

PERFORMANCE OF LAYERS FED DIET WITH EUBIOTIC AGENTS

RONNIE C. AGUILLON

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

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

JUNE 2017

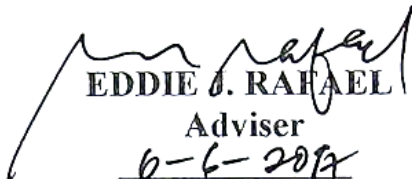
PERFORMANCE OF LAYERS FED DIET WITH EUBIOTIC AGENTS

by


RONNIE C. AGUILLON

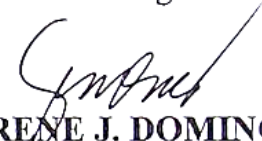
An undergraduate thesis manuscript presented to the faculty of the Department of Animal Science, College of Agriculture in partial fulfillment of the requirements for the degree of Bachelor of Science in Agriculture major in Animal Science

APPROVED:

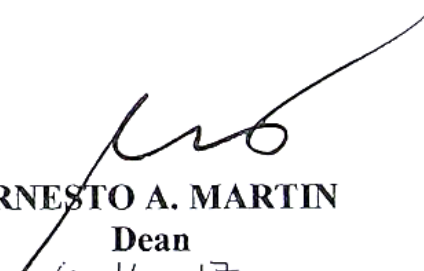

EDDIE J. RAHAEL
Adviser
6-6-2017
Date Signed


ERNESTO A. MARTIN
Critic
6-6-17
Date Signed



JOICE V. SAN ANDRES
Department Research Coordinator
6-13-2017
Date Signed


IRENE J. DOMINGO
Department Chairperson
6-15-17
Date Signed

ACCEPTED:


ERNESTO A. MARTIN
Dean
6-16-17
Date Signed

RECORDED:


RONALDO T. ALBERTO
College Research Coordinator
6/17/17
Date Signed

BIOGRAPHICAL SKETCH

The author, Ronnie C. Aguillon, was born on March 2, 1997 in Malolos City, Bulacan. He is the third child of Romeo M. Aguillon and Cristina C. Aguillon among the six siblings.

He took his primary education at Santor Elementary School (Grade 1-3) and at Food for Hungry Minds School (Grade 4-6) and graduated in 2009. He finished his secondary education at Bulacan Ecumenical School in the year 2013.

For his tertiary education, he was admitted at Central Luzon State University under the Bachelor of Science in Agriculture program major in Animal Science with poultry production as his specialization. To further enhance his knowledge in the field of research, he pursued thesis as his undergraduate requirement.

ACKNOWLEDGEMENT

The author would like to express his profound and sincerest gratitude, deep regards and overwhelming appreciation to those who helped him in making this thesis possible.

Above all, to our Almighty God who guided the author in every hour of his life, the blessings, favors, knowledge, wisdom, furthermore, His unfailing love and grace that helped the author overcome all the hindrances and obstacles in his study.

To his adviser, Prof. Eddie J. Rafael, for giving his valuable and constructive suggestion, assistance, constant encouragement, professional guidance and also to his welcoming presence and cool demeanor;

To the Dean of College of Agriculture and also his critic, Dr. Ernesto A. Martin, for his professional guidance during the actual conduct of the thesis and for making this thesis possible;

To the College Research Coordinator, Ma'am Joice V. San Andres, for her boundless patience, pieces of advice and for understanding and allowing the author to defend his paper after the said due date.

To all his great professors who shared their knowledge and skills for his academic growth;

To the poultry family he had, Kuya Rolly, Kuya Jeff who help him selfishly in conducting his thesis;

To all his classmates and friends, Meggie, Mae, Andrew, Raniel, Kuya Maning, Ronald, Lawrence, Juvy, Jasper, Mervic, Gelo, Nikko, Don, CJoy and to all the friends he had, for encouragements and having a sound mind when the author needs advise, for assistance, motivations, for teaching the author how to analyze data statistically. All the effort given has been very much cherished;

To Daniel, Samuel, Dave, Kuya Julius, Ate Marife and to all his Lakas Angkan Family, for prayers and unfailing support;

To the authors family, Romeo and Cristina, his parents, and to his siblings, Ronica, Ronnel, Ranie Jay, Renz Angelo, Reanne Joyce for their support, love and the author's source of inspiration which have motivated the author to do the best he can in all the things he do. They have always served as the author's driving spirit to keep going.

Lastly, to all the author's friends, mentors and colleagues not mentioned above but who have shared their concern, love and piece of advice to him. Thank you so much.

