

EFFECT OF THE USE OF INFERTIL EGGS IN FEED ON CUT WEIGHT, CARCASS WEIGHT, PERCENTAGE CARCASS AND NON CARCASE PERCENTAGE ON SUPER NATIVE CHICKEN

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ABSTRACT

This study aimed to determine the effect of infertile eggs in the feed on slaughter weight, carcass quality and non-carcass quality in super native chickens. A total of 40 super-male chickens aged eight weeks were used in this study. The design of this study used a completely randomized design with a unidirectional pattern with 4 treatments and 5 replications. The treatments in this study included: P0 (100% basal feed without additional infertile eggs); P1 (basal feed 96,7% + 3,3% infertile eggs); P2 (basa feed 93,4% + 6,6% infertile eggs) and P3 (basal feed 90,1% + 9,9% infertile eggs). The data were analyzed using the unidirectional analysis of variance (ANOVA), if significant results were obtained, they would be tested using Duncan's Multiple Range Test (DMRT). The results showed that the use of infertile eggs into the feed up to a level of 9.9% could increase the slaughter weight, carcass weight and carcass percentage ($P < 0.05$). The addition of infertile eggs up to the level of 9.9% can also reduce the percentage of non-carcasses in super native chickens ($P < 0.05$). The conclusion of this study is that infertile eggs can be used as feed ingredients for feed up to a level of 9.9% to increase slaughter weight, carcass weight, carcass percentage and can reduce the percentage of non-carcass in super native chickens.

Keyword: carcass weight, infertile egg, percentage of carcass and noncarcass, slaughter weight, super native chickens

1. Introduction

Substantive increase in the demand for super native chickens' meat has occurred in the last few years. In the farm operational cost, considerable high feed cost is a major constrain, making the business process less competitive. Therefore, there is a gaining interest to formulate kampung chickens' feed with a specialized diet using the most economical value to have more profit. A large quantity of infertile eggs from hatchery processing has received researchers' interest to utilize it as an alternative protein source. It is especially important to partially replace soybean meal since Indonesia most totally depends on importation for this ingredient. Therefore, utilization locally available resources such as infertile eggs as protein sources is a correct strategy to create sustainable feeding more efficiently.

Hatchery by-products including infertile eggs contain >30% crude protein, making this ingredient valuable to be included in feed formula. A number of previous experiments have demonstrated that the inclusion of infertile eggs or whole hatchery by-products could enhance the productive performance of broiler chickens. For instance, the inclusion of 4-6% egg powder in the broiler diet resulted in higher daily gain, better feed conversion, and healthier intestinal status. To support a higher growth rate, it is important

to provide kampung chickens with an easily digestible ingredient such as infertile egg powder. The provision of such ingredients is hypothesized to beneficially enhance the slaughter weight and carcass weight of super native chickens as well as enhance immunity because it has natural protein which acts as an immunomodulator. Therefore, the present study intended to evaluate dietary levels of infertile egg powder on the production slaughter weight and carcass weight of super native chickens at 8 weeks of rearing period.

2. Material and Methods

2.1 Animals, Experimental Design and Diet Formulation

The experiment was conducted in the experimental farm of the Department of Animal Science, Universitas Sebelas Maret, Indonesia. All facilities were provided to meet the standard of animal welfare including space, ventilation, lighting, drinking water, and security. In total, 40 male of Indonesian native chickens at 8 weeks.

Table 1. Chemical composition of infertile eggs powder*

Parameters	Composition
Crude protein (%)	48.38
Crude fiber (%)	0.87
Ether extract (%)	35.36
Calcium (%)	0.32
Phosphorus (%)	0.63
ME (Kcal/kg)	5.667,7

*) Calculated according to Sibbald et al

Table 2. Diet composition of the treatment groups in starter and finisher

Chemical composition	Starter	Finisher			
		CON	IEP 3,3%	IEP 6,6%	IEP 9,9%
Metabolizable energy (Kcal/kg)	3051	2900	2900	2904	2995
Crude protein	21,21	18	18	18	18
Crude fiber	3,28	3,58	3,67	3,76	3,82
Ether extract	4,07	7,79	7,30	6,90	8,25
Calcium	1,09	1,05	1,05	1,05	1,06
Available phosphorus	0,43	0,72	0,75	0,77	0,80

The treatments were according to the inclusion levels of infertile eggs (IE) in formula (CON = without IE; T1 = inclusion of 10% of IE; and T2 = inclusion of 20% of IE; and T3 = inclusion of 30% of IE in the formulated diets). Infertile eggs were obtained from a commercial hatchery located in Boyolali, Central Java, Indonesia.

2.2 Sample Collection

Slaughter weight and carcass weight data were collected when super male free-range chickens were 8 weeks old. Cutting the sample as much as 2 tails for each replication so that the whole super free-range chicken is cut totaling 40 tails. Slaughter of super free-range chicken begins with fasting for 12 hours to empty food in the digestive tract. The process of slaughtering super free-range chickens is done by cutting the carotid artery, jugular vein, trachea, and esophagus. Super free-range chicken that has been slaughtered is put into water for 120 seconds at a temperature of 60°C. The chicken is then removed and put into a feather plucking machine to remove the feathers. The clean chicken is then separated between the carcass and non-carcass parts and weighs then records the results of the weighing.

2.3 Statistical Analysis

The data obtained in this study were analyzed using analysis of variance based on a completely randomized design (CRD) with a unidirectional pattern to determine the effect of treatment on the observed variables. If the results of the data analysis are significantly different, it is continued with Duncan's Multiple Range Test (DMRT) to determine the difference between the four treatments.

