

# Performance of Male and Female Local Grower Ducks Fed Fermented Non- Conventional Rations Supplemented with Asam Gelugur Leaf Meal

*By Dewi Roestamy*

# 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,  
2020

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**4<sup>th</sup> BOGOR INTERNATIONAL CONFERENCE**  
**FOR APPLIED SCIENCE 2020 (4<sup>TH</sup> BICAS 2020)**

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“Facing the World Challenges through Exploring the Beneficial of Science  
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## **PROCEEDING**

**4<sup>th</sup> Bogor International Conference for Applied Science 2020**

**4<sup>th</sup> BICAS 2020**

Theme:

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

ISBN: 978-602-6585-76-9

**VIRTUAL CONFERENCE**

**DECEMBER 2<sup>nd</sup> 2020**

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**Publisher:**  
Unida Press  
Universitas Djuanda Bogor  
Indonesia  
Jl. Tol Ciawi No. 1 Bogor 16720

ISBN 978-602-6585-76-9



## **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 4<sup>th</sup> 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

## CONTENTS

<b>COVER .....</b>	<b>i</b>
<b>PREFACE .....</b>	<b>v</b>
<b>CONTENTS .....</b>	<b>vi</b>

No	Article Title	Institution	Page
1	Evaluation of chili production on the concentration of banana growth controls  Author: Oktavianus Lumban Tobing, Yanyan Mulyaningsih	Universitas Djuanda	1-6
2	Pummelo Farming Development Strategy Through institutional Strengthening in Magetan Regency East Java Province  Author: Wini Nahraeni, Arifah Rahayu, Siti Masitoh	Universitas Djuanda	7-13
3	Growth, Production, and Quality of Katuk ( <i>Sauropus androgynus</i> (L.) Merr.) Accessions on Various Nitrogen Organic Fertilizer  Author: Arifah Rahayu, Nur Rochman, Wini Nahraeni, Lathifah Nuraeni	Universitas Djuanda	14-18
4	Exploring Consumers' Acceptance of E-Marketplace Using TAM And Flow Theory at Pusat Pembelanjaan Mentaya Kotawaringin Timur  Author: Agung Purwanto, Nurahman, Andy Ismail	Universitas Darwan Ali	19-28
5	Development of Probability Density Function for Data Analysis of Variance Equality Testing  Author: Muhamad Nursalman, Aris Sasongko	Universitas Pendidikan Indonesia	29-33
6	The Concept of Feminism Architecture in Houses to Reduce Postpartum Depression Symptoms  Author: Yeptadian Sari, Anggana Fitri Satwikasari, Almira Muthi Faliha	Universitas Muhammadiyah Jakarta	34-37
7	Physical Environment Criteria that Affects Tuberculosis Prevalence in Rural Settlement  Author: Anggana Fitri Satwikasari, Yeptadian Sari	Universitas Muhammadiyah Jakarta	38-40
8	In Silico Study of Butterfly Pea Flower Water Extract ( <i>Clitoria ternatea</i> L.) as Inhibitor of NADPH Oxidase Enzyme  Author: Tiana Fitrilia, Muhammad Fakihi Kurniawan, Febryana Rahayu Kurniawati, Tirta Setiawan	Djuanda University	41-44

