

PROCEEDING

The 4th Bogor International Conference For Applied Science



“Facing the World Challenges through Exploring the Beneficial Science and Technology for the Future”

December 2,
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PREFACE

Dear ladies and gentlemen,

In this very precious moment, I would like to convey my warm regards and high appreciation for the eminent speakers, distinguished guests, respected colleagues, and all participants, from the deepest of our heart for having you joining our conference.

In 2020, we have successfully done our responsibility as scholars and researchers through The 4th Bogor International Conference for Applied Sciences (BICAS). Present our research finding virtually worldwide, proofs that knowledge have no boundaries, time, and place border. Even, the pandemic will not stop us to invent, create and publish. We should be more than proud, and this proceeding is dedicated for all participants who have share their remarkable research to the world.

Hereby, we would like to thank to Yayasan Pusat Studi Pengembangan Islam Amaliah Indonesia as well as the highest appreciation to the committee partner in journal publication, Taylor's University and Universiti Kebangsaan Malaysia. Thank you to our loyal partner Universitas Ibn Khaldun that have been collaborating since the first BICAS and BICSS. Finally yet importantly, all remarkable keynote speakers thank you for making the conference full of bright new knowledge. With the deepest of gratitude, we are more than proud to have all partners in the conference.

Through the theme "Facing the World Challenges through Exploring the Beneficial of Science and Technology for the Future", we have more than 40 scholars joined the conference in variety field of study such as Applied Science, Agriculture, Poultry & Husbandry, Fisheries, Bioscience, Engineering & Technology, Computer Science, Food Science, Sciences, Medicine & Applied Health, Pharmacy.

The conferences hope to serve as a forum to exchange ideas and experiences on findings and thoughts presented in empirical and theoretical assessments among Indonesian and overseas academicians and researchers. We deeply say thank a lot to all of you who make this conference happened. Thanks, are also deserved for the committee members and editorial boards for their tirelessly contributions to this conference. Finally, we hope that the pandemic is over and we could meet in person the next Bogor International Conference for Applied Science. Thank You.

Sincerely,

Prof. Ir. Mohamad Ali Fulazzaky, CES, DEA, PhD.

Conference Chair

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UTILIZATION OF FERMENTED FISH WASTE AS MULTIPURPOSE FEED AGAINST THE PERFORMANCE OF ALABIO DUCKS

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ABSTRACT

This study is in charge of analyzing the utilization of fish waste modified through fermentation using EM-4 against the appearance of egg-laying Alabio ducks. Alabio ducks used are 5-6 months old as many as 50 tails are placed in cage cages that are filled with 2 tails each. Feed given refers to the needs of laying ducks with 18% protein and Metabolic Energy 2900 Kcal. Feed is given 150-200 g/tail/day. As for drinking water is given on an ad libitum. The research design used is a Complete Random design with 5 feed treatments each fermented fish waste of 0%, 5%, 10%, 15% and 20% with 5 replays. The results showed that the utilization of fermented fish waste has a positive influence on the increased production of Alabio duck eggs (% duck day), exterior quality and interior of Alabio duck eggs. The use of fermented fish waste up to 15% in duck rations, providing the best results against the appearance of production and interior quality of alabio duck eggs.

Keyword : *Fish waste, Fermentation, cholesterol, alabio ducks*

I. INTRODUCTION

Alabio duck is a germplasm that is very well known especially in South Kalimantan. The advantages of duck eggs compared to other poultry eggs include rich in minerals, vitamin B6, pantoteic acid, thiamine, vitamin A, vitamin E, niacin, and vitamin B12. In addition to the advantages, duck eggs also have a deficiency compared to other poultry eggs that have a high content of saturated fatty acids that stimulate increased blood cholesterol levels. The cholesterol levels of duck eggs are approximately twice as high as chicken eggs. To increase the content of omega-3 fatty acids and lower cholesterol in livestock products especially egg products can be done through feed engineering with the addition of alesandry plant oil et al. 1998; Sceilder et al; 1998; Apriyanto et al; 1997; Herber and Van Elswyk;1996) or fermented feed (Collins et al,1997).

