“WISDOM OF USING LOCAL RESOURCES FOR DEVELOPMENT OF SUSTAINABLE ANIMAL PRODUCTION IN DEVELOPING COUNTRIES”

The Singhasari Resort, Batu City, Indonesia, October 16-19, 2017
PROGRAM AND ABSTRACT BOOK

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Poespita Sari Hazanah N., S.Pt., MP
Tentative Program SAADC 2017

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| 08:30-09:30             | Report by Chairman of SAADC 2017  
Prof. Dr. Ir. Ifar Subagiyo, M.Agr.St.  
Welcome Participants by President of SAADC  
Prof. Dr. Liang Juan Boo  
Opening Remarks by Dean Faculty of Animal Husbandry, Brawijaya University  
Prof. Dr.Sc.Agr. Ir. Suyadi, MS |
| 09.30-09.45             | Coffee Break |
| 09.45-10.15             | Prof. Peter Wynne  
Making money from milk on small-holder dairy farms in the tropics: An international perspective |
| 10.15-10.45             | Prof. V. M Ani Nurgiartiningsih  
Performance improvement of local cattle production in Indonesia through selection |
<p>| 10.45-12.00             | Lunch Break |
| 12.00-13.30             | Trip to Singhasari Hotel |</p>
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Exterior characteristics of female Gembrong goat in Karangasem, Bali

Bayu Andri Atmoko¹, I Gede Suparta Budisatria¹, Sigit Bintara¹, Dyah Maharani¹ and I Made Londra²

¹Faculty of Animal Science, Universitas Gadjah Mada, Yogyakarta, Indonesia
²The Assessment and Development Institute for Agricultural Technology, Bali Province, Indonesia
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Abstract

Gembrong goat is one of local genetic resources of livestock in Bali Province. The population is categorized as endangered and critical breed based of World Watch List for Domestic Animal in 1997. Currently its population under 50 individuals were spread in Bali Province. This paper explain the exterior characteristics of female Gembrong Goat was found in Karangasem Regency, Bali Province. Twelve female Gembrong Goat were observed including face appearance, coat colour, horn, ear appearance. Head and body measurements were obtained, including head length, head girth, ear length, chest girth, body length, withers height, hip height. The descriptive statistical analysis was applied due to the small size numbers of goat in this research. Female Gembrong goat have flat face appearance, small pointed horn, hanging to the side ear, and have white, brown, black coat colour dominant is 50%, 25% and 25% respectively. Result of the head measurement show that the average of head length, head girth, ear length, is 18,20±1,14 cm, 11,30±0,82 cm, and 14,20±2,04 cm respectively, so the head index is 62,08±0,72. Body size of female Gembrong Goat such as chest girth, body length, withers height, hip height respectively was 67,42±3,21 cm, 48,50±4,40 cm, 51,50±3,21 cm and 54,58±3,55 cm. In case compared with the Exterior characteristics of female Gembrong goat in previous research in 2004 and 2014, appears to decrease ear length and all of the body size, this indicates a decrease in genetic quality of Gembrong Goat was raised with traditional management by small farmer in Karangasem, Bali.

Keywords: Gembrong goat, exterior characteristics, body size, Karangasem Bali, critical breed
Exterior characteristics of female Gembrong Goat in Karangasem, Bali

Bayu Andri Atmoko\textsuperscript{a}, I Gede Suparta Budisatria\textsuperscript{a}, Sigit Bintara\textsuperscript{a}, Dyah Maharani\textsuperscript{a}, I Made Londra\textsuperscript{b}

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\textsuperscript{b}The Assessment and Development Institute for Agricultural Technology, Bali Province, Indonesia

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Keyword: gembrong goat, exterior characteristics, body size, karangasem bali, critical breed

Introduction

Indonesia owns several goat germ plasm some of which are known as Kacang goat, Etawah Crossbred goat, Bligon goat, Kejobong goat, Gembrong goat, Kosta goat, and Marica goat. Each has its own different characteristics related to its natural spreading areas, most of those breeds have limited spreading areas which mean they are not widely distributed. Amongst those breed, the most endangered population is Gembrong goats (Budisatria, 2009). Gembrong is one of Indonesian indigenous breed of goats raised in Karangasem, Bali Gembrong goat mostly has the long shiny white hair that covering its whole body including its necked and face (Maharani et al., 2014)
Based on the report the World Watch List for Domestic to Animal, in 1997 a population of Gembrong Goat as many as 100 heads (Scherf, 2000), while population is not currently more than 50 heads. The recent research found that the population of Gembrong goats at Karangasem district were only 26 heads, consisted of 10 head male and 16 head female (Budisatria et al., 2014; Maharani et al., 2014; and Bintara et al., 2015).

Conserving genetic of domestic animals such as Gembrong goats urgently required, primarily because their population decreased annually and once lost, genetic material is irreplaceable (budisatria et al., 2014). Many studies reported that Gembrong goats is a specific type of goat differ from the indigenous breed (Kacang goats) and their Ettawa-crossbreds (Oka et al. 2011). Several studies have reported on exterior characteristic of Gembrong goats. However, the population of the gembrong goats is limited, and its development is very slow from year to year. So, currently indicated a change of the exterior characteristics. This paper explain the exterior characteristics of female Gembrong Goat was found in Karangasem Regency, Bali Province.

