INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH AND ANALYSIS

ISSN(print): 2643-9840, ISSN(online): 2643-9875

Volume 06 Issue 04 April 2023

DOI: 10.47191/ijmra/v6-i4-47, Impact Factor: 7.022

Page No. 1761-1770

Giant Floater (Pyganodon Grandis) as Feed Ingredient in Broiler Production

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ABSTRACT: The focus of the research was to determine how giant floater (Pyganodon grandis) worked as a feed ingredient in broiler production. A total of 120 one-day-old Cobbs 500 were reared for 42 days, regardless of sex. The chicks were weighed and brooded for 14 days. The chicks were weighed and distributed at random on the fourteenth day for four treatments with three replications, each containing ten chicks. They were given varied proportions of giant floater meal as a feed ingredient. Treatment 1 was simply home mixed; treatment 2 had a 3% addition of giant floater meal; treatment 3 had a 6% inclusion of giant floater meal; and treatment 4 had a 9% inclusion. The supplementation of giant floater meal as a feed ingredient for broilers had a significant effect on the broilers' weekly body weight gain. Broiler-fed diets containing a higher percentage of inclusion gained the most weight as compared to broiler-fed diets containing a lower percentage of giant floater meal or diets containing no giant floater meal. In terms of broiler feed consumption, the results showed that broilers fed with 9% (T4) and 6% (T3) giant floater meal had higher feed intake than broilers fed with 3% (T2) giant floater meal, and the least feed intake was found in the control group. The result of this study shows that using giant floater meat as a feed ingredient for broilers improves their development and production performance in terms of body weight gain and that it can be used as a replacement and/or supplementary source of protein in broiler feeds.

KEYWORDS: Broiler Production, Alternative feed ingredient, Giant Floater (Pyganodon grandis), Organic feeds

INTRODUCTION

Poultry products, whether eggs or meat, have been one of the most popular dishes. In terms of economic relevance, the chicken was the most important source of eggs and meat in the Philippines. Due to the continuing price increases and inadequate availability of livestock products caused by the African Swine Flu (ASF), particularly in pork, broiler, and egg production, this is currently the most progressive. As a result, demand for poultry products has soared.

With the recent outbreak of the pandemic, the cost of several commodities has been steadily rising, and feed is one of them. Feeding is a crucial part of broiler production, accounting for the majority of costs. As a result, poultry growers and raisers must develop low-cost feed formulations.

According to Babatunde et al. (2019), there are several unused natural sources that can be optimized to lower feed production costs while enhancing chicken quality. This is in support of Republic Act 10068, the Philippine Organic Agriculture Act of 2010, which encompasses all agricultural systems that promote environmentally sound, socially acceptable, commercially viable, and technically feasible food and fiber production (Department of Agriculture Regional Field Office III, 2021).

Organic product demand has surged dramatically in recent years, with global sales more than doubling since the year 2000. Organic agriculture arose as a response to agriculture's industrialization and the resulting environmental and social problems. Some argue that organic farming is more profitable and environmentally beneficial than conventional farming (Reganold et al., 2016).

The cost of raw materials used to make feeds, such as fish meal, meat and bone meal, soybean meal, peanut meal, and other traditional sources of protein and vitamins in poultry rations, has been steadily rising, making the search for alternative feed sources necessary to reduce feed costs (Swain, 2017).

As a result, the giant floater (Pyganodon grandis) was used as an alternate protein source in the feed diet. It has a crude protein content of 47.43%. Protein is necessary for broiler muscle development and growth. Rice bran (darak), corn meal (corn bran), limestone (apog), salt, molasses, and oil were among the locally accessible raw materials.

Giant Floater (Pyganodon Grandis) as Feed Ingredient in Broiler Production

In this study, a giant floater (Pyganodon grandis) was employed as a protein-based component substitute for broiler production, resulting in cheaper feed costs, less environmental impact, and improved product quality. It will be utilized in four distinct feed formulations for four different treatments as a feed ingredient.

