Crossbreed broilers performance raised at different cages density

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Abstract. Optimal growth in chickens is closely related to the level of density in the cage. This study aims to identify the optimal level of density needed by chickens from the cross between Broiler and Kampung chickens. This research was conducted in February to June 2019, in the Livestock Laboratory, Faculty of Agriculture, Al Asyariah University Polewali Mandar. This study uses a randomized block design study to see the performance of Broiler Kampung crossbreed chickens at various levels of cage density. This study was divided into 3 treatment groups with each group having different levels of density namely P0 containing 8 chickens, P1 containing 10 chickens, and P2 containing 12 chickens in it. Chicken kept in cages with a size of 1x1 m. The result of the research has given more space for stock was impact (P<0.05) to feed consumption, increasing the stock body weight, and feed conversion. Feed consumption was lower for P0 treatment and it is 974.53 gr/bird and the higher is P2 (1379.29 g/bird). Increasing the stock body weight for P0 is 1334.77 gr/bird and the lower for P2 is 1237.54 g/bird. And the following conversion to P0 is 0.73 and the optimal to P2 is (1.11 g/bird). Accordingly, the result of this research is as the conclusion for better treatment is P0 as you see by lowering consumption, increases the maximum stock body weight and lowering conversion.

1. Introduction
Local chickens are the typical Indonesia’s birds and they breeded by Red Jungle Fowl (Gallus gallus), and as we know it has a special meat superiority. Those birds are good adapted in a new environment, resist the disease and weathers comparing to broilers [1]. Local chicken consumption was increased in 2001–2005 in the amount of 4.5% (1.49 million ton) and in 2005 – 2009 was increased 1.52 million ton. Local chickens production in Indonesia is lowering and it is caused to not able to put Indonesians needs in domestic markets. Broilers superiorities is growing faster and stocking in a short time. The broilers genetic superiorities were giving good performance to produce maximum stock comparing the local chickens. To reform the local chickens qualities is able to increase by interbreed between local chickens and broilers parent stock. Hopefully it will attained chickens meat productions and tender chickens meat on endurance system directed with high temperatures room. Interbreed [2] between Pelung chickens and

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broilers parent stock were generated better chickens breed. Rates the result of the interbreed chickens body weight in 7 weeks is 1.200 g. Interbreed chickens meat have the best quality compared the broilers [3].

Besides, the factors of genetics and forages is also coop maintenance to consider a good chickens performance and the benefits. Optimal chickens to coop density was caused in decreased chickens body weight was comparing the lowering chickens to coop density. [4] said forages losses the chickens body weight, increases the mortality, and ammonia, reduces the air in the room and got into stress. Nevertheless, the aim of the research is analysing chickens to coop density levels to performance interbreed between local chickens and broiler chickens.

2. Materials and methods

2.1. Research time and location
The research was conducted from February to June 2019, in the Livestock Laboratory, Faculty of Agriculture, Al Asyariah Polewali Mandar University, West Sulawesi.

2.2. Research materials
Substances used eggs from interbreed between local chickens and broiler chickens parent stock, alcohols 70%, an egg drill tool, an egg binoculars, an analitic scale, a hand sprayer 500 mL, a digital thermometre, automatic injections device 1 mL, waterer space and feeder space.

2.3. Research design
The research processing is involve the experiment design by using group random design in treatment of the interbreed chickens to coop density devided in three groups and each one devided in 3 groups and each one has 8, 10 and 12 chickens in it. The replication for each experimental were three giving total experimental unit.

2.4. Research procedure

2.4.1. The coop maintenance. 90 chicks DOC are putting them in randomly to twelve bamboo swatch (pen) and sawdust space is long x width x high (1 x 1 x 0.5 m) spray the pen with the hand sprayer. Each pen is filling suitable treatments mixing sex. Put on the lamp 60 watt for every coop, feeder spaces, waterer spaces, and fabric to cover up the coop. During the maintenance (10 weeks) the fount drinker is using the well after pouring clorination at first and give in ad libitum in twice a day in the morning and the noon. Use the local forage and give in ad libitum.

2.5. The measures parametres
The measure parametres are egg hatchabilities (%) egg weights (g) feed consumption (g/bird/day), feed conversion, and chicks weekly body weight (g/bird).

2.6. Data analysis
Get the data and analyse it in random as complete random design, if the treatment showing the impact as well take the next step for a Duncan experiments.

