



The Effects of Slaughter Age and Sex of Broilers Cobb Strain on Live Body Weight, Carcass Weight, and Carcass Percentage

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ABSTRACT. Demand for chicken consumption in Indonesia tends to increase every year. Broiler chickens were slaughtered at a shorter age than in the past years, recently about 4 to 6 weeks. A total of 28 to 42 day old broiler chicks was distributed to completely randomized design of the factorial scheme, categorized based on the slaughter age (4, 5 and 6 weeks old) and sex (male and female). The evaluated parameters were live body weight (LBW), carcass weight (CW), and carcass percentage (CP). Two Way analysis of variance (ANOVA) was analyzed using SPSS with 5 replications. Duncan Multiple Range Test (DMRT) was used to determine the differences among treatment means. The result showed that live body weight did not significantly effect by the sex but it affects ($P < 0.05$) to slaughter age (4, 5 and 6 weeks) by 1460 g, 1881 g and 2310 g, respectively. The different sexes was not significantly affects the carcass weight and percentage of carcass (1.283 g and 1.223; 69.43% and 70.15%). This research can be concluded that sex difference was not affected to body weight (1.891 g), carcass weight (1.253 g) and carcass percentage (69.79%), but the female broiler get higher than male broiler. Thus, slaughter age affects body weight, carcass weight and carcass percentage, at 4 weeks old was tend to decrease but increasily at 5 weeks and 6 weeks old. The best body weight, carcass weight and carcaas percentage at 5 weeks old, according to market demand.

Keywords: slaughter age, sex, live body weight, carcass percentage

INTRODUCTION

The development of poultry in Indonesia was pretty good, because the demand for chicken consumption every year tends to increase. Chicken consumption increased by 3 to 6 kilograms per person per year. At the end year of 2022, BPS-Statistics Indonesia reported the chicken meat production in Indonesia reached 3.42 million tons. According to Ferlito and Respatiadi (2018) Indonesian poultry industry is a key sector of national economy, supplying 65% of all animal protein. Even though the market industry is strongly positive, the price of meat and eggs are consistently higher than in Europe and America.

Broiler chicken, commonly known as broilers, is the type of chicken that is easy to maintain, fast growth, and inexpensive. The demand for broiler consumption increases every

year in Indonesia because, in addition to the majority of the population being Muslim (Agus and Widi, 2018), it is also cheaper than other livestock meat. Selection criteria for broiler chickens have been adapted over decades according to the evolution of the market demand for chicken meat, and there has been a quick transition in recent decades to industrialization of poultry production (Pettracci et al., 2017). Broiler was chosen because it has a high final body weight output with short maintenance. Farida et al. (2022) reported the body weight of broiler chickens is important in accordance with the type (strain) of DOC. The farmers are most interested in maintaining Cobb Strain because it has the lowest cost of live weight production, superior performance on low cost feed rations, is most feed efficient, has an excellent growth rate and can reach body weight of 2 kg within 35 days (Vantress, 2018).

Recently, broiler are bred for rapid growth to attain mature body size within 4-7 weeks with good carcass quality. Meat quality of broiler contains low cholesterol and fat content than red meat (Farrell, 2013). There are some factors such as strain, temperature, diet content, age and sex that affect performance, meat quality and physiology of the chicken (Erwan et al. 2009, 2011; Erwan et al. 2014; Ikusika et al. 2020). Previous research reported that sex affects carcass characteristic of broiler chicken and average daily weight gain (Olawumi and Fagbualo, 2011). Furthermore, different author reported sex of different strains such as Ross, Anak and Aboaca affect significantly to final body weight and slaughter weight ().

Murawska (2017) reported the age was the selection progress in meat-type poultry (turkeys and broiler chicken) contributed to an increase their body weight and improved carcass composition and percentage. Furthermore, research reports that Cobb Slow strain had maximum growth between 33 and 35 days and started getting low at 42 days (Fernandes et al., 2013). Thus, in the slaughter at 43 days old, a better yield was registered for Cobb breeds (Pascalau et al., 2017).

