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Performance of broiler feed with different levels of fresh Saluyot (*Corchorus olitorius*) Leaves as feed substitute

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Abstract
This study was conducted on March 15, 2018 to April 21, 2018 at Carida, Tapaz, Capiz; to find out the performance of broilers feed with different levels of fresh Corchorus leaves as feed substitute and to determine which levels of fresh Corchorus leaves contributed the best result in terms of feed consumption, gain in weight, feed conversion ratio of broilers and return on investment. The study was conducted in Completely Randomized Design (CRD).The experimental treatments were the following; treatment A-100% pure commercial feed (control), Treatment B- 10% fresh Corchorus leaves +90% CF, Treatment C-15% fresh Corchorus leaves 85%, Treatment CF D-20% fresh Corchorus leaves + 80% CF. All treatments were replicated four times. All data gathered were analyzed by the Analysis of Variance (ANOVA), using F- test and were interpreted at 5% level of significance. The study revealed that the different levels of fresh Corchorus leaves as feed substitute to broilers did not significantly affect in terms of feed consumption, gain in weight, and feed conversion ratio. However, in terms of return on investment, birds given with 10% fresh Corchorus leaves + 90% CF obtained the highest Return on Investment (ROI) among all other treatments.

Keywords: performance of broiler feed with different levels of fresh Saluyot (Corchorus olitorius)

Introduction

The shortage of feed resources for poultry feeding diverted majority of research in the field of animal nutrition to look into possibilities to overcome this nutritional crisis.

A possible and perhaps, the most viable proposition could be the inclusion of locally available plants in poultry rations with suitable and complete feed technology that can utilize the feed sources with maximum efficiency. One method is to exploit the use of locally available plants that can be utilized the feeds to be combined as feed substitute that can be found in the community. Researchers continuously try green feeds that are indigenous, relatively cheap and can therefore reduce feed cost, like the utilization of Corchorus olitorius leaves to broilers (Livestock Research for Rural Development, 2017).

According to Dina and Carmen (2015) [1], Corchorus olitorius belongs to the genus of about 40-100 species of flowering plant belonging to the family tilicantea. It is an erect, annual herb (also known as fruited jute, tossa jute, jute mallow and jew's mallow) growing up to 3.5 meters, an abundant agricultural products and a potential alternate feed ingredient.

According to Loum *et al*. (2013) [2] a higher crude lipid content in jute mallow leaves. The crude lipid content could make these crops contribute to meeting the daily lipid requirement of consumers. However, a higher crude lipid content would make the product highly susceptible to rancidity (Neven E.*et al*, 2008) [4].

Hence, this study was conducted to determine the performance of broiler as influenced by fresh Corchorus olitorius leaves as feed substitute.

Statement of the Problem/Objectives

This study aims to find out the performance of broilers feed with different levels of fresh Saluyot (Corchorus olitorius) leaves as feed substitute.

Specifically this study aims to answer the following questions

1. Is there a significant difference in the performance of broilers feed with different levels of fresh Corchorus leaves as feed substitute in terms of feed consumption, gain in weight, feed conversion ratio and Return on Investment (ROI)
2. Which treatment contributed the best result in terms of A. Feed Consumption
B. Gain in Weight
C. Feed Conversion Ratio
D. Return of Investment (ROI)

Statement of Hypothesis

1. There is no significant difference in the performance of broiler feed with different level of fresh Corchorus leaves as feed substitute in terms of feed consumption, gain in weight, feed conversion ratio and Return of Investment (ROI).
2. Treatment B with 10% fresh Corchorus leaves + 90% CF obtained the highest Return on Investment (ROI) among all other treatments.

Significance of the Study

The result of the of study would be beneficial to the following:

Community
The result of this study may give knowledge to the chick growers and to the community to become productive and resourceful individuals.
Researchers
They will be motivated to adopt and develop this study.

Scope and Limitations
This study was limited only to the effect of fresh Corchorus as feed substitute to broilers.