RONNIE CINCO AGUILLON

TABLE OF CONTENTS

	PAGE
TITLE PAGE	i
APPROVAL SHEET	ii
BIOGRAPHICAL SKETCH	iii
ACKNOWLEDGEMENT	iv
LIST OF TABLES	viii
LIST OF APPENDIX OF FIGURES	ix
ABSTRACT	x
INTRODUCTION	1
Statement of the Problem	2
Significance of the Study	3
Objectives of the Study	3
Hypothesis of the Study	3
Scope and Limitation of the Study	4
Time and Place of the Study	4
REVIEW OF LITERATURE	5
Probiotics	5
Prebiotics	6
Organic Acids	7
Gut Health in Poultry	8

Layer Egg Production and Protein Requirement	9
METHODOLOGY	10
Experimental birds and treatments	10
Composition of the Eubiotic Preparation	10
Care and management	12
Feeding	12
Data gathered	12
Analysis of Data	15
RESULTS AND DISCUSSION	16
Effects on Production Performance	16
Egg Weight Classification	17
Egg Quality	18
Other Observations	18
Income Over Feed Cost	20
SUMMARY, CONCLUSION AND RECOMMENDATIONS	21
LITERATURE CITED	22
APPENDICES	25

LIST OF TABLES

TABLE		PAGE
1	Composition of eubiotic agents as presented by manufacturer	10
2	Composition and cost/kg of SLD and SLD + EB and Calculated Analysis	11
3	Mean effect of treatment on production performance of layers	16
4	Mean effect of treatment on egg classification	17
5	Mean effect of treatment on egg quality	18
6	Mean effect of treatment on excreta quality	19
7	Mean effect of treatment on income over feed cost	20

LIST OF APPENDIX FIGURES

FIGURE		PAGE
1	Fecal quality scores	26
2	Experimental site at the Poultry Module 1, Department of Animal Science, College of Agriculture	27
3	Mixing of feed	28
4	Equipment used in checking the egg quality	29
5	Measuring albumen height using digital caliper	30

PERFORMANCE OF LAYERS FED DIET WITH EUBIOTIC AGENTS^{1/}

by

RONNIE C. AGUILLON

ABSTRACT

The study was conducted to determine egg production performance, egg quality and income over feed cost of layers fed diet with eubiotic agents. A total of 400 Dekalb layers (68 weeks old) were used in the study for seven weeks. The layers were randomly assigned to dietary groups, namely SLD- Standard Layer Diet (without eubiotic agents) and SLD+EB- Standard Layer Diet with eubiotic agents (add on). Each diet had 15 replications with initially 16 layers per replication.

Results revealed egg production was numerically improved with the feeding of diet with eubiotic agents. An improvement on feed conversion ratio was observed, in favor of the layers fed with eubiotic agents. Moreover, a lower mortality rate was seen as a possible effect of feeding layers with eubiotic agents. Income over feed cost was numerically higher from layers fed diet with eubiotic.

^{1/} An undergraduate thesis presented in partial fulfillment of the requirements for graduation with the degree of Bachelor of Science in Agriculture major in Animal Science from Central Luzon State University, Science City of Muñoz, Nueva Ecija. Prepared in the Department of Animal Science with the supervision of Prof. Eddie J. Rafael with Research Contribution No. CA-04-17-0008.

LITERATURE CITED

- BIOSTAR NUTRIPRODUCTS, INC. 2016.** Research Protocol.
- CHOCT, M. 2009.** Managing gut health through nutrition. *British poultry science*, 50(1), 9-15.
- CUMMINGS, J.H. and G.T. MACFARLANE. 2002.** Gastrointestinal effects of prebiotics. *Br. J. Nutr.* 87(2):145-151.
- DAMASKOS, D. and G. KOLIOS. 2008.** Probiotics and prebiotics in inflammatory bowel disease: microflora 'on the scope'. *British Journal of Clinical Pharmacology*, 65: 453-467.
- DIBNER J.J. and P. BUTTIN. 2002.** Use of organic acids as a model to study the impact of gut microflora on nutrition and metabolism. *J. Applied Poult. Res.* 11:453-463.
- FALLAH, R., A. KIANI and A. AZARFAR. 2013.** A review of the role of five kinds of alternatives to in-feed antibiotics in broiler production. *Journal of Veterinary Medicine and Animal Health*, 5(11), 317-321.
- FOTEA, L., E. COSTĂCHESCU, G. HOHA, and D. LEONTE. 2010.** The effect of oregano essential oil (*Origanum vulgare* L) on broiler performance. *Lucraristiintifice*, 53, 491-4.
- GADD, J. 1997.** Life without antibiotic digestive enhancers. In: Lyons TP (ed) *Biotechnology in the feed industry. Proceedings Alltechs 13th Annual Symposium*, Nicholasville, Kentucky, USA, Pp. 277-291.
- GIBSON, G.R. and M.B. ROBERFORD. 1995.** Dietary modulation of the human colonic microbiota: introducing the concept of prebiotics. *J. Nutr.* 125:1401-1412.
- GREEN, A.A. and D.W.B. SAINSBURY. 2001.** The effects of enzyme and probiotic supplementation to diets on broiler performance. *Turk. J. Vet. Anim. Sci* 11:895-903.
- GRIGGS, J. P. and J. P. JACOB. 2005.** Alternatives to antibiotics for organic poultry production. *The Journal of Applied Poultry Research*, 14(4), 750-756.