Fish waste is the remains of parts on the body of fish that can no longer be used or consumed by humans. If left to accumulate alone it will cause organic pollution, odor, and reduce the aesthetic value of the surrounding environment. Fish waste is quite abundant in South Kalimantan, but its utilization for livestock is still limited despite the advantages of its protein content, and its high omega 3 content. Besides, fish waste does not compete with humans, hence it is a very large potential for animal feed. There are obstacles dali waste this

fish among others high enough water content that if stored long will smell rotten because it is easily overgrown microbes. To increase the value of fish waste, it is necessary to breakthrough modification of feed processing so that the deficiencies can be overcome, among others by fermentation. Fermentation process in addition to increasing the nutritional value of feed, reducing odor and juda can improve feed digestibility.

Fish waste can be fish that are no longer worth consuming or processing, or from processing waste such as fish stomach contents and other parts that are not commercialized. Fresh fish waste is not much different from fresh fish. Fish innards waste contains high protein and unsaturated fats, in addition fresh fish waste also contains omega 3 fatty acids. Omega 3 fatty acids are essential fatty acids that are very useful for the human body. The purpose of this study is to analyze the utilization of fermented fish waste in rations against the production and quality of alabio duck eggs.

II. LITERATURE REVIEW

The issue of feed is still one of the main issues in the activities cultivation of livestock, both for poultry and ruminansia. This is mainly because feed is a significant component in the structure of livestock production costs. In addition to factors the cost, content and nutritional composition of feed will also have a direct effect on the health of Livestock. The health of livestock will also directly affect the productivity and quality of farm products. Feed is a major need in the livestock business and is very sustainability. The adequacy of feed, in terms of quantity and quality, is requirements that must be met to ensure that livestock are healthy, growing normally and production as expected. The needs and availability of feed, especially duck livestock laying, is currently greatly disrupted by the availability of feed materials and prices are soaring High. This condition has been going on for quite a while and causes the availability of feed Fluctuate. On industrial-scale farms the availability of feed can be addressed by procurement of feed specifically and or supplies of preserved feed, but for farms with very little ownership, so it is a problem that's hard. Reliance on imported feed components needs to be reduced in order for feed costs to be Pressed. Therefore, it is necessary to intensify efforts to explore local feed raw materials with good nutritional content, available in adequate quantities, and affordable by local/domestic farmers. Soedjana (2007) also agreed that efforts to improve livestock production must be based on local resources, meaning all potential and resources we have to be more optimized. Lisson et al. (2010) reported that although technology to increase productivity is basically available; but in general general, the adoption of technology to improve livestock cultivation system is still very slow.

Nutrient Needs on Laying Ducks One of the challenges for tropical countries such as Indonesia in the development of livestock especially poultry livestock is related to the availability and adequacy of nutrients is a protracted problem that must be solved with a sustainable approach to integrated feed technology. Integrated program of providing animal feed quality needs to be supported with round-the-clock availability in order to support our

intensive farming. Animal protein source feed ingredients have an advantage because the content of amino acids is complete, so it is very good for the growth and livestock production. In line with the development of feed technology, fish market waste can be effectively used as an alternative to animal feed laying ducks by providing treatment aimed at improving the productivity of laying ducks. Duck Egg Duck Egg is a source of animal protein that has a very delicious taste, easy to digested and highly nutritious. Duck eggs are generally large and white until bluish green. The average weight of duck eggs is 60-75 g (Resi, 2009).

Fish Waste is a waste resulting from a production process both industrial and (household), better known as garbage, whose presence at some point and certain places do not want the environment because it has no economic value. When chemically reviewed, this waste consists of organic compound chemicals and Inorganic. With a certain concentration and quantity, the presence of waste can negatively impact environment, especially for human health, so it is necessary to address the against waste. Fishery waste contains nutrients that are no different from mainly and has tiresFishery waste contains nutrients that are no different from and has also been extensively researched (Syukron, 2013). Fishery waste can come from upstream fisheries activities (aquaculture), and downstream fisheries activities (processing, transportation, marketing). Industrial by-results fishery treatment is generally in the form of head, innards, skin, bones, fins, blood and water used Production. Traditional processing activities are generally less able to utilize this side result, not even made use of it at all so it is wasted just like that. The by-products of fishery industry activities can be classified into five groups i.e. by-results in the utilization of a species or resource; residual processing from freezing, canning, and traditional industries, participating products; surplus from a harvest and remaining distribution (Syukron 2013).

