Utilization of Vermicast as Supplementary Feeds for Hardening Darag Native Chicken

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Abstract

Native chicken meat has always been preferred by consumers over that of commercial broilers due to its unique taste, distinct flavor and texture, presence of nutraceutical compounds (functional food), and lower fat content. . It is understood that the greatest item of expenses in raising of birds is the cost of feeds. Thus, this study was conducted to evaluate the potential of vermicast as supplemental feeds in the growth performance of hardened Darag native chicken based on average feed consumption, gain in weight and feed conversion ratio. The study utilized four treatments with three replication: Treatment 1-100% pure commercial feeds; Treatment 2-95% pure commercial feeds mixed with 5% vermicast; Treatment 3-90% pure commercial feeds mixed with 10% vermicast; and Treatment 4- 85% pure commercial feeds mixed with 15% vermicast. A total of 60 heads of hardened Darag native chicken were used in the study. The study was conducted at the Darag Research Project of CapSU Dumarao funded by LRDC from January 2020 to March 2020. The study revealed that vermicast supplementation to hardened Darag native chicken feeds can improve the feed consumption, gain in weight and feed conversion ratio.

Keywords: Darag Native Chicken, Hardened, Supplements, Vermicast

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Introduction

Native chicken meat has always been preferred by consumers over that of commercial broilers due to its unique taste, distinct flavor and texture, presence of nutraceutical compounds (functional food), and lower fat content (DOST – PCAARRD, 2016).

A native chicken production is a popular business venture today, because it is organically raised animals. The organically raised animals are free from chemicals like antibiotics, and other poisonous substances, which are considered hazardous to human health. It is understood that the greatest item of expenses in raising of birds is the cost of feeds. Because of this, studies and researches have been conducted, particularly, on the use of feed ingredients or feedstuffs like vermicast. It is one way of reducing feed cost. Vermicast (worm castings) is the material deposited by the earthworms after the material passes through the digestive tract of the worm (worm manure). Worms, also known as "vermin" break down organic matter by consuming said matter after consumption they leave behind "castings" that are an excellent soil enhancer and bioactive high quality fertilizer for organic farming (https://www.kahariamfarms.com). Some animal raisers claimed that vermicast can be added up to10% in the diet of swine.

Hence, this study was done to determine the effect of vermicast on the poultry specifically on Darag chicken. The result of the study will give information on the beneficial effect of vermicast as supplementary feeds to chicken that may also lessen cost of production. This study was conducted to find out the growth performance of hardened Darag native chicken in terms of feed consumption, gain in weight and feed conversion ratio.

Materials and Methods

The materials used in the study includes sixty heads of hardened Darag native chicken, rearing house and pens, feeding and watering troughs, commercial feeds, weighing scale, vermicast, record book, camera.

Experimental Treatment. The study was composed of four treatments which consist of the following: Treatment 1-100% pure commercial feeds; Treatment 2-95% pure commercial feeds mixed with 5% vermicast; Treatment 3- 90% pure commercial feeds mixed with 10% vermicast; and Treatment 4- 85% pure commercial feeds mixed with 15% vermicast.

Experimental Design and Layout. The study was conducted in Completely Randomized Design (CRD). Experimental birds were divided into twelve groups that correspond to four treatments and three replications.

Vermicast Supplementation. Vermicast was taken from the vermiculture project of the research. The feeds were weighed before giving to the birds to

determine the daily feeds consumption and this was done twice a day (morning and afternoon feeding schedule). Vermicast were also weighed according to the amount required in each group of birds (treatment). Vermicast supplementation was given daily for the whole duration of the study (3 months).

Data Gathering

Feed Consumption (FC). This was determined by subtracting the weight of the left over feeds from weight of feeds given. This was done from the start of experimental feeding until the day of termination of the study.

Gain in Weight. This was determined by subtracting the final weight of birds (taken on the last day of the study) to the initial weight of the birds (taken on the start of the study).

Feed Conversion Ratio. Feed conversion ratio was obtained by dividing the average feed consumption by the average gain in weight.

Statistical Tools and Analysis

The data from the experiment was subjected to the Analysis of Variance (ANOVA) using (F-test) for Completely Randomized Design (CRD) and was interpreted at 5% level of significance. The Least Significant Difference (LSD) test was used in case of significant results.