- GUARNER, F., F. CASELLAS, N. BORRUEL, M. ANTOLIN, S. VIDELA, J. VILASECA and J.R. MALAGELADA. 2002.** Role of microecology in chronic inflammatory bowel diseases. *European Journal of Clinical Nutrition*, 56(Suppl. 4): S34–S38.
- HADDADIN, M. S. Y., S. M. ABDULRAHIM, E. A. R. HASHLAMOUN and R. K. ROBINSON. 1996.** The effect of *Lactobacillus acidophilus* on the production and chemical composition of hen's eggs. *Poult. Sci.* 75:491–494.
- HINTON, M. and A. H. LINTON. 1988.** Control of salmonella infections in broiler chickens by the acid treatment of their feed. *Vet. Rec.* 123:416–421.
- HUGHNER, R.S., P. MCDONAGH, A. PROTHERO, C.J. II SHULTZ, and J. STANTON. 2007.** Who are organic food consumers? A compilation and review of why people purchase organic food. *J. Consum. Behav.*, 6: 94–110.
- JACOB, J. 2015.** Feeding Chickens for Egg Production. Retrieved from <http://articles.extension.org/pages/69065/feeding-chickens-for-egg-production> on February 14, 2017.
- KRAEHENBUHL, J.P. and M.R. NEUTRA. 1992.** Molecular and cellular basis of immune protection of mucosal surfaces. *Physiology Reviews*, 72: 853–879.
- KELLY, D. and S. CONWAY. 2001.** Genomics at work: the global response to enteric bacteria. *Gut*, 49: 612–613.
- KELLY, D. and T.P. KING. 2001.** Luminal bacteria regulation of gut function and immunity, in: PIVA, A., BACH.
- LEESON S. 2006.** Feeding programs for laying hens. In: *Poultry Nutrition and Management. Technical Report Series. Southeast Asia, Singapore: American Soybean Association International Marketing Southeast Asia. Singapore, pp. 56-75.*
- LEESON, S. and J. D. SUMMERS. 2009.** *Commercial poultry nutrition.* Nottingham University Press.
- MAKKAR H. P. S. and K. BECKER. 1996.** Nutritional value and an nutritional components of whole and extracted *Moringa oleifera* leaves. *Animal Feed Science and Technology* 63, 211 – 228.
- MARKOVIĆ, R., D. ŠEFER, M. KRSTIĆ and B. PETRUJKIĆ. 2009.** Effect of different growth promoters on broiler performance and gut morphology. *Arch Med Vet*, 41, 163-169.

- MEUNIER, R. A. and M. A. LATOUR. 2007.** Commercial Egg Production and Processing. Retrieved from <http://ag.ansc.purdue.edu/poultry/publication/commeegg/> on February 14, 2016.
- NAHASHON, S. N., H. S. NAKAUE and L. W. MIROSH. 1994.** Production variables and nutrient retention in Single Comb White Leghorn laying pullets fed diets supplemented with direct-fed microbials. *Poult. Sci.* 73:1699–1711.
- PATTERSON, J.A. and K.M. BURKHOLDER. 2003.** Application of prebiotics and probiotics in poultry production. *Poult. Sci.* 82:627-631.
- PHILLIPS, I., M. CASEWELL, T. COX, B. DE GROOT, C. FRIIS, R. JONES and J. WADDELL. 2004.** A critical review of published data. *Journal of Antimicrobial Chemotherapy*, 53(1), 28-52.
- SINOVEC, Z. and R. MARKOVIĆ. 2005.** Use of pre-biotics in poultry nutrition. *Biotechnology in Animal Husbandry*, 21(5-6), 235-239.
- SUTHERLAND J. P., G. K. FOLKARD and W. D. GRANT. 1990.** Natural coagulants for appropriate water treatment: a novel approach, *Waterlines*, April (4). pp30-32.
- WILLIAMS, K. C. 1992.** Some factors affecting albumen quality with particular reference to Haugh unit score. *World's Poultry Science Journal*, 48(01), 5-16.
- YUSRIZAL C. and T.C. CHEN. 2003.** Effect of adding chicory fructans in feed on broiler growth performance, serum cholesterol, and intestinal length. *Int. J. Poult. Sci.* 3:214-219.
- ZIKIC D, PERIC L, G. USCEBRKA, N. MILOSEVIC and S. JOTANOVIC. 2006.** Probiotici i prebiotici u ishrani brojlera: 1. Efekat na proizvodne rezultate. 11. Savetovanje biotehnologiji, Čačak, 11(2):471.