

**PERFORMANCE OF BROILERS FED HYBRID QUALITY
PROTEIN MAIZE-BASED DIETS**

SHARICA S. ROMOROSA

An undergraduate thesis presented to the faculty of the Department of Animal
Science, College of Agriculture, Central Luzon State University in
partial fulfillment of the requirements for the degree

**BACHELOR OF SCIENCE IN AGRICULTURE
(ANIMAL SCIENCE)**

SEPTEMBER 2016

**PERFORMANCE OF BROILERS FED HYBRID QUALITY
PROTEIN MAIZE-BASED DIETS**

by

SHARICA S. ROMOROSA

An undergraduate thesis presented to the faculty of the Department of Animal Science,
College of Agriculture, Central Luzon State University in partial fulfillment
of the requirements for the degree of Bachelor of Science in
Agriculture major in Animal Science


APPROVED:


ERNESTO A. MARTIN

Adviser

9-13-16

Date Signed


JOICE V. SAN ANDRES
Department Research Coordinator


9-16-16
Date Signed


JOICE V. SAN ANDRES

Critic

9-16-16

Date Signed


IRENE J. DOMINGO
Department Chairperson

9-16-16
Date Signed

ACCEPTED:

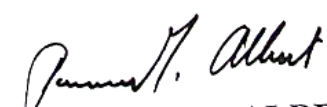

ERNESTO A. MARTIN

Dean

9-16-16

Date Signed

RECORDED:


RONALDO T. ALBERTO
College Research Coordinator

9/16/16
Date Signed

ACKNOWLEDGMENT

The author would like to extend her deep appreciation and heartfelt gratitude to all the people who contributed and helped her for the fulfillment of this study.

The author wants to thank Dr. Ernesto A. Martin, her adviser, for his guidance and lessons taught in the study as he has set an example of excellence as a researcher and instructor to the author.

To Ms. Joice V. San Andres, her critic and the Department Research Coordinator for her optimistic words of encouragement and outlaying her time to give answers to the authors' questions as well as to Dr. Irene J. Domingo, Chairperson of the Department of Animal Science for her motivations and mother-like advices to the author.

To Dr. Ramon Ceasar Salas, Casimiro, Lance, ate Perlyn, Kuya Jeff, Kuya Rolly, Mang Peter, Janjan who helped her and filled her spare hours during the conduct of the study, so much appreciation for all of you.

To the author's family who gets her through everything because they believed in her especially her beloved parents; Mr. Romeo E. Romorosa and Mrs. Linda S. Romorosa for the love, support and sacrifices they've made for the author, and every effort it takes to raise happy and healthy children. To her sisters Kristine and Excelsis for immeasurable instants we've shared be it happy or sad moments, the author is very grateful for that.

To her ROTC family who served as her family while studying including her senior class and batch mates who guided and accompanied her for the first three years of her stay in the university.

To her brothers and sisters in Society in Animal Science for the countless memories be it in joy or in hardship

To her special someone, Jose Marco D. Aquino, for his never-ending understanding and love through the good and hard times.

Above all, to Almighty God for the bountiful blessing you have given to our family. I would not have been in this position today if it was not for You.

SHARICA SEBASTIAN ROMOROSA

BIOGRAPHICAL SKETCH

The author was born on 15th of February 1995 at Cauayan City, Isabela. She is the youngest child of Mr. Romeo E. Romorosa and Mrs. Rosalinda S. Romorosa.

She completed her elementary education at Centro de Cultura Inc. and took up her secondary education at Nan Sing School, Cauayan City, Isabela. She took Bachelor of Science in Agriculture Major in Animal Science with Poultry Production as her field of specialization. She conducted and finished her undergraduate thesis at Poultry Module I, Animal Production Office, University Business Affairs Program, Central Luzon State University, Science City of Muñoz, Nueva Ecija.

She joined Reserve Officer Training Corps as an advance officer and finished the 3-year course successfully.

She was also an active member of the Society of Animal Science.