Based on the previous research, no research has been carried out related to the slaughter age and sex of Broilers Cobb on live body weight, carcass weight and carcass percentage of 4 weeks to 6 weeks.. This study aimed to compare the effect of slaughter age and sex of broiler strain Cobb on live body weight (LBW), the carcass weight (CW) and carcass percentage (CP).

MATERIALS AND METHODS

This experiment was conducted at Experimental Laboratory of the Brahmputra Animal Husbandry Academy, Yogyakarta. All the procedures of management from chick-in to

slaughter time were approved by The Institution of Research and Community Services of APB.

This research used 4 to 6-weeks old broiler strain Cobb (male and female) from 100 birds. Prior to slaughter, all broilers were evaluated for live body weight (LBW). At the time of slaughter, the broiler was evaluated for carcass weight (CW) and carcass percentage (CP).

Broiler were distributed to completely randomized design in factorial scheme (4, 5 and 6 weeks old) and two sexes (male and female). All of evaluated were live body weight (LBW), carcass weight (CW), and carcass percentage (CP). The data were analyzed statistically using Two Way analysis of variance (ANOVA) using SPSS with 5 replications. Duncan Multiple Range Test (DMRT) was used to determine the differences among treatments.

RESULT AND DISCUSSION

Live Body Weight

Live body weight (LBW) was heritable, vary with age and strain. The different sexing of birds and different ages effect on LBW of this experimental broiler was depicted in Table 2. There is no significant effect difference in the sexing of LBW, but female broilers (1.840 g) tend to have lower LBW compared to male broilers (1.943 g). There are some factors that affect LBW such as diet content, strain, and sex. The diet content and strain used in this experiment were the same as all treatment, the Strain Cobb. Previous research used different strain (Ross, Aboaca and Anak) to analyze the feed intake (FI) and Final body weight (FWG). The result showed that female broilers had higher average BW and higher average daily FI ($P < 0.05$) and indicated impact of growth hormones and fatness in female chicken (Ikusika et al., 2020).

Table 1. Live Body Weight (g) of broiler pre slaughter

Sex	Slaughter age (weeks)			Mean ^{ns}
	4	5	6	
M	1.508±59.44	1.961±201.2	2.360±190.9	1.943±390.96
F	1.460±263.84	1800±221.6	2.260±101.9	1.840±153.5
Mean	1.484 ^a ±182.1	1.881 ^b ±216.6	2.310 ^c ±153.5	1.891±387.27

^{a,b,c}: Different superscripts on the same row indicated significant differences (P <0.05).

M: male; F: female.

This research was not the same as the other author (Benyi et al., 2015). It was reported that there is a significant effect of sex to final body weight. At 7 days old, the male chicks were consumed more feed and inefficiently weight gain more. Whereas, the slaughter age (4, 5, and 6 weeks) affect to BW (P<0.05), BW pre slaughter of of this research was increase at 4 weeks old to 6 weeks old (Table 1), which range from 484 g to 2.310 g. It was indicated that broiler chicken, especially Strain Cobb, had the ability to eat more. It will cause the increase of BW with increasing age. This research is different from previous research, which stated that LBW accumulations during 21-28 days were 532.13 and get decreased in time period at 35 days was 498.34 g (Pascalau et al., 2017).

Carcass weight

Table 2. Carcass weight (g) of different sexing and slaughter age

Sex	Slaughter age (weeks)			Mean ^{ns}
	4	5	6	
M	1.061 ± 60.4	1.357 ± 140.5	1.431 ± 161.6	1.283 ± 203.67
F	1.041 ± 178.9	1.260 ± 146.8	1.370 ± 50.8	1.223 ± 190.1
Mean	1.051 ^a ± 126.3	1.308 ^b ± 144.7	1.400 ^b ± 117.3	1.253 ± 195.8

^{a,b}: Different superscripts on the same row indicated significant differences (P <0.05).

M : male ; F : female.

