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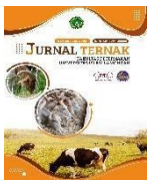

Analysis Of Productivity Of Chickens Male Layer Resulting From Substitution Of Maggot Flour And Corn

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ABSTRACT

The purpose of this study was to analyze the productivity of layer roosters related to feed consumption, body weight gain (PBB), feed conversion ratio (FCR), carcass weight and income over feed cost (IOFC). The materials used in this study were finisher phase layer roosters (aged 22 days to 60 days). The method used was experimental method using Randomized Block Design (RBD) with 4 treatments and 4 groups, each group consisted of 9 chickens and the total sample used was 144 finisher phase layer roosters (22 days old). The treatments given were P1 = 100% commercial feed, P2 = 80% commercial feed plus 20% BSF (Black Soldier Fly) maggot flour and corn, P3 = 70% commercial feed plus 30% BSF (Black Soldier Fly) maggot flour and corn, P4 = 60% commercial feed plus 40% BSF (Black Soldier Fly) maggot flour and corn. The results showed that the use of maggot BSF (Black Soldier Fly) flour substitution feed and corn had a very significant effect (P<0.01) on feed consumption and income over feed cost (IOFC), but did not show a significant effect (P>0.05) on body weight gain, feed conversion ratio, and carcass weight. The conclusion of this research is that substitution feed meal maggot BSF (Black Soldier Fly) and corn can increase the productivity of layer roosters seen from the amount of feed consumption decreased by 6.6% to 8.4% followed by an increase in income over feed cost by 19.11% to 34.28%. The suggestion of this research is the use of maggot BSF (Black Soldier Fly) and corn substitution feed can be used up to 40% with 60% commercial feed.

Introduction

The purpose of laying hen farming is to produce eggs and female chicks, male chicks produced by laying hens become waste production that will be used for other purposes. According to Wiyono, et al. (2012), male laying hens are currently used as a substitute product for native chickens because the texture and taste resemble native chickens. In addition, the price of chicks or day old chicks (DOC) is cheaper and the maintenance time is shorter, their growth is faster so they can be harvested at the age of 7 to 8 weeks, and their selling price is relatively more stable and higher compared to broiler chickens.

To support livestock productivity needs, and minimize feed costs, in order to obtain maximum profit. of course it is necessary to make efforts to find alternative feed ingredients that are cheaper, easier to obtain, and nutritious, but do not compete with human needs. The use of insects as a source of animal protein has been studied by experts around the world. According to (Van Huis, 2013), protein obtained

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from insects has a large feed conversion efficiency and can be maintained continuously. Another very advantageous factor is that insect-based protein sources do not compete with human food, so they are very suitable for use as animal feed, especially poultry.

Black Soldier Fly (BSF) maggots are one of the high animal protein sources because they contain a protein range of 40% - 50%. Based on the results of the identification of the nutritional content of maggots that have been carried out. According to (Murtidjo, 2001) it is stated that food ingredients containing more than 19% crude protein are classified as protein source foods. The advantage of using BSF maggots is that they have a protein content almost the same as fish meal, BSF maggots also have the potential as a source of animal protein for animal feed. In connection with the description above, it is necessary to conduct research on the Analysis of the productivity of layer male chickens from the substitution of maggot and corn flour.

Material And Method

Material

The material to be used in this study was 144 22-day-old or male layer chickens in the finisher phase. The feed ingredients used were commercial feed, BSF (Black Soldier Fly) flour, and corn, the composition of the treatment feed used was, P1 = 100% Commercial feed, P2 = 80% Commercial feed plus 20% BSF (Black Soldier Fly) maggot flour and corn, P3 = 70% Commercial feed plus 30% BSF (Black Soldier Fly) maggot flour and corn, P4 = 60% Commercial feed plus 40% BSF (Black Soldier Fly) maggot flour and corn. The following is a table of nutrient content for each treatment:

Table 1. Nutrient content of feed for each treatment in the study. Food Substances P1 P2 P3 P4

Food Substances	P1	P2	P3	P4
Metabolism Energy	3200.00	3315.40	3373.10	3430.80
Protein (%)	19.00	19.00	19.00	19.00
Fat (%)	4.00	4.34	4.51	4.68
Crude Fiber (%)	4.50	3.93	3.65	3.37
Calcium (Ca, %)	1.00	2.35	3.02	3.69
Phosphorus (P, %)	0.70	1.04	1.21	1.38

Based on Calculation.

Method

This study was conducted using an experimental method, using a Randomized Block Design (RAK). Consisting of 4 treatments and 4 groups, and each group consisted of 9 chickens and a total of 144 22-day-old male layer chickens used in the study and analyzed at 60 days of age (harvest period).

The results of observations of the variables in this study were analyzed using the ANOVA (Analysis of Variance) test. If there are results that have a very real or real effect, it will be continued with the BNT (Smallest Significant Difference) test to determine the differences between treatments as well as to select the most optimal treatment.