Since it is rarely known and/or utilized, numerous of its kind can be found in the small water impounding project in Marannao, San Mariano, Isabela, ensuring its long-term viability. As a result, increasing the usage of giant floaters (Pyganodon grandis) increases farm earnings for poultry producers and farmers in general, reduces consumer health concerns due to their organic nature, and reduces negative environmental impacts.

METHODS

The materials, ingredients, and methods used in developing the Giant Floater (Pyganodon grandis) as a feed ingredient in broiler production are presented below.

MATERIALS

1. Utensils. The materials and equipment used were the following:

Table 1. Materials and equipment used in conducting the study.

	DESCRIPTION	
Preparatory Tools	**Materials**	**Equipment**
Pail	Booster feeds Record Book	Feeders / Feeding Trough
Broom Stick		Drinkers / Drinking Trough
Old/Used Papers		Meat Grinder
Clean Sack		Digital Weighing Scale
		100 watts incandescent bulbs

INGREDIENTS

Table 2. Composition of Home-mixed Starter Ration used in the study.

Ingredients	T_1	T_2	T_3	T_4
Giant Floater Meal	-	3.00	6.00	9.00
Rice bran (D1)	6.00	6.00	6.00	6.00
Corn meal	50.97	47.01	45.26	44.23
Soybean Oil Meal	36.13	35.86	34.60	33.19
Limestone	0.78	0.77	0.77	0.77
Salt	0.50	0.50	0.50	0.50
Min/Vit. Premix	0.50	0.50	0.50	0.50
Molasses	2.00	2.00	2.00	2.00
Oil	0.76	1.00	1.00	2.44
DL Methionine	0.16	0.16	0.17	0.17
Toxin binder	0.20	0.20	0.20	0.20
Total	100.00	100.00	100.00	100.00

Table 3. Composition of Home-mixed Grower Ration used in the study.

Ingredients	T_1	T_2	T_3	T_4
Giant Floater Meal	-	3.00	6.00	9.00
Rice bran (D1)	8.00	8.00	8.00	8.00
Corn meal	55.34	52.67	49.96	46.53
Soybean Oil Meal	27.11	26.77	26.44	26.25
Limestone	1.21	1.22	1.22	1.23
Salt	0.50	0.50	0.50	0.50
Min/Vit. Premix	0.50	0.50	0.50	0.50
Molasses	2.00	2.00	2.00	2.00
Oil	-	-	0.03	0.64
DL Methionine	0.14	0.14	0.15	0.15
Toxin binder	0.20	0.20	0.20	0.20
Total	100.00	100.00	100.00	100.00

METHODS

In order to perform the research properly, the flowchart of procedures in preparing giant floater as feed ingredient was carefully and consistently followed. The needed tools, materials, and ingredients were prepared.

The giant floater underwent different stages of development such as harvesting, washing, selecting, boiling, shucking, sun drying, grinding, and mixing for different treatments.

The developmental procedure began with the preparation of the giant floater meat. The procedure started with harvesting giant floater. These were washed thoroughly to remove soil and other particles on the giant floater. Then, giant floaters were selected by removing the giant floaters that contains mud. The preparation of the Giant Floater (Pyganodon grandis) is shown in Figure 1.