TABLE OF CONTENTS

	PAGE
TITLE PAGE	i
APPROVAL SHEET	ii
ACKNOWLEDGEMENT	iii
BIOGRAPHICAL SKETCH	v
TABLE OF CONTENTS	vi
LIST OF TABLES	viii
LIST OF APPENDIX FIGURES	ix
ABSTRACT	x
INTRODUCTION	1
Statement of the Problem	1
Importance of the Study	2
Objectives of the Study	2
Hypothesis of the Study	3
Scope and Limitation	3
Time and Place of the study	3
REVIEW OF LITERATURE	4
Maize Production and Utilization in the Philippines	4
Development of Quality Protein Maize	5
Nutritional Value of Quality Protein Maize	6
Energy Value of Quality Protein Maize compared with Normal Maize	8

Inclusion Level of Quality Protein Maize in Poultry Diets	9
Carcass Quality	10
METHODOLOGY	12
Experimental birds	12
Formulation and preparation of experimental diets	12
Care and Management	14
Data Gathering	15
Data Analysis	17
RESULTS AND DISCUSSION	18
SUMMARY AND CONCLUSION	24
LITERATURE CITED	25
APPENDICES	28

LIST OF TABLES

TABLE	TITLE	PAGE
1	Crude protein and amino acid profile (%) in normal and quality protein maize	7
2	Content of experimental broiler diets	14
3	Composition of experimental broiler diets	15
4	Mean (\pm SEM) production performance of broilers fed diet with normal maize or quality protein maize	21
5	Mean (\pm SEM) carcass yield of broilers fed diet with normal maize or quality protein maize	23
6	Mean (\pm SEM) sensory characteristics of broilers fed diet with normal maize or quality protein maize	24
7	Mean (\pm SEM) income over feed cost of broilers fed diet with normal maize or quality protein maize	25

LIST OF APPENDIX FIGURES

FIGURE	TITLE	PAGE
1	Electrical feed mixer	30
2	Brooding cage used in the study	31
3	Weighing scale used	32
4	Questionnaires used in sensory evaluation	33
5	Panelists during sensory evaluation	34

PERFORMANCE OF BROILERS FED HYBRID QUALITY PROTEIN MAIZE-BASED DIETS¹

by

SHARICA SEBASTIAN ROMOROSA

ABSTRACT

A total of 270 day-old broiler chicks (Cobb) were used to determine the effects of quality protein maize-based diet (QPM) on growth performance, carcass yield and sensory characteristics of broilers meat; economic efficiency of using QPM-based diet was also assessed. The birds were randomly assigned to diets with normal maize (NM) and two varieties of quality protein maize (QPM). Each dietary treatments had six replications with 15 birds per replication.

Results showed no significant differences ($p>0.05$) in gain in weight, feed conversion ratio and livability among the dietary treatments. However, during 0-28 days of age, feed intake was significantly different with higher values from QPM variety 1 and NM ($p<0.05$). Carcass yield and cut-up parts did not differ significantly. Sensory attribute of meat did not differ ($p>0.05$). However, purchase intention in QPM variety 2 was slightly higher than the two treatments.

¹ Undergraduate thesis presented as partial fulfillment of the requirements for the degree of Bachelor of Science in Agriculture from Central Luzon State University, Science City of Muñoz, Nueva Ecija under the supervision of Dr. Ernesto A. Martin with Research Contribution no. CA-02-15-0008.

LITERATURE CITED

- AMONELO, M.O. and D.B. ROXAS.** 2008. Growth performance of broilers fed quality protein maize (QPM)-based diet. *Philippines J. Vet. Anim. Sci.*, 34(1): 11-22.
- BAI, X.F.** 2002. Nutritional evaluation and utilization of quality protein maize Zhong Dan 9409 in broiler feed. MSC Thesis, Chinese Academy of Agricultural Sciences, Beijing.
- BASTIANELLI, D., M. QUENTIN, I. BOUVAREL, C. RELANDEAU, P. LESCOAT, P. PICARD, and S. TESSERAUD.** 2007. Early lysine deficiency in young broiler chicks. *Animal* 1: 587-594.
- BAR.** 2011. CORN: Optimizing productivity and competency. October-December 2011 Issue (Vol. 13 No. 4).
- BAS.** 2015. Corn Calendar Year 2014 Estimates. Rice and Corn Situation and Outlook. January 2015
- CELESTINO, O.F.** 2011. Nutritional and feeding values of quality protein maize in laying hen
- CROW, J.F.** 1998. 90 years ago: the beginning of hybrid maize. *Genetics*. Mar: 148(3): 923-928.
- CAMBEL, I.H. and M.P. MAGSALIN.** 1990. Evaluation of yellow corn and quality protein maize in feed rations for broilers. *USM College of Agriculture Research Journal (Philippines)*. 1:40-46.
- FLODIN, N.** 1997. The Metabolic Roles, Pharmacology and Toxicology of Lysine. *J. Anim. Coll. Nutr.*, 16: 7-21.
- GERPACIO, R.V., J.D. LABIOS, R.V. LABIOS, and E.I. DIANGKINAY.** 2004. Maize in the Philippines: Production Systems, Constraints and Research Priorities. Mexico. D.F.: CIMMYT.
- KERR, B.J., M.T. KIDD, K.M. HALPIN, G.W. MCWARD and C.I. QUARLES.** 1999. Lysine level increase live performance and breast yield in male broilers. *J. Appl. Poult. Res.* 8:381-390.