9	LOOP-MEDIATED ISOTHERMAL AMPLIFICATION (LAMP) IN HALAL INDUSTRY : CURRENT STATE AND FUTURE TRENDS  Author: Raafqi Ranasasmita, M.Biomed, Rosy Hutami, S.TP, M.Si	Djuanda University	45-49
10	The fungal solid-sate fermentation (FSSF) strategy in modified bitter cassava flour (mocaf) production  Author: DWI ARYANTI UTAMI, TIANA FITRILIA	UNIVERSITAS DJUANDA	50-55
11	Effect of Drying Method (Tray Drying dan Freeze Drying) on The Yield and Total Phenolic Content of Indonesian Citrus Peel  Author: Siti Aminah, Nindya Atika Indrastuti	Djuanda University	56
12	CHARACTERISTICS OF NATURAL LIQUID HAND SOAP WITH NEEM SEED ( <i>Azadirachta indica</i> ) OIL  Author: Fina Uzwatania	Universitas Djuanda	57-61
13	Physical Transport of Polycyclic Aromatic hydrocarbon Emission in Urban Air  Author: Miftahudin Miftahudin	Teknologi Industri Pertanian Universitas Djuanda	62-70
14	Flushing Diet Supplementation Affects Apparent Nutrient Digestibility of Postweaning Pasundan Calves under Extensive Grazing  Author: Dede Kardaya, Elis Dihansih, Deden Sudrajat	universitas djuanda	71-73
15	ANALYSIS HANDLING METHOD OF SPECIFIC HOUSEHOLD WASTE ON SELF-QUARANTINE PATIENTS IN THE PATIENTS CONFIRMED OF COVID-19 CASE IN THE AREA WORKING OF THE CANGKUANG PUBLIC HEALTH CENTER  Author: Budiman Budiman	Stikes A Yani Cimahi	74-85
16	PRODUCT ATTRIBUTES DETERMINE THE PREFERENCE OF HERBAL MEDICINE CONSUMERS  Author: Himmatul Miftah, I. Novita, H. Tsuwaibah, M.A. Sunaryo	Universitas Djuanda	86-90
17	THE PERFORMANCE OF THE SAFETY SUPPLY CHAIN ( <i>Curcuma Domestica</i> Val.) AS A HERBAL MEDICINE  Author: Ita Novita, H. Miftah, L. Alhani	Faperta Universitas Djuanda Bogor	91-98



18	The Implementation Of Occupational Health And Safety For Pregnant Workers In Various Workplaces  Author: Atidira Dwi Hanani	Universitas Indo Global Mandiri	99-108
19	Pengaruh Media Pendidikan Seks Terhadap Perubahan Pengetahuan dan Sikap Remaja Usia 12-15 Tahun dalam Berperilaku Seksual Di Kecamatan Cianjur Kabupaten Cianjur  Author: Ai Ana Rodiana	Akbid cianjur	109-121
20	THE ACTIVITY OF EXTRACT VISCOUS ETHANOL PANDANUS TEST A NEW KIND OF FOREST ( Freycinetia sessiliflora Rizki ) ON THE GROWTH OF THE BACTERIA Streptococcus mutans  Author: <sup>1</sup> Fitri Sri Rizki, ADE FERDINAN	Akademi farmasi yarsi pontianak	122-129
21	MEAT SENSORY QUALITY OF FEMALE ALABIO DUCKS FED COMMERCIAL RATIONS SUPPLEMENTED WITH MANGOSTEEN (Garcinia mangostana L) PERICARP MEAL  Author: Anggraeni, Ristika Handarini, Visya Mudyana Khoiriyah	Universitas Djuanda	130-134
22	Performance of Male and Female Local Grower Ducks Fed Fermented Non-Conventional Rations Supplemented with Asam Gelugur Leaf Meal  Author: Dewi Wahyuni, Burhanudin Malik, Elis Dihansih	universitas djuanada	135-138
23	Effects of the Inclusion of Papaya (Carica Papaya L) Leaf Meal in Rations on the Productivity of Quail (Coturnix-coturnix japonica) Layers.  Author: Rahma Fatimah Zahra, Deden Sudrajat, Dewi Wahyuni	Universitas Djuanda Bogor	139-144
24	UTILIZATION OF FERMENTED FISH WASTE AS MULTIPURPOSE FEED AGAINST THE PERFORMANCE OF ALABIO DUCK  Author: Taufikurrahman, Achmad Jaelani, Tintin Rostini	Universitas Islam Kalimantan Muhammad Arsyad Al Banjari Banjarmasin	145-152
25	Sensory Evaluation of Meat of Spent Ducks In Fed Nonconventional Ration with Garcinia Atroviridis Leaf  Author: Elis Dihansih, Dede Kardaya, Dewi Wahyuni	Universitas Djuanda	153-154
26	The Meat Composition of Spent Duck with Garcinia Atroviridis Leaf Flour in the Nonconventional Ration Fed  Author: Nadzira Nurifazria, Elis Dihansih, Dede Kardaya	Universitas Djuanda	155-165