Materials and methods
Materials
The materials used in the study were the following; sixty four (64) heads of one (1) day old broiler chicks, commercial feeds, feeding and watering throughs, brooding and rearing cages, incandescent lamps, bulbs, electric wires, bamboos, weighing scale, charcoal heater,nail, hammer, saw, newspapers, empty sacks, fresh Corchorus leaves.

Methods
Experimental Procedure
Experimental Treatment: The study was composed of four (4) treatments with four (4) replications. The treatment includes: Treatment A-100% comercial feeds, Treatment B-10% fresh Corchorus leaves + 90% CF, Treatment C-15% fresh Corchorus leaves + 85% CF and Treatment D-20% Fresh Corchorus leaves + 80% CF.
Experimental Design and Layout: Completely Randomized Design (CRD) was used in the study. Rearing pen was divided into 16 cages. Each cage was composed of four (4) broilers, picked at random basis giving a total of sixty- four (64) birds.

Table 1

B3	D3	D2	C2	B1	C3	C1	D4
A1	A3	A4	D1	A2	B2	B4	C4

Figure 1.0 The experimental lay out in Completely Randomized Design (CRD)
Legend:
Treatment A- Control (100% commercial feeds)
Treatment B- 10% fresh Corchorus leaves + 90% CF
Treatment C- 15% fresh Corchorus leaves + 85% CF
Treatment D- 20% fresh Corchorus leaves + 80% CF

Management Practices
Preparation of Brooder. One week before the arrival of the chicks, brooder was thoroughly cleaned and disinfected by disinfectant. It was exposed to the heat of the sun for at least one (1) day after rinsing it with water in order to eliminate microorganisms. Then electric wire and receptacle for incandescent bulb were installed. Empty sacks were placed around the brooder and old newspapers were also used as beddings of chicks.
Securing of Chicks. The sixty four (64) heads of broiler chicks was secured from a reliable sources in Roxas City.
Brooding and Caring of chicks. The chicks were placed in a prepared brooder upon arrival. They were given only with water diluted with sugar powder serving as anti- stress for at least 2 hours. Then, they were allowed to pick feed particles which was spread thinly on the paper matting. Adlibitum feeding and watering were employed during the brooding period which lasted for fourteen (14) days from the day of arrival. The birds were provided with plastic drinking jars. Artificial heat was also provided using electric bulbs. The bulbs were turned off when the temperature is enough which could be detected by the behavior of the chicks. During black out, artificial heat was provided using improvised charcoal heater.
Preparation of Fresh Corchorus Leaves. Fresh Corchorus leaves, were collected and washed with clean water. Then, it was chopped into smaller and finer pieces so that they could be easily ingested by birds. Afterthat, the chopped Corchorus leaves was given to the broilers at levels of 10%, 15%, and 20%.
Rearing the Birds. The sixty four (64) birds in the brooding cage were transferred to the rearing cages after (14) days following the experimental treatment and design. They were cared until they reach the age of 35 days.
Feeding the Birds. The birds were feed with adlibitum feeding. The feeds were weigh before giving it to the birds. The left over feeds were also weighed before giving another ratio to get the total feed consumed for the day.
Watering. The birds were provided with clean and potable drinking water at all times throughout the experiments.
Prevention of Parasites and Diseases. To prevent the infestation of parasites and occurrence of diseases, sanitation was properly and strictly observed throughout the duration of the study by cleaning the feeding and watering troughs everyday. Likewise, the brooding and rearing cages as well as the sorroundings were also cleaned.
Cleanliness and Sanitation. Cleanliness and sanitation was observed throughout the duration of the study. Feeding and watering troughs were cleaned daily and the droppings were removed on a daily basis.