- KIDD, M.T., B.J. KERR and N.B. ANTHONY.** 1998. Dietary interactions between lysine and threonine in broilers. *Poult. Sci.* 76:608-614
- LANDIN, G., E. RODRIGUEZ and T.C REIZ DE SUOZA.** 2014. Metabolizable energy, nitrogen balance, and ileal digestibility of amino acids in quality protein maize for pigs
- MARTIN, E.A., O.F. CELESTINO, J.V. SAN ANDRES and A.T. BADUA.** 2012. Amino acid profile, energy metabolizability and feeding value of quality protein maize in laying hens. *Philippine Journal of Veterinary & Animal Sciences*; 38: (2) 117.
- NRC.** 2011. Ministry of Agriculture and Cooperatives, Singha Durbar, Kathmandu, Nepal. Statistical Information on Nepalese Agriculture., USA.
- ONIMISI, P.A., I.I. DAFWANG. J.J. OMAGE, and J.E. ONYIBE.** 2008. Apparent digestibility of feed nutrients, total tract and ileal amino acids of broiler chicken fed quality protein maize (Obatarnpa) and normal maize. *International Journal of Poultry Science* 7: 959-963.
- ONIMISI, P.A., J.J. OMAGE, I.I. DAFWANG and G.S. BAWA.** 2009. Replacement value of normal maize with Quality Protein Maize (Obatampa) in broiler diets. *Pakistan Journal of Nutrition* 8: 112-115.
- OSEI S. A., C.C. ATUAHENE, D.B. OKAI, A. DONKOH and A. K. TUAH.** 2002. The nutritive value of quality protein maize in the diets of broiler chickens. Department of Animal Science, Kumasi Ghana
- OSEI, S. A., H. K. DEI and A. K. TUAH.** 1999. Evaluation of quality protein maize as a feed ingredient for layer pullet. *Journal of Animal.*, 181-189.
- PALIT, K.K. and S.C. BABU.** 2003. Food systems for improved human nutrition: linking agriculture, nutrition and productivity.
- PANDA, A.K., RAJU, M.V.L.N., S.V.R. RAO, G. LAVANYA, E.P.K. REDDY and G.S. SUNDER.** 2010. Replacement of normal maize with quality protein maize on performance, immune response and carcass characteristics of broiler chickens. *Asian Australian Journal of Animal Sciences* 23: 1626-1631.
- PERYAM, D.R., and F.J. PILGRIM.** 1957. Hedonic scale method of measuring food preferences. *Food Technology*, 11(9), 9-14.

- QI, G.H., Q.Y. DIAO, Y. TU, S.G. WU and S.H. ZHANG.** 2001. Feed Research Institute and Institute of Crop Breeding and Cultivation, Chinese Academy of Agricultural Sciences, Beijing, P. R. China
- SULLIVAN, J.S., D.A. KNABE, A.J. BOCKHOLT and E.I. GREGG.** 1989. Nutritive value of quality protein maize and food corn for starter and grower pigs. *J. Anim. Sci.* 67:1285-1292.
- TANG, M.Y., Q.G. MA, Z.D CHEN and C. JI.** 2007. Effects of dietary metabolizable energy and lysine on carcass characteristics and meat quality in Arbor Acres broilers. *Asian Australasian Journal of Animal Sciences* 12: 1865-1873
- TYAGI, P. K., A. K. SHRIVASTAV, A. B. MANDAL, K. PROMOD, A.V. TYAGI, A.V. ELANGO VAN and C. DEO.** 2008. The apparent metabolizable energy and feeding value of quality protein maize for broiler chicken. 43, 169-174.
- VIVEK, B.S., A.F. KRIVANEK, N.P. ROJAS, S.T. AFRIYIE and A.O. DIALLO.** 2008. Breeding Quality Protein Maize (QPM) Protocols for Developing QPM Cultivars.
- ZHAI, S.W.** 2002. Nutritional evaluation and application of quality protein maize in layer ration. M. S. Thesis, Northwest Science and Technology University of Agriculture and Forestry, Yangling, Shaanxi, China.
- ZHAI, S.W. and M.L. ZHANG.** 2010. Comparison of true metabolizable energy and true amino acid availability between normal maize and quality protein maize (Shandan 17)