GROWTH PERFORMANCE OF FaST (FAC SELECTED TILAPIA STRAIN) FED UNDER TWO FEEDING SCHEMES

By

MARLEE ESMEERE DONCILLO BADUA

An undergraduate thesis submitted to the faculty of the College of Fisheries
in partial fulfillment of the requirements for the degree of

BACHELOR OF SCIENCE IN FISHERIES

COLLEGE OF FISHERIES
CENTRAL LUZON STATE UNIVERSITY
Science City of Muñoz, Nueva Ecija
Philippines

2017

COLLEGE OF FISHERIES
CENTRAL LUZON STATE UNIVERSITY
Science City of Muñoz, Nueva Ecija

GROWTH PERFORMANCE OF FaST (FAC SELECTED TILAPIA STRAIN) FED UNDER TWO FEEDING SCHEMES

by

MARLEE ESMEERE DONCILLO BADUA

is an undergraduate Thesis presented to the Faculty of the College of Fisheries in partial fulfillment of the Requirements for the degree of

BACHELOR OF SCIENCE IN FISHERIES

APPROVED:

RAVELINA R. VELASCO
Adviser
06/19/17
Date

EMMANUEL M. VERA CRUZ
Critic
06-19-17
Date

NOTED:

REMEDIOS B. BOLIVAR
Department Chair
6-20-17
Date

RECORDED:

REMEDIOS B. BOLIVAR
College Research Coordinator
6/20/17
Date

ACCEPTED:

RAVELINA R. VELASCO
Dean
06/19/17
Date

BIOGRAPHICAL DATA

Personal Data

Name	Marlee Esmeere D. Badua
BirthdaY	January 23, 1996
Birthplace	Alicia, Isabela
Address	Dagupan, Alicia, Isabela
Parents	Mr. Mario M. Badua and Mrs. Lelita D. Badua

Educational Attainment

Elementary	Alicia Central School Alicia, Isabela
Secondary	School of our Lady of Atocha Alicia, Isabela
Tertiary	Central Luzon State University Science City of Muñoz, Nueva Ecija

ACKNOWLEDGEMENTS

The author would like to express her sincerest and deepest gratitude to the people behind the success of her thesis.

First and foremost, the author would like to acknowledge the Lord, Who has provided wisdom, courage and strength during her study and in her daily life. All the glory and praises are given to Him;

To her adviser, Dr. Ravelina R. Velasco, for sharing her knowledge, for her patience and time in editing the manuscript, for her unending support and pieces of advices during the entire conduct of the study;

To her critic, Dr Emmanuel M. Vera Cruz, for providing motivations in the conduct of the study;

To the College Research Coordinator, Dr. Remedios B. Bolivar, for her constructive criticisms for the improvement of this paper.

To Mr. Eddie Boy T. Jimenez, for providing the requested fingerlings and technical assistance;

To the FAC fingerling production unit headed by Mr. Eddie Boy T. Jimenez, Prof. Eduardo Lopez, Mrs. Mia Porlucas, Mr. Jayson V. Isaias, Mr. Reynaldo N. Lanuza and Mr. Dennis G. Bungar, for camaraderie and labor assistance during study.

To Ms. Graciela Nocum, Ms. Kairon Maniquiz, Ms. Stephanie Espiritu, Ms. Carlota Aban, and Ms. Eden Abejero for the company and support during the conduct of this thesis.

To Icthyological society headed by Ms. Lindsay Star Dacanay for pushing forward in the completion of this paper.

To her friends from Maejo University, Chiang Mai, Thailand: Niphada Thiampayuha (Niki), Bim UsaneeSrisakham (Bim) and May Aungkana Ngammuang (May) for the quality time they shared with the author.

To her parents, Mr. Mario M. Badua and Mrs. Lelita D. Badua, for their unconditional love, moral and financial support, to her siblings, brothers Leomar and Marville D. Badua for the education assistance to make this paper possible.

To the above, she expresses her deep respect and gratitude.