Gathering of Data
The data gathered in the study are the feed consumption, gain in weight, feed consumption ratio and Return on Investment (ROI).
Feed Consumption. Data on feed consumption were recorded daily from the start of the rearing period until the end of the study. Left over feeds was weighed in the afternoon. The weight o f the left over feeds was subtracted from the weight of the feed given, and the difference represents the feed consumption of all birds.The value was added and divided to the total number of birds per cage.
Gain in Weight. This was obtained by subtracting the initial weight from the final weight of birds in every treatment. The difference was divided by the number of birds per cage.
Feed Conversion Ratio. Feed conversion ratio of birds was determined when the data on the feed consumption and gain in weight were obtained. This was done by dividing the feed consumption with the gain in weight of the birds in each replication and treatment.
Return on Investment (ROI). To determine the return of Investment (ROI), the net income per treatment(which was computed by su btracting the total cost (expenses per treatment) was divided by the total expenses and multiplied by 100%. The ROI was computed using the following formula:

$$ROI = \frac{\text{Net-Income}}{\text{Total Expenses}} \cdot x\ 100\%$$

Statistical tools and analysis

All data were analyzed using Analysis of Variance (ANOVA) for Completely Randomized Design (CRD) and were interpreted at 5% level of significance.

Results and discussions

Feed Consumption

The feed consumption of broilers as affected by fresh Corchorus leaves as feed substitute is shown in Table 1 showed that the birds fed with 10% fresh Corchorus leaves + 90% CF achieved the highest feed consumption with a mean of 1.53 kilograms. This was followed by the birds which were given 20% fresh Corchorus leaves + 80% CF with a mean of 1.48 kilograms. And then broilers fed with 15% of fresh Corchorus leaves mixed with + 85% CF with a mean of 1.45 kilograms. The lowest feed consumption was observed in birds which were given pure commercial feed (control) with a mean of 1.43 kilograms.

Table 1: Feed Consumption (kg) of broiler as affected by different levels of fresh Corchorus leaves

Treatment		Replication				
	I	II	III	III	Total	Mean
Contro1100%	1.36	1.49	1.50	1.37	5.72	1.43
10% FTL+90%CF	1.46	1.58	1.54	1.53	6.11	1.53
15% FTL+85%CF	1.36	1.53	1.52	1.45	5.86	1.47
20% FTL+80%CF	1.49	1.54	1.45	1.46	5.94	1.49
Grand Total/ Mean					23.63	1.48

The Analysis of Variance in Table 2 showed that the feed consumption of broilers feed with different levels of fresh saluyot leaves as feed substitute was not significantly affected

Table 2: Analysis of Variance of computed data from Table 1.0

SV	DF	SS	MS			
					5%	1%
	3	0.0327	0.0109	0.50ns	3.49	5.95
	12	0.2591	0.0216			
Total	15	0.2918				

NS-Not Significan, CV =4.63 %

Table 3 presents the gain in weight of the birds as influenced by fresh Corchorus leaves as feed substitute on the performance of the broiler. The data showed that the birds fed with 15% of fresh Corchorus leaves + 85% CF achieved the highest gain in weight with a mean of 0.77 kilograms. This was followed by birds given 100% pure commercial feeds with a mean of 0.76 kilograms. And lastly, lowest gain in weight was observed in birds fed with 10% fresh saluyot leaves + 90% CF which has the same result in birds given 20% fresh saluyot leaves + 80% CF having a mean of 0.74 kilograms.

Table 3: Gain in Weight (kg) of broiler as affected by different levels of fresh Corchorus leaves

SV	DF	SS	MS	Compute	Tabular	
Treatment	3	0.0509	0.0170	0.52ns	5%	1%
	12	0.1349	0.0112		3.49	5.95
Total	15	0.1858				

The Analysis of Variance in Table 4 showed that the difference among treatment means was not significant. This implies that the use of fresh Corchorus leaves as feed substitute on broilers did not affect the gain in weight of the birds.