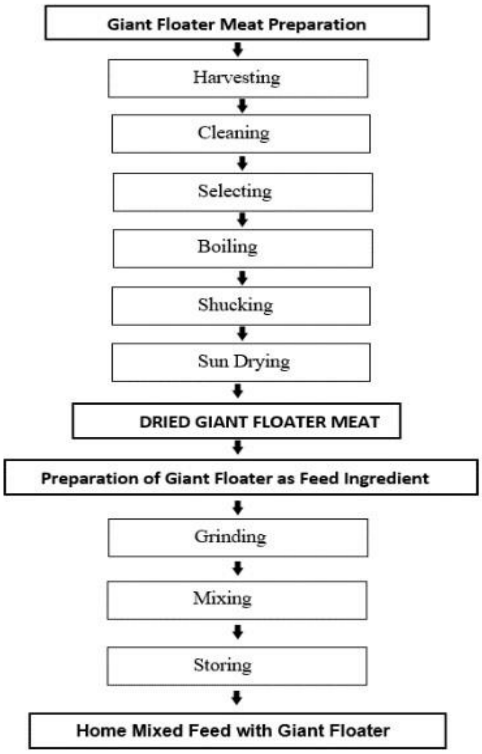

Figure 1. Flowchart on the preparation of the Giant Floater (Pyganodon grandis)

Care and Management of the Experimental Poultry

All the facilities and equipment including the drinking and feeding troughs were prepared days before the arrival of the chicks.

The 120 one-day-old broiler chicks were brooded for up to 14 days. Old papers were scattered on the floor of their cages to avoid damage to the feet and legs of the chicks and to serve as an insulator. The lights were on day and night to keep them warm and encourage them to eat. Water and food were served to the chicks every morning and afternoon. The drinking and feeding troughs were cleaned before they were used.

On the fourteenth day, the chicks were randomly distributed into four treatments with three replications. The cages were 1 meter by 1 meter, each cage was labeled and covered with sacks around it. Every cage contains 10 chicks per treatment with three replications. The chicks were fed into transition with the different treatments of giant floater meal from the fifteenth day to the forty-second day.

The manure was removed every day during the brooding period until termination day. Rice hulls were spread on the manure and were properly managed during the entire duration of the study.

Experimental Design

The study was laid out using a Completely Randomized Design (CRD). The broiler chicks were randomly distributed into four treatments. The different treatments used in the study were as follows:

Treatment 1 = 100% Home-mixed ration
Treatment 2 = 3 % Giant Floater Meal + 97% Home-mixed ration
Treatment 3 = 6 % Giant Floater Meal + 94% Home-mixed ration
Treatment 4 = 9 % Giant Floater Meal + 91% Home-mixed ration

Data Gathering Instrument and Procedure

120 one-day-old broiler chicks, regardless of sex, were obtained to determine the effect of a giant floater as a feed ingredient. There were four (4) treatments and replicated three times with 10 birds in each replication. The data were gathered and recorded weekly: (a) weekly weight gain and (b) daily feed intake and left over.

Weekly Body Weight Gain (BWG) and weekly feed intake (FI) and leftovers of the broiler were recorded from day 14 to day 42. Through observation and record keeping effects of Giant Floater (Pyganodon gradis) as a feed ingredient in terms of the weight of broilers were determined.

Data gathering was derived using the following formula:

Initial Weight = weight of the broiler chicks at the start of the feeding period or at day 14

Final Weight = weight of the broiler chicks at the end of the feeding period or at day 42

Body Weight Gain = Final Weight – Initial Weight

Feed Consumption = Total weight of feeds given – leftover (Weekly basis)

Feed Efficiency = $\frac{\text{Final Weight}}{\text{The total amount of feeds consumed}} \times 100$

Statistical Analysis

Mean, Analysis of Variance, and Post Hoc Analysis Using Duncan's Multiple Ranged Test was used to determine the average body weight gain of the broiler and the average consumption of feeds, whether there is a significant difference in the weight gain of the broiler in the different treatments, and to compare any significant treatment means.

RESULTS

Product Evaluation

Tables 4 and 5 show the composition and calculated nutrient analysis of the home-mixed feed formulation for starter and grower rations in the study.

The feed composition shows that there was no inclusion of giant floater meal in treatment 1, but there was 3 percent inclusion in treatment 2, 6 percent inclusion in treatment 3, and 9 percent inclusion in treatment 4. The computed nutrient content shows that the starting ration has 22 percent crude protein, whereas the growing ration contains just 20 percent crude protein.