3. Result and Discuccion

Proximate analysis showed that IEP used in the present study (Table 1) was comparable with previous studies reporting the chemical composition of infertile eggs from the hatchery processing industry. Data on super native Chickens' are presented in Table 3. Increasing dietary IEP to partially replace SBM affected on slaughter weight and carcass weight measured at 8 weeks

($p < 0.05$) whereas increasing IEP proportion up to 20% increased slaughter weight and carcass weight.

Table 3. Average slaughter weight, carcass weight, carcass percentage and non-carcass percentage of super free-range chickens

Variables	Teratments				P Values
	P0	P1	P2	P3	
Slaughter Weigt (g)	687 $\pm$ 26,65 ^a	989 $\pm$ 68,86 ^c	953 $\pm$ 67,30 ^{bc}	892,5 $\pm$ 72,58 ^b	0,000
Carcass weight (g)	406 $\pm$ 21,99 ^a	620,5 $\pm$ 54,13 ^c	591 $\pm$ 58,72 ^{bc}	543,97 $\pm$ 46,86 ^b	0,000
Noncarcass weight (g)	226,6 $\pm$ 3,99 ^a	293 $\pm$ 12,98 ^b	284,4 $\pm$ 20,91 ^b	285,9 $\pm$ 18,76 ^b	0,000
Persentase carcass (%)	59,12 $\pm$ 1,44 ^a	62,68 $\pm$ 1,60 ^b	61,92 $\pm$ 1,89 ^b	60,93 $\pm$ 0,66 ^{ab}	0,009
Persentase noncarcass (%)	33,03 $\pm$ 1,39 ^a	29,68 $\pm$ 1,43 ^b	29,86 $\pm$ 1,15 ^b	32,07 $\pm$ 1,12 ^a	0,001

3.1 slaughter Weight

The results of the study adding infertile eggs to the level of 9.9% in the ration showed significantly different results ($P < 0.05$) on the slaughter weight of super-male chickens aged 8 weeks. The results of the follow-up test (DMRT) treatment of P0 with P1, P2 and P3 showed significantly different results ($P < 0.05$). This shows that super free-range chickens fed with treatment have a higher slaughter weight than super free-range chickens without treatment. The results of the follow-up test (DMRT) for P1 and P3 treatments showed significantly different results ($P < 0.05$). P1 gives a higher cutting weight gain than P3. This is presumably due to the consumption of livestock ration P1 which is 1887.2 g which is higher than P3 which is 1865.7 g, besides that there is also a limitation of protein that can be utilized by the animal's body. Protein that is not utilized by the animal's body will be wasted through excreta. This is reinforced by the opinion of Suprijatna et al (2005) which states that excess protein consumption will be disposed of in the form of nitrogen excretion through excreta.

3.2 carcass weight

The results of the study adding infertile eggs up to 9.9% in the ration showed significantly different results ($P < 0.05$) on the carcass weight of super-male chickens aged 8 weeks. The results of the follow-up test (DMRT) treatment of P0 with P1, P2 and P3 showed significantly different results ($P < 0.05$). The carcass weight produced from super free-range chickens fed the treatment feed was higher than that without the treatment feed. Another factor that causes an increase in carcass weight is the protein

content in infertile eggs which is still relatively high, thus increasing the protein content in the ration. Munira et al (2016) stated that one of the elements that influence the formation of carcasses is protein. The protein content in the ration is needed for tissue formation.

3.3 Percentage of Carcass

The results of the study adding infertile eggs to the level of 9.9% in the ration of super free-range chickens showed significantly different results ($P<0.05$) to the percentage of carcasses of super-male chickens aged 8 weeks. The results of the follow-up test (DMRT) treatment of P0 with P1, P2 and P3 showed significantly different results ($P<0.05$). The percentage of carcasses that were given a treatment ration was higher when compared to those without a treatment ration. This is presumably because the value of slaughter weight and carcass weight of super free-range chickens that were given treatment rations increased. This agrees with Mairizal (2000) who stated that the high carcass percentage was caused by the larger carcass weight obtained, because it was supported by better thigh and chest muscle meat.

3.4 Percentage Of Noncarcass

The results of the study adding infertile eggs to the level of 9.9% in the ration of super free-range chickens showed significantly different results ($P<0.05$) from the percentage of non-carcasses in 8-week-old super-male chickens. The results of the follow-up test (DMRT) treatment of P0 with P1, P2 and P3 showed significantly different results ($P<0.05$). The results of the follow-up test (DMRT) of treatment P1 and P2 with P3 showed significantly different results ($P<0.05$). This is presumably because the percentage of carcass produced increases, if the percentage of carcass increases, the percentage of noncarcasses will decrease. In the opinion of Retnani (2009) which states that the percentage of non-carcass produced from the slaughter will be inversely proportional to the percentage of carcass produced from the slaughter, if the percentage of carcass produced is of high value, the percentage of non-carcass is of lower value.

4. Conclusion

In conclusion, the present study suggests that infertile eggs powder can be partially used to substitute conventional protein sources in super native chickens. the use of infertile eggs in the ration of super free-range chickens can increase the slaughter weight, carcass weight and carcass percentage, and can reduce the percentage of non-carcass. This shows that infertile eggs can be used as ingredients for the preparation of super-range chicken rations with the use of up to 9.9% in the ration.

5. Reference

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