

**THE PRODUCTIVITY OF QUAIL (*Coturnix coturnix japonica*) FED ON READY-MADE BROILER FEED AND MANUALLY PREPARED DIET**



**Md. Imrul Kayes Sujan**

Roll no: 0121/03

Registration no. 936

Session: 2021-22

**A Thesis Submitted in Partial Fulfillment of the Requirements for the Master of Science in Poultry Science**

**Department of Dairy and Poultry Science  
Faculty of Veterinary Medicine**

**Chattogram Veterinary and Animal Sciences University  
Khulshi -4225, Chattogram, Bangladesh**

**JULY 2023**

**THE PRODUCTIVITY OF QUAIL (*Coturnix  
coturnix japonica*) FED ON READY-MADE  
BROILER FEED AND MANUALLY PREPARED  
DIET**

**Md. Imrul Kayes Sujan**

Roll no: 0121/03

Registration no. 936

Session: 2021-22

**This is to certify that we have examined the above Master's thesis and have found that is complete and satisfactory in all revisions required by the thesis examination committee have been made**

.....  
**Dr. Mohammad Abul Hossain**

Professor

Department of Dairy and Poultry Science

Faculty of Veterinary Medicine, CVASU

**Supervisor**

.....  
**Dr. Md. Saiful Bari**

Associate Professor

Department of Dairy and Poultry Science

Faculty of Veterinary Medicine, CVASU

**Co- supervisor**

.....  
**Mr. Goutam Kumar Debnath**

Professor and Head

**Chairman of the Examination Committee**

Department of Dairy and Poultry Science

Faculty of Veterinary Medicine, CVASU



**Chattogram Veterinary and Animal Sciences University  
Khulshi -4225, Chattogram, Bangladesh**

**JULY, 2023**

## **Declaration**

I hereby declare that I am the sole author of the thesis. I also authorize the Chattogram Veterinary and Animal Sciences University (CVASU) to lend this thesis to other institutions or individuals for the purpose of scholarly research. I further authorize the CVASU to reproduce the thesis by photocopying or by other means, in total or in part, at the request of other institutions or individuals for the purpose of scholarly research.

I, the undersigned, and author of this work, declare that the electronic copy of this thesis provided to the CVASU Library is an accurate copy of the print thesis submitted, within the limits of the technology available.

**The Author**

**July, 2023**

**Dedicated to My Beloved  
Parents**

## Acknowledgments

First and foremost, I would like to remember the Almighty Allah, without his profound kindness and love it won't be possible for me to complete my research and dissertation smoothly for the Master of Science (MS) degree in Poultry Science at the Department of Dairy and Poultry Science, CVASU, Chattogram.

Later, I would like to express my sincere gratitude to my respected supervisor **Dr. Mohammad Abul Hossain, Professor, Department of Dairy & Poultry Science (DDPS), CVASU**, for his academic guidance, valuable suggestions, gracious cooperation, and enthusiasm throughout the course of my study. His sensible comments and criticisms, detailed edits, and inspirational participation have encouraged me to complete my research while conducting significant obligations or responsibilities.

My co-supervisor, **Dr. Md. Saiful Bari, Associate Professor, DDPS, CVASU**, has provided me with academic advice, corrections, recommendations, and guidance that have helped me properly write and submit my thesis. I am extremely grateful to him.

Additionally, I would like to extend my sincere gratitude to **Mr. Goutam Kumar Debnath, Professor, and Head, including other respected teachers** as well as the personnel of the DDPS, for their valuable advice, support, and encouragement throughout my study time.

I do want to thank CVASU's internal research grant and the NST fund for making this research successful. I also want to thank the technical staff at CVASU, who showed me around the lab and explained different things. I also want to thank the staff of the PRTC at CVASU.

My friends Dr. Rony Chowdhury, Dr. Abdullah Al Masud, and Dr. Nahid Imtiaz Chowdhury deserve special gratitude for their endless support and encouragement during the entire research.

I also must thank the Coordinator of Advanced Studies & Research (CASR), Director of Research & Extension, Librarian, and all other CVASU professionals who helped me to complete my studies.

Last but not least, I am grateful to my family members and close friends for their unwavering blessings, encouragement, and support, which have enabled me to reach this point in my life. I could not ignore the contribution of my friends and other well-wishers for their inspirational support, assistance, and guidance during my academic career.