According to Beski et al. (2015), protein products receive the most attention in poultry nutrition due to protein's relevance as a primary constituent of physiologically active substances in the body. It also aids in the production of body tissue, which is necessary for the body's renovation and growth. Broilers have high dietary protein requirements, so determining the optimal protein concentration in broiler diets, whether to maximize broiler performance or profit, necessitates a greater understanding of the birds' protein and amino acid requirements, as well as their effects on the birds' growth and development.

Protein is a critical constituent of poultry diets, and along with the other main nutrients such as carbohydrates, fat, water, vitamins, and minerals, it is essential for life. When formulating broiler diets, the main emphasis is placed on crude protein (CP), because protein is a critical constituent of poultry diets (Cheeke, 2005).

As a result, rather than simply reaching calorie or amino acid levels, it is vital to choose ingredients to maximize nutrient availability during broiler diet formulation (Ravindran, 2005).

Table 4. Composition and Calculated Nutrient Analysis of Home-mixed Starter Ration used in the study.

Ingredients	T_1	T_2	T_3	T_4
Giant Floater Meal	-	3.00	6.00	9.00
Rice bran (D1)	6.00	6.00	6.00	6.00
Corn meal	50.97	47.01	45.26	44.23
Soybean Oil Meal	36.13	35.86	34.60	33.19
Limestone	0.78	0.77	0.77	0.77
Salt	0.50	0.50	0.50	0.50
Min/Vit. Premix	0.50	0.50	0.50	0.50
Molasses	2.00	2.00	2.00	2.00
Oil	0.76	1.00	1.00	2.44
DL Methionine	0.16	0.16	0.17	0.17
Toxin binder	0.20	0.20	0.20	0.20
Total	100.00	100.00	100.00	100.00

Calculated Nutrient Content	**T_1**	**T_2**	**T_3**	**T_4**	**Nutrient Requirement**
Crude Protein (%)	22.00	22.00	22.00	22.00	22.00
Metabolizable Energy (kcal)	2950.00	2862.37	2762.73	2662.72	2950.00
Crude Fiber	4.00	4.97	5.95	6.92	4.00
Calcium	1.00	1.00	1.00	1.00	1.00
Phosphorous	0.46	0.46	0.46	0.46	0.42
Lysine	1.24	1.23	1.22	1.20	1.20
Methionine	0.45	0.45	0.45	0.45	0.45

Table 5. Composition and Calculated Nutrient Analysis of Home-mixed Grower Ration used in the study.

Ingredients	**T_1**	**T_2**	**T_3**	**T_4**
Giant Floater Meal	-	3.00	6.00	9.00
Rice bran (D1)	8.00	8.00	8.00	8.00
Corn meal	55.34	52.67	49.96	46.53
Soybean Oil Meal	27.11	26.77	26.44	26.25
Limestone	1.21	1.22	1.22	1.23
Salt	0.50	0.50	0.50	0.50
Min/Vit. Premix	0.50	0.50	0.50	0.50
Molasses	2.00	2.00	2.00	2.00
Oil	-	-	0.03	0.64
DL Methionine	0.14	0.14	0.15	0.15
Toxin binder	0.20	0.20	0.20	0.20
Total	100.00	100.00	100.00	100.00

Calculated Nutrient Content	**T_1**	**T_2**	**T_3**	**T_4**	**Nutrient Requirement**
Crude Protein (%)	20.00	20.00	20.00	20.00	20.00
Metabolizable Energy (kcal)	2961.85	2930.26	2900.00	2900.00	2900.00
Crude Fiber	3.84	3.74	3.64	3.53	<4
Calcium	1.00	1.00	1.00	1.00	1.00
Phosphorous	0.62	0.61	0.60	0.59	0.42
Lysine	1.08	1.07	1.05	1.04	1.00
Methionine	0.40	0.40	0.40	0.40	0.40

Table 6. Report analysis of Department of Agriculture on the Crude Protein Content of Giant Floater (Pyganodon grandis)

Analysis Name	Result
Crude Protein	**47.43%**

Table 6 displays a report of analysis of the Department of Agriculture (DA) on the crude protein of the giant floater. According to the data, the giant floater contains 47.43 percent crude protein.