III. METHODOLOGY

Time and Place

The research was conducted at the Agricultural Laboratory of the Center for the Study of Agricultural Technology of South Kalimantan and the Feed Technology Laboratory of the Faculty of Agriculture of the Islamic University of Kalimantan MAB from March to November 2020.

Materials

Ingredients used include: 40 adult Alabio ducks fermented fish waste, other conventional feed materials such as yellow corn, soybean meal, rice bran, fishmeal, coconut meal, premix, DL Methionine, Bone meal, EM-4. The tools used are grinder machines, feed mixers, cages as many as 25 units, bulb lamps, feed places and drinking places, digital scales. The amount of feed given as much as 750Kg for 50 alabio ducks laying for 60 days. Feeding trial was conducted in the cage of Duck Poultry Laboratory Of The Agricultural Technology Assessment Agency of South Kalimantan. Feed milling is carried out using a grinder machine capacity of 200 kg/h and feed mixing is carried out using horizontal mixer capacity of 100 kg.

Methods

The study used a Complete Randomized Design (RAL) of laying ducks with 5 treatments and 5 replays and each replay consisted of 2 tails. The treatment used is the level of feeding of fermented fish waste as additional feed against the content of omega 3 and egg cholesterol of ducks. The treatment in this study consisted of control, 0%, 5%, 10%, 15% and 20% fermentation of fish waste in rations. The variables observed in this study are Duck day egg production (%), Exterior quality and interior of duck eggs.

Statistical Analysis

In observations during the study, data was collected and analyzed to determine the difference in the effect of treatment on observed variables. The data obtained first tested its homogeneity with barlett tests, then analyzed statistics using variety analysis. If there is a real or very real influence then continue with the middle score test using duncan multiple area test (DMRT) according to Steel and Torrie (1993).

IV. RESULT AND DISCUSSION

In this study the composition of feed treatment is presented in Table 1. The preparation of treatment rations based on the nutritional needs of laying ducks is 18% 84 Coarse Protein and metabolic energy 2750-2800 Kcal (Nutrient Requirement of Duck from 85 NRC, 2004). Based on the results of the study for 6 weeks obtained results as presented in Table 1.

Table 1. Nutritional composition of treatment rations

Nutrition Content	Perlakuan				
	R 0	R 5	R 10	R 15	R 20
Crude Protein (%)	18,00	18,12	18,12	18,17	18,07
Crude fiber (%)	5,14	5,47	5,47	5,61	6,12
Crude fat (%)	4,80	6,57	6,57	6,72	6,84
Metabolizable Energy (Kkal)	2755	2758	2758	2786	2804
Metionin (%)	0,37	0,38	0,38	0,41	0,43
Lisin (%)	1,03	0,99	0,99	0,98	0,99
Calsium (%)	3,20	3,32	3,32	3,41	3,56
Phosfor Total (%)	0,65	0,71	0,71	0,76	0,82
Balanced Ca : P	4,92	4,67	4,67	4,48	4,34

Description : R 0 = Use of 0% Fermented Fish Waste in rations

R 5 = Use of 5% fermented Fish Waste in rations

R 10 = Use of 10% fermented Fish Waste in rations

R 15 = Use of 15% fermented Fish Waste in rations

R 20 = Use of 20% fermented Fish Waste in rations

Table 2. Average Performance of Alabio duck egg production during study

No	Variabel	Treatment				
		R0	R5	R10	R15	R20
1.	Duck day production (%)	82,05a	65,58c	73,22b	82,47a	83,22a
2.	Egg Weight (g)	72,39b	69,71a	70,15a	69,24a	70,48a
3.	Ration Consumption (g.bird ⁻¹ .day ⁻¹)	190a	177b	178b	178b	184ab
4.	Ration Conversion	2,62	2,54	2,54	2,57	2,61
5.	Shape egg index	74,66	75,14	75,31	75,18	76,12
6.	Eggshell thickness (µm)	358	352	347	348	357
7.	Eggshell weight percentage (%)	10,16a	9,21b	9,68b	10,13a	9,24b
8.	Yolk egg color (%)	37,18a	36,28b	36,32b	37,24a	37,47a