27	<p>Testing Study of Micro Gas Turbine (MGT) Based on Turbocharger DH300-7 Using LPG</p> <p>Author: Fatkur Rachmanu, S.T, M.T, Mokhamad Is Subekti, S.T, M.T, Widodo, S.T, M.T, Lukman Nulhakim, S.T, M.T, Ade Irvan Tauvana, S.T, M.Eng</p>	<p>Politeknik Enjinering Indorama</p>	<p>166-170</p>
28	<p>The Making of Instant Porridge of Pumpkin (Cucurbita moschata D.) for the Elderly</p> <p>Author: Aji Jumiono, Mardiah, Rina Kaniawati</p>	<p>Universitas Djuanda Bogor</p>	<p>171-183</p>
29	<p>Goat Milk Soap Enriched with Binahong Leaf Extract: Analysis on Ph Value, Water Content and Free Fatty Acids</p> <p>Author: Hilmi Nurul Mufidah, Putri Dian Wulansari, Novia Rahayu</p>	<p>Universitas Perjuangan Tasikmalaya</p>	<p>184-192</p>

## Performance of Male and Female Local Grower Ducks Fed Fermented Non-Conventional Rations Supplemented with *Asam Gelugur* Leaf Meal

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**Background**—Increasing consumption of local duck meat is expected to be an alternative solution for dependency on imported meat. Efforts to increase duck meat consumption should be taken toward the improvement of production and consumers' acceptance of duck meat (Mattitaputty and Suryana 2010). Sex and feed are two of important factors affecting duck growth. Feed additives including herbs can be used to improve growth performance of ducks. In this study, the use of *asam gelugur* leaves (*Garcinia atroviridis*) containing organic acids and phenolic compounds was expected to improve digestive functions and improve duck production performance.

**Purpose** – This study was aimed at assessing the effects of *asam gelugur* leaf meal inclusion in rations on the production performance of ducks of different sexes.

**Design/methodology/approach** – The study was conducted for 2 months in the Poultry Farm of Faculty of Agriculture, Djuanda University, Bogor. Eighty male and female grower ducks were allocated into a 2 x 2 completely randomized factorial design. Factor A consisted of sexes (male and female) and factor B consisted of levels of *asam gelugur* leaf meal inclusion in rations (0, 2, 3, 4, and 6%). Three replicates were used for each treatment. Measurements were taken on feed intake, body weight gain, feed conversion ratio, and mortality rate.

**Findings**– Results showed that no interaction between sexes and levels of *asam gelugur* leaf meal inclusion in rations was found. However, body weight gain and feed conversion ratio were significantly affected by sex. Significant effects of levels of *asam gelugur* leaf meal inclusion in rations were found on feed intake and body weight gain. The inclusion of *asam gelugur* leaf meal of 6% in rations of male ducks was found to be more effective as it increased body weight gain and lowered feed conversion ratio.

**Research limitations**– Results of this study were limitedly found in male and female grower ducks.

**Originality/value** – Assessment of production performance of male and female ducks fed rations containing *asam gelugur* leaf meal.

Keywords: hydroxycitric acid, flavonoid, *garcinia atroviridis*, organic acid, body weight gain

### I. INTRODUCTION

Today, meat of commercial and native chickens is the main source of animal protein intake for Indonesian people. However, demand for duck meat is increasing as reflected from the increasing duck population from 50,528 in 2018 to 51,950 in 2019 (Ditjen PKH Direktorat Jendral Peternakan dan Kesehatan Hewan 2019). Local ducks are expected to be an alternative source of meat to reduce the country dependence on imported meat. Improvement of production and consumers' acceptance of duck meat should become the main objective of the efforts done to increase duck meat consumption (Mattitaputty and Suryana 2010).

