

## The difference of feed consumption, body weight, and feed conversion ratio between male muscovy duck (*Cairina moschata*) and male mule duck at the growing age

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### Abstract

This study aims to collect data on comparisons of the differences in body size between Muscovy Duck and Mule Duck that can be observed from feed consumption, weight gain and feed conversion ratio between *Cairina moschata* and Mule Duck to find out the best waterfowl as a cut poultry. *Cairina moschata* and Mule Duck that are maintained at the age of the growth phase that is from the age of 5 weeks to 9 weeks with gender male *Cairina moschata* and male Mule Duck were used in this study. The number of samples that were used was 10 *Cairina moschata* and 10 Mule Duck. The results of the data processing of this study used a t test method in SPSS. The results of this study were the consumption of Mule Duck feed is much more than Muscovy Duck, the weight gain of Mule Duck is much more than Muscovy Duck, and Mule Duck have a lower feed conversion ratio compared to the Muscovy Duck. This experiment concluded that Mule Duck performance are more superior compared to Muscovy Duck.

**Key words:** *Cairina moschata*, Mule duck, Feed consumption, Weight gain, Feed conversion ratio.

### INTRODUCTION

Poultry is one of the livestock commodities that many people enjoy because it has a source of animal protein that is economically affordable compared to other livestock origin meat. The need for animal protein consumption can be fulfilled with poultry origin proteins, especially the type of waterfowl that feels less. Waterfowl is also one of the poultry that can supply quite large in meeting

The needs of animal protein. Waterfowl in Indonesia very diverse, including Duck, Muscovy Duck and Mule Duck. Muscovy Duck (*Cairina moschata*) is one of the type domestic fowls that has a considerable role as a good meat-producing poultry and is a commodity that has enough potential to be cultivated. The development of Muscovy Duck as a meat producer has an excellent increase, because it has a better growth rate and carcass weight compared

to other types of ducks (Steklenev, 1990; Solomon *et al.* 2006). Muscovy Duck has the potential as a good source of meat with low fat content compared to other ducklings, resistant to diseases that commonly attack poultry, relatively easy maintenance, has high adaptation power so that it can be maintained widely throughout Indonesia (Wiwin, 2011).

Ducks are waterfowl that have a variety and types, ranging from wild waterfowl to farmed waterfowl. Ducks have great potential to be developed and useful as a source of community protein needs. Various waterfowl there are waterfowl that have an important meaning for human life, because it is able to meet one of the human food needs (Tjuk, 2020). Waterfowls in addition to Muscovy Duck that began to be popular lately is Mule Duck.

Mule Duck is a waterfowl that the result of a crossbreeding between male Muscovy Duck and female Duck. The cross between Muscovy Duck and Duck has occurred naturally in the community of Indonesia. The development of the duck enlargement business encourages breeders in developing hybrid strains that have many advantages over local strains in terms of speed and uniformity of growth (Tjuk, 2019). The advantages of Mule Duck, among others, have rapid growth, large body weight, and productive in producing meat (Suparyanto, 2005), resistant to disease attacks and low mortality ranges from 2-5% (Anwar, 2005).

The growth phase is the phase where the performance of a livestock is best. During the growth phase, waterfowl generally require relatively large and quality feed in order to grow and develop perfectly (Purba and Ketaren, 2011). One of the difference in characteristics of Muscovy Duck and Mule Duck can be known from the growth patterns of them. Growth is a weight gain resulting from the consumption of feed that has good quality nutrition. Male Muscovy Duck and Mule Duck have faster growth compared to female Muscovy Duck and Mule Duck. In adult male Muscovy Duck can reach 5.5 kg, while in adult female Muscovy Duck only reaches a weight of 3 kg (Sri, 2013). In the age of 12 weeks, male Mule Duck reaches a body weight

of 920.3 g / tail, while females 911.8 g / tail (Suparyanto, 2005). Feed is a single or mixed feed material, either through the processing process or without going through the processing process (Christian *et al.*, 2016). The use of standard feed that usually farm give is can be corn, bran, bran, menir, fermented onggor, molasses, soybean bungkil, and commercial feed (Ati, 2007). Commercial feed is feed that is mass produced by the feed industry to produce optimal development, growth,

## MATERIALS AND METHODS

The research design that was used on this study was Completely Randomized Design (CRD). The research animal used are male Muscovy Ducks and male Mule Ducks raised from the age of 5 weeks to 9 weeks amount of 10 tails in each species with details of 10 male Muscovy Ducks and 10 male Mule Ducks.

For preparation, 10 male Muscovy Ducks and 10 male Mule Ducks at four weeks old are placed in different cage. Each tail has a differentiating sign. Then through the process of adaptation of feed and cage for 7 days. Maintenance health and appearance content that suits the needs (Thomas, 2014).

To know the difference of the body size among superior waterfowls such as Muscovy Duck and Mule Duck need to be done further research using poultry Muscovy Duck and Mule Duck that are still in the growth age (*grower*) so the difference in body weight between the two animals can be seen clearly. Differences in body size between Muscovy Duck and Mule Duck can be observed from feed consumption, weight gain and feed conversion ratio of 10 male Muscovy Ducks and 10 male Mule every week, ranging from male Muscovy Ducks and male Mule Ducks at aged 5 until 9 weeks. Recording of the measurement results is done directly after the male Muscovy Ducks and male Mule Ducks are weighed. Measurement of feed consumption is done using digital scales every day in the morning and evening, starting from the start of the research to the end of the research.