**Methodology**

The study of Gembrong Goat in Karangasem Regency, Bali province was conducted in May-June 2016. The data used for this study were collected from 12 Does (adult female with age range 1-3 years old), that was found located in Bug-Bug village, Abang village, and tumbu village (location of conservation). Gembrong Goat were observed including face appearance, coat colour, horn, ear appearance. Head and body measurements were obtained, including head length, head girth, ear length, chest girth, body length, withers height, hip height. The Gembrong goats were raised in similar management systems (traditional system) at those locations by small farmer.

The following linear head and chest girth measurements were measured by using the tailor’s type measure (butterfly© in cm), for body length, withers height, hip height measurements were measured by using the stick measure (FHK© in cm). For this data collection for face appearance, coat colour, horn, ear appearance by using Guideline for Phenotypic Characterization of Animal Genetic Resources (FAO, 2012). The descriptive statistical analysis was used due to the small size of goat was found and we presented by comparing with previous research was done.

**Result and Discussion**

Qualitative character of adult female Gembrong goat was found in Karangasem regency such as face/head, horn, ear and hair coat. The observation based on Guidelines for Phenotypic Characterization of Animal Genetic Resources (FAO, 2012). The result showed that female Gembrong goat have straight or flat face appearance, present horn and the shape is straight, small and pointed, erect and straight ear or hanging to the side. Hair coat type is straight hair, smooth and glossy. The previous research report that female Gembrong goat was observed, faceline is a bit concave, have small horns, ears are straight upright although hanging ears are also noticed (Budisatria et al., 2014).

Result of hair coat colour dominant is white, brown and black with a percentage 50%, 25% and 25% respectively. in contrast to the previous report by Fahmilia et al. (2004) that dominant body color of goat Gembrong generally white 61.51%, and several is light brown
23.08% and brown 15.38% as well as the results of observations obtained by Setiadi et al. (1998), where the white color is 91.16% and the rest is light brown and black. The frequency decrease of this dominant (white) color and emergence of new (black) color may be related to uncontrolled matting patterns with another breeds likely Peranakan Etawah (PE) and kacang by farmers, because the population of Gembrong goat is very small.

The mean and standard deviation of head and body measurements that was obtained from the study are presented in Table 1. Table 1 show the comparison of result and previous study about the head and body size of female gembrong goat. The result of head size was obtained in this study greater than with the previous study (2014 and 2015), especially the head length and for ear length was similar (2015) and smaller than study was reported in 2004. Similar from the table, all of the body size of Gembrong goat was measured on this study lower than study was reported in 2004, 2014 and 2015. Body length, withers height and hip height of Gembrong does from this study were also lower with Kacang does, as reported by Setiadi et al (2000) which was 47-55 cm, 55,26±1,31 cm and 58,40±1,61 cm, respectively. However, chest girth of Gembrong does were bigger than Kacang does which having chest girth 62,11±1,49 cm (Setiadi et al., 2000).

Table 1. The mean and standard deviation of head and body measurements that was obtained from the study and previous study

<table>
<thead>
<tr>
<th>No</th>
<th>Trait</th>
<th>Mean±SD (cm)(^a)</th>
<th>Mean±SD (cm)(^b)</th>
<th>Mean±SD (cm)(^c)</th>
<th>Mean±SD (cm)(^d)</th>
<th>Mean±SD (cm)(^e)</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>head length</td>
<td>18,20±1,14</td>
<td>16,83±2,14</td>
<td>14,41±1,32</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>head girth</td>
<td>11,30±0,82</td>
<td>11,50±1,05</td>
<td>8,18±0,60</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>ear length</td>
<td>14,20±2,04</td>
<td>14,17±1,33</td>
<td>-</td>
<td>-</td>
<td>18,50±3,54</td>
</tr>
<tr>
<td>4</td>
<td>chest girth</td>
<td>67,42±3,21</td>
<td>70,00±5,06</td>
<td>64,45±5,45</td>
<td>71,00±6,90</td>
<td>70,90±3,47</td>
</tr>
<tr>
<td>5</td>
<td>body length</td>
<td>48,50±4,40</td>
<td>56,17±4,63</td>
<td>57,64±5,71</td>
<td>56,70±6,90</td>
<td>62,60±1,14</td>
</tr>
<tr>
<td>6</td>
<td>withers height</td>
<td>51,50±3,21</td>
<td>55,08±1,69</td>
<td>53,91±4,74</td>
<td>59,80±4,90</td>
<td>64,20±4,55</td>
</tr>
<tr>
<td>7</td>
<td>hip height</td>
<td>54,58±3,55</td>
<td>57,42±1,80</td>
<td>-</td>
<td>-</td>
<td>66,60±4,56</td>
</tr>
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</table>

SD: Standard deviation
\(^a\) this study; \(^b\) Hasinah et al., 2015; \(^c\) Zein and Sulandari, 2014; \(^d\) Maharani et al., 2014; \(^e\) Fahmilia et al., 2004.