Factors affecting duck growth include breed, species, sex, and feed (Soeparno 2005). The feed given to ducks should quantitatively and qualitatively meet the animal requirements. Providing feed additive such as herbs is a potential way to improve the quality of meat. *Asam gelugur* leaf (*Garcinia atroviridis*) contains various kinds of organic acids including malic and

hydroxycitric acids (Meer *et al* 2013). In addition, phenolic acid, flavonoid, and tannin having antioxidative activity is found in *asam gelugur* leaf (Shabrina 2017). Other phenolic compounds (flavonoid, phenylpropanoid, phenolic acid, antosianin, quinone pigment, melanin pigment, lignin, and tannin) contained in plants are known to raise appetite and improve the work of the digestive system which may eventually improve the animal performance. Therefore, this study was conducted to assess the effects of the inclusion of *asam gelugur* leaf meal in rations on the production performance, particularly body weight gain and feed conversion ratio of male and female ducks.

## II. LITERATURE REVIEW

Based on zoological classification, duck is a waterfowl belonging to Aves Class, *Anseriformes* Order, *Anatidae* Family, and *Anas* Genus, and *Platyrrhynchos* Species (Crawford 1993). Ducks are meat and egg producers. Indonesian local ducks with Indian Runner physical characteristics are mainly egg producers. In other areas including China, America, and Europe, ducks are mostly developed as meat producers.

Feed intake in male local ducks aged 10 weeks was on average 9.67 g/head/day (Triyastuti 2005). Average body weight of male local ducks might reach 24.8–26.2 g/head/day (Purba and Ketaren 2011) and a carcass percentage of 52.06–54.55% within 8-week duck raising period (Dewanti *et al.* 2013).

*Asam gelugur* leaf with organic acids in it may act as an acidifier which is beneficial in preserving feed as it protects feed from any damaging action from microbes and fungi. This brings a direct effect on the improvement of feed digestibility. The inclusion of 1% *asam gelugur* leaf was found to increase carcass percentage and meat components and reduce carcass bone components (Damanik 2014).

## III. METHODOLOGY

This study was conducted in 2 months in the Poultry Farm of Animal Husbandry Department, Faculty of Agriculture, Djuanda University, Bogor. Forty male and female grower local ducks were used. Experimental rations were made of fermented non-conventional feed and *asam gelugur* leaf meal. Feedstuffs used to formulate the rations included ground corn, ground rice bran, soybean cake, fishmeal, premix, DCP, and CaCO<sub>3</sub>. Fermented non-conventional feed consisted of coconut cake, palm kernel cake, and *Aspergillus niger* fungi. The ducks were placed in battery cages equipped with feed trough and drink containers. Other equipment used in this study included plastic bags, digital balance, gas stove, oven, blender, big pans, and pails. A factorial completely randomized design with 2 factors was used. The first factor (A) was sexes (male and female) and the second factor (B) was the inclusion of *asam gelugur* leaf meal in rations (0, 2, 4, and 6%). Three replicates were applied in each treatment. Treatments consisted of male ducks + 0% *asam gelugur* leaf meal (R0), male ducks + 2% *asam gelugur* leaf meal (R1), male ducks + 4% *asam gelugur* leaf meal (R2), male ducks + 6% *asam gelugur* leaf meal (R3), female ducks + 0% *asam gelugur* leaf meal (R4), female ducks + 2% *asam gelugur* leaf meal (R5), female ducks + 4% *asam gelugur* leaf meal (R6), and female ducks + 6% *asam gelugur* leaf meal (R7). Measurements were taken on production performance parameters including feed intake, body weight gain, feed conversion ratio, and mortality rate.