The developed product is highly suggested as an alternative and/or additional protein source for broiler feed based on the proximate analysis of the crude protein of the giant floater. Mussel meal is a good alternative protein source in poultry diets, according to Jönsson (2009), and could be a solution in a 100 percent organic diet. Furthermore, protein is necessary for muscle growth and tissue repair, which is advantageous because broilers are raised for their meat.

Plant protein sources provide the majority of an animal's dietary protein requirements. Maize and soybean have traditionally been the most widely used energy and protein sources in the world. Cereals such as wheat and sorghum, as well as various plant-based protein meals, are used all over the world. In the production of chicken feed, soybean meal (SBM) is the predominant protein source. It has a CP content of 40–48 percent, depending on how many hulls are removed and how the oil is extracted. Soybean protein is preferred above the protein meal of other oilseed grains because of its well-balanced amino acid profile, particularly the necessary ones, which allows it to balance most cereal-based diets (Ravindran, 2013). Plant proteins frequently require an additional source of amino acids or other protein sources, such as animal protein, due to their shortage of specific amino acids. Plant proteins are typically less expensive than animal proteins; nonetheless, their use is limited due to the presence of anti-nutritional substances (ANFs).

Animal proteins are a good addition to poultry diets because they provide a lot of protein and amino acids, a lot of accessible phosphorus, a lot of other minerals, and a lot of energy (Beski et al., 2015).

Comparison in the Average Weight Gain of Broilers using the Different Formulation of Giant Floater (Pyganodon grandis) as Feed Ingredient

Table 7. Initial and Weekly Body Weight of Broiler Chicken.

TREATMENT	WEEKLY BODY WEIGHT					
	Initial	1st	2nd	3rd	4th	5th
T_1	138.86	380.91[d]	1004.61[d]	624.91	729.47[d]	1268.35[d]
T_2	147.40	398.87[c]	635.97	810.7[c]	1112.23[c]	1367.24[c]
T_3	140.73	481.65[b]	1264.10[b]	686.53	908.88[b]	1816.35[b]
T_4	143.66	519.07[a]	747.10	929.86[a]	1304.83[a]	1898.18[a]
RESULT	Ns	*	ns	*	*	**
C.V. %	7.2	11.34	9.07	7.34	8.18	5.51

As shown in the table, the analysis of variance revealed that the means were based on the broiler chicken's starting body weight. On the first weekly body weight of broiler chicken, significant (>0.05) results were observed. Broilers fed with 9% (T4) inclusion of giant floater meal had the highest weight mean of 519.07 grams, followed by broilers fed with 6% (T3) inclusion of giant floater meal with a mean of 481.65 grams, broilers fed with 3% (T2) inclusion of giant floater meal had a weighted mean of 398.87 grams, and broilers fed without the inclusion of giant floater meal had the lowest weight mean of 380.91 grams.

The results demonstrated no significant differences among the treatment means on the second weekly body of the broiler chicken, indicating that all treatments are statistically equivalent.

The inclusion of giant floater meal had a significant (>0.05) influence on the third weekly body weight of broiler chickens. Broilers fed with home-mixed ration with 9% (T4) giant floater meal had the highest weight of 929.86 grams, followed by broilers fed with 6% (T3) inclusion of giant floater meal with 908.88 grams, broilers fed with 3% (T2) inclusion of giant floater meal with 810.70 grams, and broilers fed without the inclusion of giant floater meal with 729.4 grams. Similarly, the fourth weekly body weight of broiler chickens showed a similar trend, with mean values ranging from 1304.83 grams to 1004.61 grams respectively.