The record of measurement results is carried out directly after the feed of the male Muscovy Duck and the male Mule Duck is weighed, then continued with the

## DATA ANALYSIS

Data analysis is the discussion of statistical tests used to test hypotheses (Sarmanu, 2017). The analysis of this study is by reading data from the results of weight measurements from muscovy ducks and mule ducks presented in the

## RESULTS AND DISCUSSION

The study was done by observing weight gain, feed consumption and feed conversion ratio from male Muscovy Duck and male Mule Duck for five weeks. Feed consumption is the acquisition of a reduction in the amount of feed provided with the rest of the feed. Based on the here results of statistical analysis of feed

analysis of the data. Measurement of feed conversion ratio is carried out after all data on weight gain and consumption of male Muscovy Duck and male Mule Duck in each week collected, then continued with data analysis. form of tables. The analysis is done using the t test method. The analysis conducted on this study uses software precisely SPSS 20 program (*Statistikal package for the social science*) (Santoso, 2015).

consumption between male Muscovy Duck and male Mule Duck showed that the value of  $p = 0.000$  where  $p < 0.05$ . So it can be concluded that there is a significant difference between the consumption of feed male Muscovy Duck and male Mule Duck.

**Table 1.** Average Results of the Independent T-Test Consumption of Feed Male Muscovy Duck and Male Mule Duck for Five Weeks (grams).

Animals	Average ± SD (g/tail)	p Value
Male Muscovy Duck	3283,5 ± 297,71	0,000
Male Mule Duck	4034,6 ± 305,87	

Note : Difference superscripts show significant differences ( $p < 0.05$ )

Based on the table 1, the average feed consumption between male Muscovy Duck and male Mule Duck is, on male Muscovy Duck as much as 3283.5 with standard deviation 297.71 grams while on male Mule Duck as much as 4034.6 and standard deviation 305.87 grams. This shows that there is a real average difference between the consumption of feed between male Muscovy Duck and male Mule Duck. The high average consumption of male Mule Duck feed compared to male Muscovy Duck can prove that male Mule Duck is able to consume more feed compared to male Muscovy Duck. In this research, the high average consumption of male Mule Duck feed compared to male Muscovy Duck is because the genetic of Mule Duck from crossbreed have a superior character from the elder, the water consumption of Mule Duck are much more than the Muscovy Duck, and the health of Mule Duck is more stronger than the Muscovy Duck. Weight gain is the value of the final weight minus the initial weight of the treatment. The results of statistical analysis of weight gain between male Muscovy Duck and male Mule Duck show that the value of  $p = 0.000$  where  $p < 0.05$ . So it can be concluded that there is a significant difference between weight on male Muscovy Duck and male Mule Duck.

**Table 2.** Average Results of Independent T-Test Weight Gain Between Male Muscovy Duck and Male Mule Duck for Five Weeks (grams).

Animals	Average ± SD (g/tail)	p Value
Male muscovy duck	1058,1 ± 67,287	0,00 0
Male mule duck	1347,5 ± 98,436	

Note : Difference superscripts show significant differences ( $p < 0.05$ )

Based on the table 2, the average weight gain between male Muscovy Duck and male Mule Duck is, on male Muscovy Duck as much as 1058.1 with standard deviation 67,287 grams while on male Mule Duck as much as 1347.5 and the standard deviation 98,436 grams. This proves that, male Mule Duck weight gain is more than the male Muscovy Duck weight gain. this research, the high average body weight of male Mule Duck feed compared to male Muscovy Duck is because the greater digestibility of Mule Duck compared to Muscovy Duck and the genetics it self. Feed conversion ratio is a comparison between the resulting weight gain and the feed consumption. Feed conversion ratio are calculated every week since the data of weight gain and feed consumption are collected.

**Table 3.** The Average Results of the Independent T-Test of Feed Conversion Ratio Between Male Muscovy Duck and Male Mule Duck for Five Weeks (grams).

Animals	Average ± SI (g/tail)	p Value
Male Muscovy Duck	3,126 ± 0,115	0,011
Male Mule Duck	2,992 ± 0,095	

Note : Difference superscripts show significant differences ( $p < 0.05$ )

Based on the table 3, the results of statistical analysis of feed conversion ratio between male Muscovy Duck and male Mule Duck show that the value of  $p = 0.011$  where  $p < 0.05$ . So it can be concluded that there is a significant difference between feed conversion ratio on male Muscovy Duck and male Mule Duck. The average feed conversion ratio between male Muscovy Duck and male Mule Duck is, on the male Muscovy Duck as much as 3,126 with standard deviation 0.115 and the feed conversion ratio of feed on male Mule Duck is 2,992 and the standard deviation is 0.095.

This shows that the feed conversion ratio rate of male Muscovy Duck is higher compared to male Mule Duck, so the male Muscovy Duck is less able to utilize the use of feed well. In this research, the low conversion ratio of male Mule Duck compared to male Muscovy Duck can be caused by male Mule Duck's ability to convert its food into meat. This is explained by Rukmiasih. (2000), Mule Duck has several advantages, namely its rapid growth, able to convert low-quality feed into meat. While the ability of Muscovy Duck in digesting feed to be converted to meat is less than Mule Duck because the value of feed conversion is still high.

## CONCLUSIONS

Muscovy Duck and male Mule Duck by consuming commercial feed with the same dose, it showed that male Mule Duck eat more feed compared to male Muscovy duck. There is a difference in body weight between male Muscovy Duck and male Mule Duck, it showed that the weight of male Mule Duck is greater and faster to increase compared to male Muscovy Duck. There is a difference in the value of feed conversion ratio on male Muscovy Duck and male Mule Duck, it showed that the feed conversion ratio of male Mule Duck is lower compared to male Muscovy Duck.

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