Feed fermentation process was done based on procedures developed by Supriyati *et al.* (1998). *Asam gelugur* leaf meal preparation was done by firstly separating the leaves from the midrib. The leaves were then dried under the sun for 1–2 days before they were in an oven at 62 °C for 10 minutes. Dried leaves were ground by using a blender. Rations of 100 g/head/day were given to the ducks twice a day. Treatments were given to the ducks for 6 weeks.

Comment [BM1]: 40 atau 80?

#### IV. RESULTS AND DISCUSSION

Results showed that there was no interaction between sex and levels of *asam gelugur* leaf meal inclusion. However, significant effects of sex on daily body weight gain and feed conversion ratio. Effects of levels of *asam gelugur* leaf inclusion on feed intake and body weight gain were also significant.

Daily feed intake was not affected by the interaction between sex and levels of *asam gelugur* leaf meal inclusion. Effects of sex on feed intake was not significantly different either. In contrast, levels of *asam gelugur* leaf inclusion gave significant effects on feed intake. Average feed intakes in male and female ducks were 93.54 and 92.87 g/head/day, respectively. Although they were not statistically different, feed intakes in male ducks tended to be higher than those in female ducks. Results of this study were in line with those found by Syaifudin *et al.* (2015) which showed that average feed intakes in male and female ducks were not different.

It was also shown that the inclusion of *asam gelugur* leaf meal of 0 and 2% gave different feed intake from that of 4 and 6% (90.45 and 88.37 versus 95.38 and 98.62 g/head/day, respectively). This increased feed intake was suspected to be caused by the notion that organic acid and phenolic compounds contained in *asam gelugur* leaf meal. This finding was in line with what was found by Magdalena (2013) that phenolic compounds raised appetite. Feed intakes found in this study were lower than the figures of 129.09-135.09 g/head/day found by Mulyani *et al.* (2013) who added citric acid to rations of grower male ducks and 108.38-110.00 g/head/day found by Sudiyono and Purwatri (2007).

Body weight is an indicator of economic success in animal raising. In this study, daily body weight gain was significantly affected by both sex and the inclusion of *asam gelugur* leaf meal. Average body weight gains were 11.27 g/head/day in male ducks and 6.04 g/head/day in female ducks. This indicated that male ducks were able to utilize feed better than female ducks (Syaifudin *et al.* 2015). This difference might be attributed to androgen hormone as found by Sari *et al.* (2012) in male and female *pegagan* ducks. In addition, male ducks were found to have relatively higher feed intake and feed efficiency allowing them to have faster growth than female ducks (Matitaputty *et al.* 2011).

Regarding levels of *asam gelugur* inclusion, it was found that body weight in ducks given ration with 0% *asam gelugur* inclusion (7.47 g/head/day) was different from those (9.27 and 9.32 g/head/day) in ducks given rations with 4 and 6% *asam gelugur* inclusion. This might be caused by organic acids and phenolic compounds including flavonoid which could improve the condition of digestive system in ducks. Tannin contained in *asam gelugur* leaves was not found to give negative effect on body weight gain.

Feed conversion ratio was significantly affected by sex but not by levels of *asam gelugur* leaf meal inclusion. Male ducks had better feed conversion ratio (8.38) than female ducks (15.79). In another study by Wulandari *et al.* (2005), male ducks were found to have higher feed intake and identified to have better digestibility as they also had lower values of feed conversion than female ducks.

No death of ducks was found in this study. This mortality rate of 0% indicated that the inclusion of *asam gelugur* leaf meal in rations gave no negative effect on the growth of ducks.

#### V. CONCLUSION

It was concluded that the inclusion of *asam gelugur* leaf meal in rations of up to 6% was more effectively done in male ducks as it could increase body weight gain and lowered feed conversion ratio.

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# **The 4th Bogor International Conference For Applied Science**

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