Similarly, Loh et al. (2005) discovered that earthworm muscle meal contains 580–710 g/kg CP (DM basis) and high lysine contents. The lysine requirement of chickens is relatively high; therefore, muscle meal made from earthworms would be an appropriate feed ingredient to meet this demand (Vielma et al., 2003; Istiqomah et al., 2009). Due to the increased intestinal microbiota profile (Husseiny et al., 2008) and high protein content, mixing muscle utilizing earthworm on the diet ration for chicken feeds is a significant strategy for boosting feed efficiency in poultry feeding (Bahadori et al., 2015). (Vielma et al., 2003).

The supplementation of giant floater meal as a diet ration for broiler chicken had a significant effect on their fifth weekly body, the heaviest weight was noted on broilers with 9% (T1) inclusion of giant floater meat with 1898.18 grams followed by broiler fed with 6% (T3) inclusion of giant floater meal with 1816.35 grams, while the broiler fed with 3% (T2) inclusion of giant floater meal obtained a weighted mean of 1367.34 grams and the least weight was found in broilers fed without the inclusion of giant floater meal with a weighted mean of 1268.35 grams.

This research supports Jönsson's (2009) study Mussel Meal in Poultry Diets – with a Focus on Organic Production, which found that mussel meal is an excellent source of protein and hence a suitable nutritional substitute for fish meal in laying hen and broiler chicken diets. This means that including giant floater meals in the diet boosted daily gain and feed efficiency. In addition, mussel meal has been found to be an excellent alternative protein source in poultry diets and may be a viable option in 100% organic diets. Furthermore, mussels are filter feeders, which means they filter coastal waters of nitrogen and phosphorus seeping from nearby farmland.

Giant Floater (Pyganodon Grandis) as Feed Ingredient in Broiler Production

According to Lindahl et al., (2009), blue mussel meal (Mytilus edulis) can be used as a protein replacement for other protein-rich feedstuffs. Additionally, blue mussels can be utilized to reduce water eutrophication by filtering nitrogen, phosphorus, and carbon from the water. Deshelled mussel meal has already been shown to have the ability to substitute fishmeal in laying hen nutrition (Jönsson et al., 2011; Afrose et al., 2016).

Average Feed Consumption Feed and Average Feed Efficiency of the Giant Floater (Pyganodon grandis) as Feed Ingredient in Different Treatments

Table 8. Cumulative and Weekly Feed Consumption Broiler Chicken (grams)

TREATMENT	WEEKLY FEEDS CONSUMPTION				
	1st	2nd	3rd	4th	Cumulative Feed Consumption
T1	3649.00	6014.72	4279.33	7802.35	6019.18
T2	3775.98	6059.99	4776.67	8015.30	6000.90
T3	4306.64	7852.15	4423.00	9926.38	7551.79
T4	4352.96	7046.57			6737.69
		4672.33	8646.57		
RESULT	*	ns	*	**	**
C.V. %	6.49	11.81	3.44	6.21	4.53

Table 8 shows that during biweekly measurement intervals over the entire experimental period (d 0–42), broiler chickens fed diets containing 9% (T4) and 6% (T3) giant floater meal had higher feed intake (significant at P=>0.05 and >0.01) than control and diets supplemented with various amounts of giant floater meat meal (Table 8). On the other hand, it was discovered that broilers fed with or without giant floater meal had no significant changes in feed consumption after the second week.

Increasing the amount of muscle meal in a feed result in higher quantities of particular amino acids like arginine and cysteine, which are known to suppress the appetite of broiler chickens, resulting in lower feed consumption (Prayogi, 2011).