Egg Production

Duck day production (%) Alabio ducks showed the highest scores on R20 treatment, while R5 and R10 treatments were still under control. This indicates that the use of fermented fish waste begins to be seen when it reaches 15% in rations. Actually this is very profitable because with the amount of 15%-20% able to replace khewani proteins such as fishmeal that are relatively expensive. This value is much higher than Biyatmoko research (2007), whose alabio duck egg production reached 67.32% with the administration of Niacin on its feed. It is suspected that in addition to the production life is close to peak production, also the difference in feeding of better sources of khewani protein., although the content of Protein and Energy is relatively the same. Solihat et al. (2003) states that egg production is influenced by feed, genetic and sex cooking speed. Egg Weight Based on DMRT test results, control treatment is higher than all treatments. This means the use of fermented fish waste in rations has not been able to increase the weight of alabio duck eggs, although in duck day egg production (%) the highest number of R20 treatments.

Ration Consumption

Based on the results of ration consumption, control treatment (R0) shows the highest feed consumption disbanding other treatments. This is in line with the weight of the resulting eggs including the highest. Even the treatment that can match the consumption of rations is the R20 treatment, although statistically the R20 treatment is no different from R5, R10 and R15. 108 4

Ration Conversion

For ration conversions, it turns out to show no real different results for all treatments. This value is a comparison between ration consumption and egg weight. So it is suspected that overall there is a physiological state leading towards normality where if feed consumption is high it will be manifested with a high egg weight, as well as vice versa. So by comparison it shows a relatively normal hail.

Egg Shape Index

The egg shape index also shows results that do not show statistical differences. This indicates that the resulting egg represents the normal shape of the oval egg. It is suspected that eggs that tend to be normal ovals are produced from ducks that are approaching peak production. Here it used in the study is already 28 weeks old. Thick eggshell In the thick parameters of the kerabang does not show any difference, it is suspected that up to 20% of the use of fermented fish waste, still does not increase the thickness of the kerabang. The thickness of this ape is closely related to calcium and phosphor consumption as well as the balance of Ca:P. In this study the thickness of the brotherly ranges from 347-358 (µm) or 0.35- 125 0.36 mm. According to Fajarwati et al. the thickness of alabio 0.01 mm. Percentage Of eggshell Weight The thickness of the brotherly is closely related to the percentage of the

weight of the brother. The thicker it will increase the weight of the brotherly. However, there is a difference between the weight of the control treatment (R0) with all treatments except R15. The highest percentage of weight gained in R0 was 10.16% and the lowest was R5 treatment (9.21%). Egg Yolk Index The Yolk Index is related to the size of the egg. Usually the larger the yolk then the weight of the egg will be greater. This yolk index is a high comparison of the yolk with the diameter of the yolk. The value of the treatment egg yolk index ranges from 36.28 to 37.47. This value is higher than the average egg yolk index in chickens which ranges from 33% – 50%. The highest yolk index is obtained in R20 treatment.

V. CONCLUSIONS

Utilization of fermented fish waste on Alabio ducks is able to provide the result of ration conversion, egg shape index and thick forging that is not different from control (R0), but the treatment of fish waste to egg production (% duck day), and egg yolk index shows better results than control especially R20 treatment. The utilization of fermented fish waste can be used in alabio duck rations up to 20%, without a negative effect on the performance of alabio duck egg

production. It is recommended that fermented fish waste can be used as a substitute for a protein source of animal up to 20% in Alabio ducks.

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CONFLICT OF INTEREST

All the authors were declaring that they have no conflict of interest.

AUTHORS CONTRIBUTION

The experimental design was achieved by Achmad Jaelani, the actual research organized by Taufikurrahman and Tintin Rostini tabularized the data and done the statistical analyses.

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