Table 4: Analysis of Variance of computed data from Table 2.0

SV	DF	SS	MS	Compute	Tabular	
Treatment	3	0.0509	0.0170	0.52ns	5%	1%
	12	0.1349	0.0112		3.49	5.95
Total	15	0.1858				

Feed conversion ratio

Table 5 presents the data on the Feed Conversion Ratio of the birds as affected by different levels of fresh Corchorus leaves as feed substitute to broilers. The data showed that the birds fed with 10% fresh Corchorus leaves +90% CF was proven to be the best feed converter with a mean of 2.28. This was followed by birds fed with 100% pure commercial feeds(control) with a mean of 2.32. Then, by birds which were given 20% fresh Corchorus leaves + 80% CF with a mean of 2.58. and the poorest feed converter was observed in birds fed with 15% fresh Corchorus leaves + 15% CF with a mean of 2.68.

Table 5: Feed Conversion ratio of broiler as affected by different levels of fresh Corchorus leaves

Treatment		Replication				
	I	II	III	IV	Total.	Mean
Contro1100%	2.38	2.46	2.16	2.36	9.26	2.32
10% FTL+90%CF	2.13	2.26	2.42	2.29	9.10	2.28
15% FTL+85%CF	2.15	3.01	2.92	2.63	10.71	2.68
20% FTL+80%CF	2.35	2.42	3.04	2.52	10.33	2.
Grand Total/ Mean				39.40	2.46	

The Analysis of Variance in Table 6 showed that the different levels of fresh Corchorus leaves as feed substitute on broilers did not significantly affect the feed conversion ratio of the birds.

Table 6: Analysis of Variance of Computed data from Table 3.

SV Treatment	DF		MS	Computed	Tabular
	3	0.4702		2.24ns.	5.95
	12	0.8383	0.1567		
	15	1.3085	0.0699		

NS-Not Significant

Return of Investment (ROI)

Table 7 shows the data on the income- over- feed and substitute cost (Php) of broilers fed with fresh Corchorus leaves as feed substitute and the return on investment (ROI). The highest ROI was obtained by birds fed with 10% fresh Corchorus leaves + 90% CF with 106.12%. This was followed by the birds fed with 100% commercial feeds (control) with a ROI 91.64%. And then birds by birds fed with 20% fresh Corchorus leaves + 80% CF wth ROI of 90.48%. The lowest ROI was observed by birds fed with 15% fresh Corchorus leaves + 85% CF with 80.78%.

Table 7: Income- over- feed and substitute costs (Php) of broilers using different levels of fresh Corchorus leaves

Particulars	**A**	**B**	**C**	**D**
Gain in Weight	**(Control)**	**(+90% CF)**	**(+85% CF)**	**(+80% CF)**
Value of Birds (Php)	0.94	1.01	0.87	0.87
Feed Consumption (kg)	112.80	121.20	104.40	104.40
Amount of CF (kg)	2.18	2.28	2.29	2.23
Cost of commercial feed(Php)	2.18	2.05	1.95	1.78
Amount of FTL	58.86	55.35	52.65	48.06
Cost of FTL	0	0.23	0.34	0.45
Cost feed and Supplement	0	3.45	5.10	6.75
Particulars	58.86	58.80	57.75	54.81
Net Profit	53.94	1.01	46.65	49.59
ROI (%)	91.64%	121.20	80.78%	90.48%

Conclusions

Based on the findings of the study, the researchers concluded that different levels of fresh Corchorusleaves as feed substitute to broilers did not significantly affect the performance of birds in terms of feed consumption, gain in weight, and feed conversion ratio but giving 10% of fresh Corchorus leaves to the broilers achieved the highest ROI of 106.12%

Recommendations

Based on the result of the study, the researcher recommended the following:

1. Give 10% of fresh Corchorus leaves to the broilers to achieve the higher return on investment.
2. Use fresh Corchorusleaves at 10% as feed substitute for broilers to help lessen the expenses on feed.
3. Conduct similar study related to fresh Corchorus leaves using other broiler strains and poultry animals in order to gather more relevant information.

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