According to Mavromichalis (2016), every 1% increase in dietary protein causes a 3 percent increase in water intake in broilers. Furthermore, excessive water consumption will increase litter wetness, which will result in a variety of issues, including not insignificant implications on animal welfare in terms of diminished comfort. Wet litter also contributes to leg issues including pododermatitis and breast lesions, both of which reduce carcass value. The disposal of nitrogen-rich trash is a topic that does not require much explanation here, but it is a serious worry in several nations.

Table 9. Final weight and Feed Conversion Efficiency of Broiler Chicken

TREATMENT	FINAL WEIGHT (g)	FCE (%)
T_1	1,129.48^d	21.06^d
T_2	1,218.84^c	22.82^c
T_3	1,675.62^b	24.07^b
T_4	1,754.68^a	28.20^a
RESULT	**	**
C.V. %	5.92	7.28

The data illustrates that adding giant floater meals to broiler chicken diets has a significant effect on the broiler's final weight. Broilers fed 9 percent giant floater food had the heaviest weight of 1,754.68 grams, compared to broilers fed various percentages of giant floater meal with weights ranging from 1,675.62 grams to 1218.84 grams, and broilers fed without giant floater meal had the lightest weight of 1,19.48 grams.

In terms of feed efficiency, the inclusion of giant floater meals as a diet ration for broiler chickens had a significant impact on feed conversion. A high Feed Conversion Efficiency (FCE) shows that the animal is consuming a lot of feed while gaining a lot of weight. When the FCE is high, the farmer of broiler chickens spends less on feeds. In general, a broiler chicken producer would strive to create feeds with a low intake, high FCE, and high Body Weight Gain (BWG) (Gunya et al., 2019b). Feed accounts for over 70% of the total cost of production in the poultry business (Willems et al., 2013), hence increasing feed efficiency is a critical goal.

Table 10. Post Hoc Analysis using Duncan's Multiple Range Test

TREATMENT	WEIGHT GAIN MEAN (Per Week)					R_p	DIFFERENCE (MEAN - R_P)				
	1st	2nd	3rd	4th	5th		1st	2nd	3rd	4th	5th
T_1	242.05^{d}	486.05^{d}	590.61^{d}	865.75^{d}	1129.49^{d}	3.87	238.18	482.18	586.74	861.88	1125.62
T_2	251.47^{c}	488.57^{c}	663.3^{c}	964.83^{c}	1219.84^{c}	4.03	247.44	484.54	659.27	960.8	1215.81
T_3	340.92^{b}	545.8^{b}	768.15^{b}	1123.37^{b}	1675.62^{b}	4.12	336.8	541.68	764.03	1119.25	1671.5
T_4	375.41^{a}	603.44^{a}	786.2^{a}	1161.17^{a}	1754.52^{a}	4.18	371.23	599.26	782.02	1156.99	1750.34

Table 10 shows the Post Hoc Analysis using Duncan's Multiple Range Test on the differences in treatment means.

During week one, among all treatments, weight gain means greater than 371.23 grams are the same. Treatment 4 is the only treatment greater than 371. 23 grams. Thus, treatment 4 is significantly different from other treatments. Among treatments 1, 2, and 3, weight gain means greater than 336.8 grams are the same. Only treatment 4 is greater than 336.8 grams. Thus, treatment 3 is significantly different from treatments 2 and 1. Between treatments 1 and 2, weight gain means greater than 247. 44 grams are the same. Only treatment 2 is greater than 336.8. Thus, treatment 2 is significantly different from treatment 1. Hence, the weight gain mean of the four treatments is significantly different from each other during week one.

In the second week, among all treatments, weight gain means greater than 599.26 grams are the same. Only treatment 4 is greater than 599.26 grams. Thus, treatment 4 is significantly different from other treatments. Among treatments 1, 2, and 3, weight gain means greater than 541.68 grams are the same. Only treatment 4 is greater than 541.68 grams. Thus, treatment 3 is significantly different from treatments 2 and 1. Between treatments 1 and 2, weight gain means greater than 484.54 grams are the same. Only treatment 2 is greater than 484.54. Thus, treatment 2 is significantly different from treatment 1. As a result, the weight gain mean of the four treatments is significantly different from each other within the second week.

