Live weight performance of three different breed of Indonesian local chickens in starter phase

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Abstract. The production of local chickens in Indonesia is determined by the availability of high-quality local chicken stocks. However, information on local chicken performance is limited, therefore, this study aims to determine the live weight performance of three local Indonesian chicken namely Merawang, Murung Panggang, and KUB in the starter phase. The study was conducted at chicken farm located in Semanu Gunung Kidul, Yogyakarta. Meanwhile, the live weight data were collected at the starter phase (0, 2, and 4 weeks). The samples consisted of 196 Merawang, 157 Murung Panggang, and 416 KUB chickens reared in a battery cage in a closed house under similar conditions. Furthermore, the live weight performance data were analyzed using analysis of variance (ANOVA). As a result, the Merawang chicken had the highest live weight (P<0.05) at the day-old chick (DOC) age. At the same age, no significant difference was detected between the KUB and Murung Panggang chicken (P>0.05). However, the live weight of Murung Panggang was significantly higher at 2 and 4 weeks compared to others (P<0.05). Therefore, it was concluded that there are variations in the live weight of the three local chickens during the starter phase.

Keywords: Local chicken, live weight performance, starter phase

1. Introduction

Poultry such as chicken, turkey, duck, geese, quail, and other domesticated birds provides 25% of the world's meat supply, and this proportion is steadily increasing. In recent years, this pattern has become more visible in developing countries. Furthermore, due to the rising growth of the broiler industry, chickens are widely consumed all over the world [1]. Aside from broilers, local chickens also have unique economic characteristics and genetic potential. Meanwhile, several local Indonesian chickens have been registered by the Ministry of Agriculture's Regulation, including Merawang (No. 2846/Kpts/LB.430/8/2012) and KUB (No. 274/Kpts/SR.120/02/2014) [2,3]. However, the Murung Panggang chicken needs further investigation to be registered.

This study is expected to provide information on the potential of local chickens by evaluating the performance of each variety (meat or layer). Awaluddin [4], stated that chicken productivity performance (growth, percentage of carcass, and hatching weight) and reproducibility are important traits. The growth trait is very important to be assessed by measuring the live weight at a certain age. In Indonesia, there are only a few studies on the live weight performance of local breed chickens. Therefore, this study aims to determine the live weight performance of three local Indonesian chickens in the starter phase.
2. Material and methods

2.1. Location of the study and experimental animals
The study was conducted at a chicken farm located in Semanu, Gunung Kidul, Yogyakarta, meanwhile, the live weight data were collected at the starter (0, 2, and 4 weeks). The samples consisted of 196 Merawang, 157 Murung Panggang, and 416 KUB chickens reared on a battery cage in a semi closed house under similar conditions.

2.2. Traits measured
The live weight performance of the chicken samples were collected using a digital scale (10kg capacity and 1gr sensitivity) for live weight. All data were tabulated in excel before further statistical analysis.

2.3. Statistical analysis
The breed's effect on the average live weight was analyzed using analysis of variance (ANOVA). Furthermore, the Duncan's multiple range test was used to determine significant differences in the means (p<0.05) between the breeds. The SPSS (2020) version 26 was used for the ANOVA (SPSS Inc., Chicago, IL, USA), meanwhile, the mathematical model used is as follows:

\[ Y_{ij} = \mu + G_i + e_{ij} \]

Where \( Y_{ij} \) is the individual average live weight, \( \mu \) is the overall mean, \( G_i \) is the fixed effect of the breed, and \( e_{ij} \) is the random error.

3. Results and discussion

3.1. Live weight performance

| Age (Week) | Chicken Breed |
|------------|---------------|
|            | Merawang Chicken (n=196) | Murung Panggang (n=159) | KUB (n=416) |
| 0 (DOC)    | 31.32±6.80\textsuperscript{a} | 28.23±2.314\textsuperscript{b} | 28.14±2.802\textsuperscript{b} |
| 2          | 133.59±26.99\textsuperscript{b} | 153.70±19.047\textsuperscript{a} | 117.34±15.508\textsuperscript{c} |
| 4          | 301.81±53.704\textsuperscript{b} | 332.02±48.352\textsuperscript{a} | 250.39±38.870\textsuperscript{c} |

Note: Superscript mean in the same rows with different superscripts are significantly different (P<0.05).

Based on the results, the Merawang chicken had the highest live weight (P<0.05) at the day-old chicken (DOC) age. At the same age, no significant difference was found between the KUB and Murung Panggang chicken (P>0.05). However, the live weight of Murung Panggang was significantly higher at 2 and 4 weeks compared to others (P<0.05). Suryana [5] reported that the Murung Panggang chicken has great potential to be used for meat and egg production due to its greater body weight, less feed conversion, and a high egg production rate compared to other native chickens. Although KUB chicken has a smaller body weight, the egg production rate is higher egg compared to other native chickens [6].
3.2. Uniformity live weight

Table 2. Uniformity of three different breed of local chickens.

| Weeks of Age | Trait                        | Chicken Breed |
|--------------|------------------------------|---------------|
|              | Uniformity (%)               | Merawang*     |
| 0 (DOC)      | Coefficient of variation (CV) (%) | (n=196)       |
|              |                              | 42-64         |
|              |                              | 9.88-13.09    |
|              | Uniformity (%)               | Murung Panggang | (n=157) |
|              | Coefficient of variation (CV) (%) | 82           |
| 2            |                              | 8.20          |
|              | Uniformity (%)               | KUB           |
|              | Coefficient of variation (CV) (%) | 63           |
|              |                              | 9.96          |
| 4            | Uniformity (%)               |               |
|              | Coefficient of variation (CV) (%) |               |
|              |                              |               |

*Note: Merawang chicken comes from two different regions (From Sembawa and Bangka Belitung each 77 and 119 chickens), so that uniformity in the form of range.

The Murung Panggang chicken has higher live weight uniformity compared to Merawang and KUB. These results need to be considered in the selection process given that weight uniformity has a significant effect on productivity. Therefore, improvements in the live weight uniformity lead to a more consistent onset of laying and lower early production losses in small hens [7]. In addition, it leads to suboptimal performance, production efficiency, and also affects egg quality [7, 8].

4. Conclusion

Based on the results, there are variations in the live weights of three local chickens during the starter phase. Murung Panggang chicken is the superior chicken for live weight performance compared to the other local chicken. Furthermore, these live weight performance can be carried out chicken during the starter phase.

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