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Results and Discussion

Productivity Analysis of Feed Consumption of Layer Roosters

Based on the analysis of variance, it shows that the level of substitution feed of BSF maggot flour and corn shows a very significant effect (P <0.01) on feed consumption of layer roosters in the finisher period aged 22 - 60 days. From the results of the average calculation of feed consumption for 38 days, it can be seen in the following table:

Table 2. Average Feed Consumption (grams/head).

Treatment	Feed Consumption (g/head)	VP	Range
P4	1206.25^{a} ± 5.55	335778.25	12.00
P3	1207.75^{a} ± 6.80	336613.86	19.00
P2	1208.50^{a} ± 5.02	337032.06	13.00
P1	1216.50^{b} ± 1.66	341508.98	4.00

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Note: Different letters in the same column indicate very significant differences. Table 2 shows the difference in average feed consumption in each treatment, namely P1 = 1216.50 grams, P2 = 1208.80 grams, P3 = 1207.75 grams, and P4 = 1206.25 grams. The research data shows a very significant effect (P <0.01). The effect of using BSF (Black Soldier Fly) maggot and corn substitute feed can be due to differences in energy in the feed for each treatment. As in table 1. P1 = 3200.00, P2 = 3315.40 with BSF (Black Soldier Fly) maggot and corn substitution feed of 20%, P3 = 3373.10 with BSF (Black Soldier Fly) maggot and corn substitution feed of 30%, and P4 = 3430.80 with BSF (Black Soldier Fly) maggot and corn substitution feed of 40%. Based on the research results obtained, it agrees with Wahju (2004) if the energy in the feed consumed is less than its needs, then feed consumption will be high, while if the energy needs exceed the needs, then feed consumption will be low. When the chicken's energy needs are met in the ration, the chicken will generally stop consuming feed.

According to Rasyaf, (2006), the standard feed consumption for chickens in the finisher period aged (21-55 days) is 66-161 grams/day/head per day. In this study, the feed consumption figure during the study (38 days) was below the standard, namely 31-32 grams/day/head, while in the Nova study (2017) the feed consumption of medium-type male chickens aged 0 to 7 weeks used up 1,638 kg/head. This is because the high metabolic energy in the P2, P3, and P4 treatments makes the metabolic energy needs sufficient so that it stops feed consumption and is added to the influence of environmental temperatures of 29oC to 34oC and is followed by livestock spending more drinking water than feed.

According to Newton, et al (2005), substitution of 50-75% fish meal with BSF (Black Soldier Fly) maggot meal gave a positive response to production, feed consumption levels and feed conversion. This is understandable because BSF (Black Soldier Fly) maggot meal has protein with amino acid characteristics that are relatively the same as fish meal. The use of a 20% protein level in feed gave the highest results, namely feed consumption of 2066.83 ± 78.91 grams/head. This difference occurs because the use of different feed ingredients has an impact on the energy and palatability of these two studies. So that the average feed consumption produced is also different. (Pangestu, 2018).

Productivity Analysis of Body Weight Gain (PBB)

Based on the analysis of variance, it shows that the level of BSF maggot meal and corn substitution feed has no significant effect (P> 0.05) on the weight gain of male layer chickens in the finisher period aged 22 - 60 days. From the results of the average calculation of body weight gain for 38 days, it can be seen in the following table:

Table 3. Average Body Weight Gain (grams/head).

Treatment	Body Weight Gain (g/head)	VP	Range
P1	518.06 ± 27.61	61934.21	68.67
P2	531.53 ± 15.93	65197.33	42.78
P3	539.94 ± 23.92	67278.46	55.78
P4	544.14 ± 15.38	68327.80	43.11

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Note. The data in this table was taken at the end of the harvesting process.

Table 3 shows the difference in average weight gain in each treatment, namely P1 = 518.06 grams, P2 = 531.53 grams, P3 = 539.94 grams, and P4 = 544.14 grams. From the research data, although the average weight obtained was different, the results based on the analysis of variance showed no significant effect (P> 0.05).

Genetic and environmental factors affect the rate of weight gain in chickens. According to Syahruddin et al. (2013) stated that at a temperature of 21 ℃ the weight gain in chickens is quite high, because chickens can consume feed optimally. This has an impact on the feed consumed by chickens being sufficient to meet all needs. In addition, environmental temperature directly affects the physiology of the chicken's body such as heart activity, breathing, blood circulation and body metabolism.

At the time of the study, the environmental temperature of the chicken coop ranged from 29 ℃ to 34 ℃, this affects feed consumption and has an effect on the weight gain in chickens. This is in accordance with Wijayanti (2011), that in the starter period, chickens need a higher temperature.

Conclusion

Substitute feed of BSF (Black Soldier Fly) maggot flour and corn can increase the productivity of layer male chickens as seen from the amount of feed consumption decreasing by 6.6% to 8.4% followed by an increase in income over feed cost by 19.11% to 34.28%.

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