In the third week, among all treatments, weight gain means greater than 782.02 grams are the same. Only treatment 4 is greater than 782.02 grams. Thus, treatment 4 is significantly different from other treatments. Among treatments 1, 2, and 3, weight gain means greater than 764.03 grams are the same. Only treatment 4 is greater than 764.03 grams. Thus, treatment 3 is significantly different from treatments 2 and 1. Between treatments 1 and 2, weight gain means greater than 659.27. grams are the same. Only treatment 2 is greater than 659.27. Thus, treatment 2 is significantly different from treatment 1. Henceforth, the weight gain mean of the four treatments is significantly different from each other during the third week.

For the fourth week, in all treatments, weight gain means greater than 1156.99 grams are the same. Only treatment 4 is greater than 1156.99 grams. Thus, treatment 4 is significantly different from other treatments. Among treatments 1, 2, and 3, weight gain means greater than 1119.25 grams are the same. Only treatment 4 is greater than 1119.25 grams. Thus, treatment 3 is significantly different from treatments 2 and 1. Between treatments 1, and 2, weight gain means greater than 960.8 grams are the same. Only treatment 2 is greater than 960.8 grams. Thus, treatment 2 is significantly different from treatment 1. For that reason, the weight gain mean of the four treatments is significantly different from each other during the fourth week.

During the fifth week, among all treatments, weight gain means greater than 1750.34grasm are the same. Only treatment 4 is greater than 1750.34 grams. Thus, treatment 4 is significantly different from other treatments. Among treatments 1, 2, and 3, weight gain means greater than 1672.5 grams are the same. Only treatment 4 is greater than 1671.5 grams. Thus, treatment 3 is significantly different from treatments 2 and 1. Between treatments 1 and 2, weight gain means greater than 1215. 81 grams are the same. Only treatment 2 is greater than 1215.81 grams. Thus, treatment 2 is significantly different from treatment 1. As a result, the weight gain mean of the four treatments is significantly different from each other during the fifth week.

In conclusion, table 10 reveals that from week 1 to week 5, the weight gain mean of each treatment is significantly different following this trend treatment 4 > treatment 3 > treatment 2, and treatment 1 had the lowest.

CONCLUSION AND FUTURE WORKS

Based on the findings of the study, feeding giant floater meat to broilers improves their growth and production performance in terms of body weight gain. Incorporating giant floater meals into broiler chicken diets improved feed conversion and efficiency significantly. A high Feed Conversion Efficiency (FCE) means the animal is consuming a lot of food while gaining a lot of weight. A higher percentage of feeding leads to a significant increase in body weight. Farmer feeds can include giant floater meat as an alternate and/or supplemental source of protein.

Further study should be conducted to determine the classification of the meat quality of the broiler that is fed with giant floater meals. Further research should be done, not only to verify the results by conducting a larger number of experimental trials but also to determine the economic viability, the ecological impacts and impact reductions, as well as the environmental sustainability of using giant floater meat as an addition to or substitute for fish meal and/or soybean meal in the diet of broilers. Finally, a comparative study should be conducted on the preparation of other treatments using giant floaters as a feed ingredient.

ETHICAL CONSIDERATIONS

The researcher makes certain that the research was conducted in a manner that is respectful to the community and other human beings that may be influenced by the research process. The procedures were observed in accordance with the rules and guidelines of the University in which the panelist was involved.

ACKNOWLEDGMENT

The researcher would like to express her deepest gratitude to the panelists for their guidance, support, and valuable feedback throughout the course of this research. Their expertise and enthusiasm have been instrumental in shaping this thesis. Her sincere appreciation goes to her family and friends, who provided her with emotional support and motivation to persevere. Their belief in her was paramount to completing this thesis.

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