## The Author

## CONTENTS

Chapter	Topics	Page No
	Acknowledgments	iv
	Contents	vi-viii
	List of tables	ix
	List of Figures	x
	List of appendices	xi
	List of abbreviations	xii-xiii
	Abstract	xiv
<b>Chapter-I</b>	<b>Introduction</b>	<b>1-4</b>
<b>Chapter-II</b>	<b>Review of literature</b>	<b>5-19</b>
	Introduction	<b>5</b>
	2.1 Poultry feed	5
	2.2: Impact of broiler compound feed and manually prepared mixed diets on the feed intake of quail broiler	9
	2.3: Effect of broiler compound feed and manually prepared complete diet on the growth performance of quail broiler	11
	2.4: Response of Readymade feed and manually prepared feed on FCR of quail broiler	13
	2.5 Response of readymade feed and manually prepared feed on meat yield of broiler quail	14
	2.6: Response of Readymade feed and manually prepared feed on Mortality	17
	2.7 Response of ready-made feed and manually prepared feed on bone quality broiler quail	18
	2.8: Response of ready-made feed and manually prepared feed on profitability or economic cost-effectiveness of broiler quail	18
	2.9 Importance of the current study	19
	Conclusion	19
<b>Chapter-III</b>	<b>Materials and Methods</b>	<b>20-31</b>
	3.1 Statement of the experiment	20
	3.2 Preparation of the experimental shed	20
	3.3: Collection of quail and experimental design	20
	3.4: Collection of the experimental feed and feedstuffs	21
	3.5: Dietary Treatments	22
	3.6: Feed grinding, mixing, and preparing the diet	23
	3.7: Management	23

	3.7.1: Brooding	23
	3.7.2: Stocking density	23
	3.7.3: Feeder and drinker space	24
	3.7.4: Feeding and watering	24
	3.7.5: Lighting	24
	3.7.6: Immunization of birds	24
	3.7.7: Medication	24
	3.7.8: Sanitation	24
	3.8: Data and sample collection	25
	3.9.1: Method of quail processing	25
	3.9.2: Record keeping	26
	a) Mortality	26
	b) Body weight	26
	c) Feed intake	26
	d) Water intake	26
	3.10: Calculation of data	26
	a) Body weight gain (BWG)	26
	b) Feed conversion ratio (FCR)	26
	c) Mortality and livability	27
	d) Dressing percentage	27
	3.11: Sample processing and analyses	27
	3.11.1: Feed sample	27
	3.11.2: Evaluation of meat yield parameters	27
	3.11.3: Production cost	28
	3.11.4: Statistical analyses	28
<b>Chapter-IV</b>	<b>Results</b>	<b>32-36</b>
	4.1: The gross response and livability of quail-fed readymade broiler feed and manually prepared feed from d1-42	32
	4.1.1: Body weight	32
	4.1.2 Feed intake	32
	4.1.3 Feed conversion ratio (FCR)	33
	4.1.4 Livability of broiler quail	33
	4.1.5 Carcass traits (%)	34

	4.1.6: Gastro-intestinal development	35
	4.1.7: Bone quality traits	35
	4.1.8: Cost-benefit analysis	36
<b>Chapter-V</b>	<b>Discussion</b>	<b>37-41</b>
	5.1: The gross response of quail-fed readymade broiler feed and manually prepared feed from d1-42	37
	5.1.1: Impact of home-made feed and ready commercial broiler ration on the feed consumption of broiler quail	37
	5.1.2: Effect of home-made feed and ready commercial broiler ration on the body weight of broiler quail	37
	5.1.3: Effect of home-made feed and ready commercial broiler ration on the feed conversion ratio (FCR) of quails	38
	5.1.4: Effect of home-made feed and ready commercial broiler ration on the survivability of quails	39
	5.1.5: Effect of home-made feed and ready commercial broiler ration on the meat yield traits of broiler quail	39
	5.1.6: Gastro-intestinal development of quails	39
	5.1.7 Effect of home-made feed and ready commercial broiler ration on bone quality of broiler quail	40
	5.1.8: The profitability of quail-fed readymade broiler feed and manually prepared feed	40
<b>Chapter-VI</b>	<b>Conclusion &amp; Recommendations</b>	<b>42-43</b>
<b>Chapter-VII</b>	<b>References</b>	<b>44-53</b>
<b>Chapter-VIII</b>	<b>Appendix</b>	<b>54-58</b>
	<b>Brief Bio-data of the Author</b>	<b>59</b>



## LIST OF TABLES

Serial No.	Name of tables	Page No.
<b>1</b>	The major grains used as poultry feed with their chemical composition	7
<b>2</b>	The major milling by-product used in poultry feed with their chemical composition	8
<b>3</b>	Different molasses used in poultry feed with their chemical properties	8
<b>4</b>	Experimental design	21
<b>5</b>	Nutrient composition of readymade feed	21
<b>6</b>	Ingredients and nutrient composition of basal diet	22
<b>7</b>	Body weight (BW) of broiler quail fed on a ready-made or manually formulated diet	32
<b>8</b>	Feed intake (FI) of broiler quail fed on a ready-made or manually prepared diet	33
<b>9</b>	Feed conversion ratio (FCR) of broiler quail fed on a ready-made or manually formulated diet	33
<b>10</b>	Carcass yield traits (%) of broiler quail fed ready-made versus manual fed from 42 days	34
<b>11</b>	Gastro-intestinal organ weight (g/b) of quail-fed readymade broiler feed and manually prepared feed on day 42	35
<b>12</b>	Bone quality traits of broiler quail fed ready-made versus manual fed from 42 days	35
<b>13</b>	Economic analyses of quail-fed readymade broiler feed and manually prepared feed	36