May the God of hope fill with all joy and peace as you trust Him, so that may overflow with hope by the power of the Holy Spirit.

-Romans 16:13

MARLEE ESMEERE DONCILLO BADUA

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDIX FIGURES

LIST OF APPENDIX TABLES

GROWTH PERFORMANCE OF FaST (FAC SELECTED TILAPIA STRAIN) FED UNDER TWO FEEDING SCHEMES[1/]

ABSTRACT

The study was conducted to determine the effect of two feeding schemes on the growth performance of FaST (FAC Selected Strain). There were two (2) treatments replicated three (3) times for a total of six hapas that were installed in an earthen pond measuring 200 meter square at the FAC facilities. The hapa with a dimension of 1m x 1m x 1.2 was used for the feeding experiment. The fish weighing 5-10 g were randomly with selected and stocked at 30 fish per hapa. The different feeding schemes served as treatments in this study: T1 (daily feeding) and T2 (alternate-day feeding).

Statistical analysis revealed that the growth of FaST in TI (daily feeding) and T2 (alternate-day feeding) had no significant differences except for the feed conversion ratio with significant differences.

Growth parameters such as initial and final weight, gain in weight, specific growth rate (SGR) and survival rate were evaluated in this study. TI (daily feeding) gained the highest average final weight of 55.88 g ± 6.92, specific growth rate 4.33 % ± 0.33, while on the survival rate, the T2 (alternate-day feeding) had highest survival rate with a 52.22 % ± 2.22.

All growth parameters showed no significant differences, which mean that both daily and alternate feeding can be used by fish farmers. However, in terms of cost savings, though treatments were not significant, there was a better and efficient feed conversion ratio in alternate feeding.

1/ Undergraduate Field Practice Report presented to the faculty of College of Fisheries, Central Luzon State University in partial fulfillment of the requirements of Bachelor of Science in Fisheries ,Prepared at the Department of Aquatic Resources, Ecology and Management under the supervision of Dr. Ravelina R. Velasco.

LITERATURE CITED

Ahmed, M.S.,K. Shafiq and M.S. Kiani. 2012. Growth performance of major carp, (*Labeo rohita*) fingerlings on commercial feeds. The Journal of Animal and Plant Sciences, 22(1): 93-96.

Ajani, F., M.O. Dawodu and O.A. Bello-Olusoji. 2011. Effects of feed forms and feeding frequency on growth performance and nutrient utilization of *Clarias gariepinus* fingerlings. African Journal of Agricultural Research, 6(2): 318-322.

Antti, H. 2014. Production and utilization of tilapia feed in rural Zambia. Retrieved from https://www.researchgate.net on October 13, 2015.

Aralar-Cuvin M.L., P. Gibbs, A. Palma, A. Andayog and L. Noblefranca. 2012. Skip feeding as an alternative strategy in the production of Nile tilapia *Oreochromis niloticus* (Linn.) in cages in selected lakes in the Philippines. Philippine Agricultural Scientist, 95(4): 378–385.

Arriesgado, D.M., H.J. Vicente and D.A. Vicente. 2011. Production of male *Oreochromis niloticus* GET Excel tilapia by egg immersion in methyl testosterone hormone. Journal of Environment and Aquatic Resources, 2: 21-33.

Asian Development Bank. 2005. An impact evaluation of the development of genetically improved farmed tilapia. Retrieved from http://www.adb.org on May 25, 2015.

Bolivar, R.B., E.B.T. Jimenez, R.M.V. Sayco and R.J. Borski. 2011. Supplemental feeding of Nile tilapia (*Oreochromis niloticus* L.) in fertilized ponds using combined feed reduction strategies. Retrieved from https://www.rinabook.com on March 15, 2015.

Bolivar, R.B., C.L. Brown and E.B.T. Jimenez. 2006. Alternate-day feeding strategy for Nile tilapia grow-out in the Philippines: Marginal cost-revenue. North American Journal of Aquaculture, 68:192-197.