Results and Discussion

Average Feed Consumption. The average feed consumption of Darag native chicken supplemented with vermicast range from 3332.65 grams to 3957.18 grams. Table 1 shows that chickens supplemented with 15% vermicast and 85% commercial feeds shows the highest feed consumption of 3957.18 grams, followed by chickens supplemented with 10% vermicast and 90% commercial feeds with 3828.30 grams and chickens with 5% vermicast and 95% commercial feeds with 3623.15 grams.

This result was significantly different from the Darag native chickens with no vermicast supplementation with average feed consumption of 3332.65 grams. Analysis of variance of the study further shows a highly significant results. This means that chickens supplemented with vermicast can increase the animals feed consumption.

This results conforms with the study of Bahdori et al., (2017) that vermicast supplementation can increase the feed intake of the experimental broiler chickens.

Table 1. Average feed consumption (g) of Darag native chicken as affected by different levels vermicast.

TREATMENT	REPLICATION 1	2	3	TOTAL	MEAN**
T1 - Pure Commercial Feeds	3300.00	3439.33	3258.61	9997.94	3332.65[b]
T2 – 5% vermicast + 95% CF	3430.00	3623.19	3816.26	10869.45	3623.15[a]
T3 – 10% vermicast + 90% CF	3760.08	3789.15	3935.66	11484.89	3828.30[a]
T4 – 15% vermicast + 85% CF	3912.56	4068.30	3890.70	11871.55	3957.18[a]
TOTAL				**44223.83**	**14741.28**

**Means with a different letter are significantly different.* *CV* - 5.10%

Average Gain in Weight. Table 2 presents the average gain in weight of Darag native supplemented with vermicast. The study showed that chicken supplemented with 10% vermicast and 90% commercial feeds showed the higher gain in weight of 914.0 grams, followed by chickens fed 15% vermicast and 85% commercial feeds with 847.9 grams and chicken fed with 5% vermicast and 95% commercial feeds with an average gain in weight of 817.2 grams. Lowest gain in weight was noted to native chicken that has no vermicast supplementation with 794.3 grams. Analysis of variance of the study however revealed that there was no significant difference on the average gain in weight of the native chicken supplemented with vermicast.

Table 2. Average gain in weight (g) of Darag native chicken as affected by different levels vermicast.

TREATMENT	REPLICATION 1	2	3	TOTAL	MEAN[ns]
T1 - Pure Commercial Feeds	780.0	747.0	856.0	2383.0	794.3
T2 – 5% vermicast + 95% CF	740.6	960.0	751.0	2451.6	817.2
T3 – 10% vermicast + 90% CF	947.0	843.0	952.0	2742.0	914.0
T4 – 15% vermicast + 85% CF	937.0	771.0	835.6	2543.6	847.9
TOTAL				**10,120.2**	**3373.4**

CV – 7.12%

Average Feed Conversion Ratio. Table 3 presents the average feed conversion ratio of Darag native chicken supplemented with vermicast. The result of the study showed that native chicken supplemented with 10% vermicast and 90% commercial feeds get the lower FCR of 4.20%, followed by native chicken under the control group with an FCR of 4.21% and native chicken supplemented with 5% vermicast and 95% commercial feeds with and average FCR of 4.49%. High FCR value was noted from native chicken supplemented with 15% vermicast and 85% commercial feeds with an average of 4.70%. Analysis of variance of the study however showed no significant difference in the average feed conversion of the Darag native chicken supplemented with vermicast.

Table 3. Average feed conversion ratio (%) of Darag native chicken as affected by different levels vermicast.

TREATMENT	REPLICATION 1	2	3	TOTAL	MEAN^{ns}
T1 - Pure Commercial Feeds	4.23	4.60	3.80	12.64	4.21
T2 – 5% vermicast + 95% CF	4.63	3.77	5.08	13.48	4.49
T3 – 10% vermicast + 90% CF	3.97	4.49	4.13	12.59	4.20
T4 – 15% vermicast + 85% CF	4.17	5.27	4.65	14.10	4.70
TOTAL				52.81	17.60

CV – 14.27%

Conclusions and Recommendations

Based on the findings of the study, the researchers concludes that vermicast supplementation to Darag native chicken feeds can influence the growth performance of the birds. The amount of feeds consumed by the experimental birds increases as the levels of vermicast was increased. Average gain in weight and feed conversion ratio is better from the experimental birds supplemented with 10% of vermicast and 90% commercial feeds.

The researchers recommend the use of vermicast as supplements to Darag native chickens for better feed consumption, gain in weight and feed conversion ratio. Further studies using different levels of supplementation to other species is also recommended.

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