The difference of head and body size, in case was lower with the previous study was reported several researcher (Table 1) probably caused by an uncontrolled matting patterns, may be like inbreeding, because lack of the Gembrong buck and there isn’t rotation of mating. In difference case, the decrease of body size may be caused by matting with another breeds likely Kacang goat by farmers.

**Conclusion**

Based on the body size from the study and compared to the previous research, Gembrong Goat was raised with traditional management by small farmer in Karangasem, Bali was indicates a decrease in genetic quality.
Reference


Extérieur Caractéristiques de la Brebis Gembrong à Karangasem, Bali

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Introduction

Gembrong is one of local genetic resources as an Indonesian indigenous goats was found in Karangasem, Bali. Gembrong goat mostly has the long shiny white hair that covering its whole body including its necked and face.

The recent research found that the population of Gembrong goats at Karangasem district were only 26 heads, (Budisatria et al., 2014; Maharani et al., 2014; and Bintara et al., 2015).

Conserving genetic of domestic animals such as Gembrong goats urgently required, primarily because their population decreased annually and once lost, genetic material is irreplaceable (budisatria et al., 2014).

Several studies have reported on exterior characteristic of Gembrong goats. However, the population of the Gembrong goats is limited, and its development is very slow currently indicated a change of the exterior characteristics. This paper explain the exterior characteristics of female Gembrong Goat was found in Karangasem Regency, Bali Province.

Methodology

Gembrong Goat were observed including face appearance, coat colour, horn, ear appearance by using Guideline for Phenotypic Characterization of Animal Genetic Resources (FAO, 2012). Head and body measurements were obtained, including head length, head girth, ear length, chest girth, body length, withers height, hip height were measured by using the stick measure (FHk in cm).

The descriptive analysis was used due to the small size of goat was found and we presented by comparing with previous research.

Result and discussion

The result showed that female Gembrong goat have straight or flat face appearance, present horn and the shape is straight, small and pointed, erect and straight ear or hanging to the side. Hair coat type is straight hair, smooth and glossy.

Table 1. The mean and standard deviation of head and body measurements of female gembrong goat that was obtained from the study and previous study

<table>
<thead>
<tr>
<th>No</th>
<th>Trait</th>
<th>Mean±SD (cm)</th>
<th>Mean±SD (cm²)</th>
<th>Mean±SD (cm)</th>
<th>Mean±SD (cm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>length head</td>
<td>18.20±1.14</td>
<td>16.63±2.14</td>
<td>14.41±1.32</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>head girth</td>
<td>11.30±0.82</td>
<td>11.50±1.05</td>
<td>8.18±0.60</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>ear length</td>
<td>14.20±2.04</td>
<td>13.17±2.33</td>
<td>-</td>
<td>18.50±3.54</td>
</tr>
<tr>
<td>4</td>
<td>chest girth</td>
<td>67.42±3.21</td>
<td>70.00±5.06</td>
<td>64.45±4.55</td>
<td>71.00±6.90</td>
</tr>
<tr>
<td>5</td>
<td>body length</td>
<td>48.50±4.40</td>
<td>56.17±4.63</td>
<td>57.64±5.71</td>
<td>56.70±6.90</td>
</tr>
<tr>
<td>6</td>
<td>withers height</td>
<td>51.50±3.21</td>
<td>55.08±6.99</td>
<td>53.91±4.74</td>
<td>59.80±4.90</td>
</tr>
<tr>
<td>7</td>
<td>hip height</td>
<td>54.58±3.55</td>
<td>57.42±1.80</td>
<td>-</td>
<td>66.60±4.55</td>
</tr>
</tbody>
</table>

SD: Standard deviation
*this study,* 1Hasinah et al., 2015; 2Zein and Sulandari, 2014; 3Maharani et al., 2014; 4Fahmilia et al., 2004.

Result of hair coat colour dominant is white, brown and black with a per sentage 50%, 25% and 25% respectively. In contrast to the previous report by Fahmilia et al. (2004) that dominant body color of Gembrong goat generally white 61.51%, and several is light brown 23.08% and brown 15.38%. The frequency decrease of this dominant (white) color and emergence of new (black) color may be related to uncontrolled matting patterns with another breeds likely Peranakan Etawah (PE) and kacang by farmers, because the population of Gembrong goat is very small.

The result of head size was obtained in this study greater than with the previous study (2014 and 2015), especially the head length and for ear length was similar (2015) and smaller than study was reported in 2004. All of the body size of Gembrong goat was measured on this study lower than study was reported in 2004, 2004 and 2015. The difference of head and body size was lower with the previous study probably caused by an uncontrolled matting patterns, may be like inbreeding, because lack of the Gembrong buck and there isn’t rotation of mating. In difference case, the decrease of body size may be caused by mating with another breeds likely Kacang goat by farmers.

Conclusion

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Reference


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CERTIFICATE

This certifies

Bayu Andri Atmoko

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