Slaughter ages of this research affect (P<0.05) carcass weight. Six week old chicken gained high carcass weight (1.400) . (The increased slaughter age than increase carcass weight). The increased of CW was related to BW, which means the higher the feed requirement when broiler age increased, then the BW will be..? (Table 1) and the higher carcass slaughter time. The increase of BW affect positively on CW

Poultry carcasses, especially chicken, were mostly traded as a commodity. It was sold as an overall form chicken without feathers, head, and legs (Hafid, 2022). In this study, there was no significant (P<0.05) effect of different sexing to CW (Table 3). But the male broiler had higher carcass weight (1.283 g) than female broiler (1.223 g). The same finding research of Olawumi & Fagbuaro (2011) reported that male broiler had higher mean values (?) than female broiler. The dressing out weight, dressing weight, muscle and drumstick percentage (Indra et al., 2015). Sexes influenced the carcass characteristic of broiler with males having smaller back weight and greater drumstick weight. The higher of male carcass weight is indicated by differences in feed metabolism and fattening.

and other organs of livestock (Hafid, 2022). BW affected by the age which older animals will achieve heavier CW than younger ones (Walita et al., 2017). Even the market demand for broilers was increasing so that the CW above 1.253 could fulfill the market need starting with 28 days of slaughter age. Murawska (2017) stated that broiler chickens intended for grilling, with

carcass weight of approximately 1 kg, can be slaughtered at 28 days of age.

Carcass percentage

Sexing differences did not have significantly effect on CP in this research. Female broilers has higher CP (70 %) compared to male broiler (69.43%). . The percentage of broiler carcass varies around 65% - 75% of BW. The increased of BW could increased CW. In this research, CP was around 68 % - 71 % (Table 3).

The highest BW of broilers is owned by F broiler so that affected to CP, besides the F broilers also have higher CW (Table 2). This is evidenced by BW of F broiler which is 2.310 g produced of 70% CP, while the M broiler contains 1.9300 g BW produced of 69.43% CP. Hafid (2022) stated that sex factor was influenced by livestock performance such as cattle, broilers, and layers. This influenced on body tissues, and affect on carcass percentage as well as gender differences growth rate in sex.

Table 3. Carcass percentage (%) broiler of different sexing and slaughter age

Sexing	Slaughter age (weeks)			Mean ^{ns}
	4	5	6	
M	69.19 ± 0.84	68.81 ± 1.09	70.31 ± 1.29	69.43 ± 1.21
F	69.89 ± 2.93	69.20 ± 2.38	71.37 ± 1.24	70.15 ± 2.32
Mean	69.54 ^{ab} ±2.1	69.79 ^a ±1.85	70.84 ^b ± 1.32	69.79 ± 1.86

^{a,b}: Different superscripts on the same row indicated significant differences (P <0.05).

M : male ; F : female.

Table 3 the result of slaughter age to CP showed significant difference (<P.0.05) at the age of 4, 5, and 6 weeks was 69.54%, 69.79%, 70.84%, respectively. At the slaughter age of 4 weeks the CP was tends to decrease but it increased in the slaughter age of 5 and 6 weeks . This research was different from the other research (Widnyana et al., 2019). The carcass percentage given turmeric on their feeds at 5 weeks old give insignificantly effect to the carcass percentage. At the sixth (60) weeks old the CP of broiler getting higher than 4 and 5 weeks old because the age of rearing chicken broiler was longer so it indicated that the fed more than. This is evidenced by very high BW (2.320 g) and CW (1.400) at sixth week old. Meat broilers usually slaughtered at 32 - 40 days old, if it is too long it may increase maintenance cost as well especially feed management.

CONCLUSION

This research can be concluded that differences in sexing did not affect body weight

(1.891 g), carcass weight (1.253 g) and carcass percentage (69.79%), but the female broiler get higher than male broiler. Thus, slaughter age affect (P<0.05) body weight, carcass weight and carcass percentage, at 4 weeks old was tend to decrease but increase at 5 weeks and 6 weeks old. The best body weight, carcass weight and carcass percentage at 5 weeks old, according to market demand.

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