cm. In this study, the chest circumference of PE goats was 92.1 cm and that of Boer goats was 87.2 cm. When compared, results measurement This higher than SNI body size for PE goats (Ettawa breed). The chest circumference of PE goats is 75 cm and the chest circumference of Boer goats is 81 cm [10]. Male Boer goats have a chest circumference of 82.10 cm. The results of the average chest circumference at study this Still more tall from studies [13].
Cement Macroscopy

Figure 2. Graph of Cement Macroscopic Differences

PE goats had a higher average semen volume value than Boer goats, while in terms of pH, color and consistency the average value of PE goats was lower than Boer goats. For the average value of semen odor between PE and Boer goats is the same. The macroscopic average of PE goat semen (volume, pH, color, odor and consistency) was (1.16 ml; 6.8; 2.2; 3; and 2.4) while the macroscopic average of Boer goat semen (volume, pH, color, smell and consistency) were (0.96 ml; 7; 2.6; and 2.8).

Volumes and pH

Table 2. Macroscopic Comparison of Cement

<table>
<thead>
<tr>
<th>No</th>
<th>PE Volume(ml)</th>
<th>pH</th>
<th>boers Volume(ml)</th>
<th>pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.2</td>
<td>0.9</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>1.2</td>
<td>0.9</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>1.4</td>
<td>1</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>1.16</td>
<td>0.96</td>
<td>6.8</td>
</tr>
</tbody>
</table>

T count 2.54 1

Conclusion Very real difference No Different

*Analysis was performed using unpaired t-test analysis using ms. axel with a count rate of 5% and 1%
**The results of cement volume analysis differed significantly t count > t table with P<0.01, for cement pH analysis showed no difference in t count < t table with P>0.05.

PE goats have an average volume value of 20.8% higher than Boer goats. Results of analysis P < 0.05 or there is a significant difference between the volume of semen of PE goats and Boer goats. [14] stated that the age of livestock, breed, body size, and feed can affect the amount of semen at the time of storage. Results observation Ejaculate volume in PE and Boer goats was 1.16 ml in PE goats and 0.96 ml in Boer goats. According to [15], goats have an average volume of 1.0 ml, a volume ranging from 0.6 to 1.5 ml is a normal volume that can be accommodated in during ejaculation. In research [14], wrote that the semen volume of goats is 0.93 ± 0.16 ml/ejaculate.

For the yield value of the average PE goat semen pH in this study was 6.80 while the average pH of Boer semen was 7.0. PE goats had an average pH value of 2.9% lower than Boer goats but based...
Comparison Productivity of PE and Boer Goats

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on t test analysis with a 5% level there was no significant difference (P > 0.05). In research [14], Boer goats have a pH value of 6.60 ± 0.08. [14], fresh goat semen has a pH of 6.53 ± 0.15. From the results of data analysis, it was shown that there was a significant difference between the volume of male PE goats and the volume of semen of male Boer goats, and based on the pH of the semen, there was no difference. When compared with previous studies, both PE goats and Boer goats, the volume and pH of the semen produced were classified as good or normal.

**Colour, Odor and Consistency**

To observe the color of the odor and the consistency of the data obtained in the form of properties. In order to be analyzed, the data is converted into numbers with certain standards. The following is the observation data for the color, odor and consistency of semen in this study.

**Table 3. Observation results of color, odor and consistency of semen**

<table>
<thead>
<tr>
<th>Color</th>
<th>Smell</th>
<th>Consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE boers</td>
<td>PE boers</td>
<td>PE Boers</td>
</tr>
<tr>
<td>Yellow cream Typical Typical Delute Thick</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yellow cream Typical Typical Thick Thick</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cream cream Typical Typical Thick Thick</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cream yellow Typical Typical Currently Currently</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The data above is then converted into numbers

** Standard color value (yellow = 1, white = 2, cream = 3); for odor (no smell = 1, not too strong = 2, and distinctive/rancid = 3) for consistency (watery = 1, medium = 2 thick = 3)

The following is data on color analysis, cement odor and cement consistency.

**Table 4. Analysis of the color, odor and consistency of semen**

<table>
<thead>
<tr>
<th>No</th>
<th>Color</th>
<th>Smell</th>
<th>Consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PE boers</td>
<td>PE boers</td>
<td>PE Boers</td>
</tr>
<tr>
<td>1</td>
<td>1 3 3 3</td>
<td>1 3</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1 3 3 3</td>
<td>3 3</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3 3 3 3</td>
<td>3 3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>3 1 3 3</td>
<td>2 2</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>3 3 3 3</td>
<td>3 3</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>2,2 2,6</td>
<td>3 3</td>
<td>2,4 2,8</td>
</tr>
<tr>
<td>T count</td>
<td>0.63</td>
<td>0.89</td>
<td></td>
</tr>
</tbody>
</table>

*Analysis was performed using unpaired t-test analysis using ms. axel with a count rate of 5% and 1%

**The results of analysis of the color, odor and consistency of semen showed no significant difference (P>0.05) with tcount < ttable, consistency analysis.
Judging from the semen color of Boer goats, the average value was 18% higher than that of PE goats, but the results of the t-test analysis at 5% level showed no difference (P>0.05) between the semen colors of PE goats and Boer goats. The color of this cement also determines the quality of good cement. Yellow color is the color of low quality cement, while white or cream colored cement is good quality cement.

Goat semen is said to be normal if it has a cream or milky white color. Riboflavin pigment can cause a yellowish color in semen, while red semen can be caused by being mixed with blood. Based on Table 4, male PE goats have an average semen odor of 3 or a distinctive odor, as well as male Boer goats also have a cement odor of 3 or a distinctive odor. The smell of cement is generally categorized as having a distinctive smell [14]. Observation of the smell of cement was carried out by directly smelling the fresh semen that was collected. The average odor of semen of PE goats and Boer goats in this study was the same, which was worth 3. Because they have the same average, no analysis is needed and it can be concluded that there is no difference in the productivity of PE and Boer goats when viewed from the smell of semen produced. Both breeds of goats have good productivity based on the smell of goat semen.

The next macroscopic observation of semen is the observation of semen consistency or dilution. In Table 4, the average semen consistency of PE goats is 2.40, while the average for male Boer goats is 2.80. Boer goats had an average score of 16.6% higher than PE goats but based on the t-test analysis with a 5% level showed no difference (P > 0.05). Consistency assessment was assessed to determine the concentration of spermatozoa present in the semen. Each livestock has a different consistency value, depending on the breed and its characteristics. The method of assessing consistency is to tilt the semen in the tube and then turn it upside down again. If the cement returns to the bottom of the tube quickly then the cement is classified as runny, if it is slower it is classified as medium, and if it is slower and leaves cement on the edge of the tube then it is classified as thick. Cement that has a medium or thick consistency is cement that has good quality [14]. So, based on previous research references, the consistency of semen in this study, both PE goats and Boer goats were good (medium and thick), but Boer goats had a higher score.

4. Conclusion

The conclusion of this study is that male PE goats are better than Boers in terms of body size and semen macroscopy. There is a very significant difference with the average body size of male PE goats being 5.6% -15.3% higher than male Boer goats. PE and Boer goats have higher body size than SNI Ettawa breed goats. The results of the macroscopic analysis showed no significant difference between PE and Boer goats except for volume, the average semen volume of PE goats was 20.8% higher.

5. References