## List of Figures

<b>Figure no.</b>	<b>Figure name</b>	<b>Page no.</b>
1	Cleaning, Washing, and prepared of shed and cages	29
2	Mixing and packaging of feed	29
3	Weighing and recording of feed	29
4	Collection of birds from Hatchery	30
5	Physical Examination of bird	30
6	Weighing of birds	30
7	Feed supply to the birds	30
8	Catching the Bird for experimental purpose	30
9	Glance of quail at day 42 of experiment	31
10	Slaughtering, Carcass examination, and sample collection	31
11	Bone sample, measuring, and weighing of bone	31
12	Livability (%) of quail fed ready-made versus manual fed from d11-42 days; Bar with the similar letter had no significant differences ( $P>0.05$ ) between treatments	34

## LIST OF APPENDICES

<b>Appendix no.</b>	<b>Appendix</b>	<b>Page no.</b>
1	Cost-benefit analyses of quail fed on readymade broiler feed and manually prepared feed	54
2	Feed intake (FI) g/b of quail chicks fed readymade broiler feed and manually prepared feed	55
3	Livability (%) of Quails	56
4	Growth performance of quail fed on readymade feed and manually prepared feed	57
5	Meat yield characteristics of quail feed test diet on 42 days	58

## LIST OF ABBREVIATIONS

<b>Abbreviations</b>	<b>Elaborations</b>
NRC	National Research Council
ANOVA	Analysis of Variance
CRD	Completely randomized design
ME	Metabolizable Energy
CF	Crude Fiber
CP	Crude Protein
EE	Ether Extract
CVASU	Chattogram Veterinary and Animal Sciences University
D	Day
DDPS	Department of Dairy and Poultry Science
DLS	Department of Livestock Services
DM	Dry Matter
DMRT	Duncan's multiple-range tests
DOC	Day-old chicks
TDN	Total Digestible Nutrients
AM	Ante Meridiem
PM	Post Meridiem
FAO	Food and Agriculture Organization
FCR	Feed Conversion Ratio
FI	Feed Intake
g/b	Gram/bird
Gm	Gram
Kg/b	Kilogram/bird
BW	Bone Weight

LWG	Live Weight Gain
TL	Tibia length
BWG	Body weight gain
Mm	Millimeter
Mg	Milligram
PRTC	Poultry Research and Training Center
P	Phosphorus
Ca	Calcium
%	Percentage
<	Less Than
>	Greater Than
e.g.	Example Given
Et al.	And his Associates
Etc.	Et cetera
Sq. ft.	Square Feet

## Abstract

The study was conducted to investigate the growth performance, survivability, carcass yield traits, gastrointestinal, and productivity of quail fed on ready-made broiler feed and manually prepared feed. A total of 150 Japanese quail chicks (11 days aged) of either sex were randomly housed in 3 treatments including T<sub>1</sub> (control), T<sub>2</sub> (ready feed-Aman), and T<sub>3</sub> (ready feed-Nourish), each treatment was replicated 5 times with 10 birds per replicate in a completely randomized design. The birds were reared in the battery cages from d11-42 days under similar lighting, feeding, and environmental management conditions. Data on body weight (BW), feed intake (FI), feed conversion ratio (FCR), livability, carcass yield traits (dressing %, breast weight, drumstick weight, thigh weight, wing weight, back weight, and neck, etc.), gastro-intestinal organ weights (gizzard, heart weight and liver), bone quality traits (femur and tibia weight, length, width, Ca%, and P%) etc., were measured in this study. Besides, the profitability of quail rearing was also estimated to analyze the cost-benefit ratio. The overall BW was marginally improved ( $P < 0.06$ ) in ready-made commercial broiler feed (T<sub>2</sub>) during d11-42 days of age. Apart from this, BW was also significantly ( $P < 0.05$ ) improved in the same diet (T<sub>2</sub>) during 11-18d, 11-25d, and 11-32 days, respectively, without affecting FI and survivability. The FCR on the birds fed the T<sub>2</sub> diet was found to be improved ( $P < 0.05$ ) on days 11-32 and 11-39 days, respectively. Only back weight % was increased ( $P < 0.05$ ) in the quail-fed T<sub>2</sub> diet amongst the other traits of carcass yield of quail without affecting gastrointestinal organs. Bone tibia weight and Ca% were significantly ( $P < 0.05$ ) improved in the birds fed the T<sub>2</sub> diet. Besides, femur length, tibia length, and width were also marginally increased in the same diet (T<sub>2</sub>). The results of profitability data showed that significantly ( $P < 0.01$ ) higher profit and lower cost involvement were observed in the birds fed manually –prepared diet (T<sub>1</sub>) than those of ready-made commercial diets (T<sub>2</sub> and T<sub>3</sub>). It can be concluded that quail rearing on homemade feed appears to be more economical, even though ready-made commercial broiler feed might show better potentiality for growth performance and bone quality development.

**Keywords:** Quail, ready-made broiler feed, home-made feed, growth performance, carcass yield, viability, bone quality, profitability