3. Results and discussion
Optimal chickens to coop density giving an impact to feed consumption, increases the stock body weight and feed conversion to interbreed chicks between local chicken and broiler chickens, take a look the table 1.
Table 1. Rates of the feed consumption, increase the stock body weight and feed conversion broiler local chickens

| Treatment | Feed consumption | Variable          | Feed conversion |
|-----------|------------------|-------------------|-----------------|
|           |                  | ADG (g/bird)      |                 |
| P0        | 974.53 ± 0.31    | 1334.77 ± 11.93   | 0.73 ± 0.006    |
| P1        | 1217.34 ± 0.30   | 1330.50 ± 8.44    | 0.91 ± 0.006    |
| P2        | 1379.29 ± 1.60   | 1237.54 ± 11.48   | 1.11 ± 0.010    |

Note: P0: chickens to coop density 8 birds/m², P1: chickens to coop density 10 birds/m², P2: chickens to coop density 12 birds/m²

Feed consumption is how much forage has given and substract the rest or numbers is showing total rates of forage has eaten by a chicken as long as the breeding period. [5] feed consumption is lower to P0 treatment was 974.53 g/head and the P2 has higher compared the others. P0 was lowing consumption because the feed consumption has saved in the chickens body weight. P2 treatment is higher feed to convert in metabolism and energy. This is showing as long as optimal chickens to coop density as much as consumption. The chickens ate. [6] said that incapacious width of the floor, then total numbers of forage has eaten also less. And mot much feed consumption left is caused by increasing the temperatures room around 31– 35°C, and its making the stock in stress when the stock in stress, activate the neurogenic system in towards [7], in the alarm phase was showing by high blood pressure, muscle problems, nerve sensitive, blood sugar increased, and respiration. According to [8] optimal chickens to coop density was caused high temperatures room by heat and metabolism of chickens Please follow these instructions as carefully as possible so all articles within a conference have the same style to the title page. This paragraph follows a section title so it should not be indented.

Figure 1. Average weekly feed consumption (g/head)

The lower the cage the weight gain can be seen in table 1, that is the treatment of P0 is significantly higher than P2 and the same as P1, this is due to the more dense the cage the higher the room temperature so that part of the consumption is converted into energy for maintenance needs. If the livestock energy needs are fulfilled, consumption will be small and vice versa [9]. Reported that the consumption of feed from the three treatments of the same stable cage was around 54428.13-5463.68 g/bird to produce a
body weight of 2375.27-2565.75 g/bird [10]. In line with the opinion of [11] that the purpose of livestock consuming rations is to maintain life, increase body weight, and to produce, therefore rations containing inadequate nutrition will produce deficiencies that disrupt body weight. This is also in line with what was reported by [12] which states that the level of protein energy in feed is a limitation in the growth and efficiency of feed use. In addition, the high density of livestock causes PBB chicken is smaller compared to low livestock density. [6] state that the area of the cage floor is a factor that is inversely proportional to the growth and conversion of feed. The higher the density of cages per unit area, the worse the growth and conversion of feed. Cages that are too dense will cause stress in the chicken so that it will also affect the growth of body weight. [13], reported consumption of native chicken feed of 3864 g/head to produce 900 g/head body weight and 4.3 feed conversion during ten weeks of maintenance. This shows that the performance of broiler native chickens is better than Kampung chicken.

The value of feed conversion in the P0 treatment shows a better value than the other treatments because the body weight gain has a higher value of 1.11 while the feed consumption has a value of 0.73. The smaller the value of ration conversion, the better the efficiency of ration, while the greater the value of ration conversion, the ration efficiency will be smaller. Much different from the results of [14] Conversion of native broiler Chicke feed is not much different from broiler chickens aged six weeks by 2.2. Feed conversion can be used as a picture of production efficiency. Small feed conversion rates mean that the amount of rations used to produce one kilogram of meat is getting less [15]. Feed conversion rates are minimally influenced by three factors, namely feed quality, feeding techniques and mortality rates [16]. It was known during the study, none of the experimental chickens experienced pain or other obstacles that could cause death. The efficiency of ration use is interrelated with ration consumption and body weight gain, but high ration consumption is not always followed by high ration usage. Feed efficiency is the ability of rations consumed in a certain time to produce the weight of a livestock in the same time [17]

4. Conclusion
The results showed that the cage had a significant influence on feed consumption, bodyweight gain and feed conversion in Broiler Kampung crosses. The best density is P0 with low consumption (974.53 g /bird), high bodyweight gain (1334 g/bird) and feed conversion (0.73 g/bird)
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