Boris, A.D.L., A. Müller-Belecke and G. Hörstgen-Schwark. undated. Control of spawning activity in female Nile tilapia (*Oreochromis niloticus* L.) temperature manipulation. Retrieved from http://onlinelibrary.wiley.com on May 19, 2016.

Bosworth, B. G. and W. Wolters. 2005. Effects of short-term feed restriction on production, processing, and body shape traits in market-weight channel catfish, *Ictalurus punctatus*(Rafinesque). Aquaculture Research, 36:344–351.

Brown, C.L., R.B. Bolivar and E.B.T. Jiminez. undated. Cost containment options for tilapia production in Central Luzon, Republic of the Philippines: alternate day feeding strategy. Retrieved from http://pdacrsp.oregonstate.edu on April 29, 2015.

Bureau, D., K. Chowdhury, N. Wing-Keong, A.G. Ponnia and M. Dey. undated. Producing tilapia feed locally: a low cost option for small-scale farmers. Retrieved from http://pubs.iclarm.net onn October 19, 2014.

Coche, A.G. 1982. Cage culture if tilapia. In: R.S.V. Pullin and R.H Lowe-McConnell (editors). The biology and culture of tilapias.ICLARM Conference Proceedings 7, 432 p. International Center for Living Aquatic Resources Management, Manila Philippines, pp.205-246.

Gullian-Klanian, M. and C. Arámburu-Adame. 2013. Performance of Nile tilapia *Oreochromisniloticus*fingerlings in a hyper-intensive recirculating aquaculture system with low water exchange. Lat. Am. J. Aquat. Res., 41(1), 150-162.

Grammer, G.L., W.T.Slack, M.S. Peterson, and M.A. Dugo. 2012. Nile tilapia *Oreochromisniloticus* (Linnaeus, 1758) establishment in temperate Mississippi, USA: multi-year survival confirmed by otolith ages.Aquatic Invasions, 7: 367–376.

Hasan, M.H. and M.B. New. 2013. On-farm feeding and feed management in aquaculture. Retrieved fromhttp://www.fao.org/3/a-i3481e.pdfon April 5, 2015.

Job, B.E., E.E.Antai, A.P. Inyang-Etoh, G.A. Otogo and H.S. Ezekiel. 2015. Proximate composition and mineral contents of cultured and wild tilapia *(Oreochromis niloticus)* (Pisces: Cichlidae) (Linnaeus, 1758). Pakistan Journal of Nutrition, 14(4): 195-200.

Khaw, H.L., H. Bovenhuis, R.W. Ponzoni., M.A. Rezk, H.Charo-karisa and H. Komen. 2009. Geneticanalysis of Nile tilapia (*Oreochromis niloticus*) selection line reared in two input environments. Aquaculture, 294(1–2): 37–42.

Li, S.F., T. Shou-Jie and C. Wan-Qi. 2010. Markers for genetically improved new GIFT Nile tilapia (*Oreochromisniloticusniloticus*L.) and their application in strain identification.Retrieved from http://www.ncbi.nlm.nih.gov on November 13, 2015.

Lugert, V., G. Thaller, J. Tetens, C. Schults and J. Krieter. 2014. A review on fish growth calculation: multiple functions in fish production their specific application. Reviews in Aquaculture, 6: 1–13.

Lovell, R.T. 1980. Practical fish diets. Food and Agriculture Organization of the United Nation. Retrieved from https://books.google.com on February 08, 20

Lunger, A.N. 2006. Evaluation of organically certifiable alternate protein sources for production of the marine carnivore, cobia *(Rachycentron canadum)*. Retrieved from http://scholar.lib.vt.edu on September 16, 2015

Mirea, C., V. Cristea, R.I. Grecu, L. Dediu and V. Ion. 2013. Hematological and biochemical characterization of Nile tilapia (*Oreochromis niloticus),* Linnaeus, 1758, reared intensively in a recirculating aquaculture system in relation to water temperature. Scientific Papers:Animal Science and Biotechnologies, 46(2):199-203.

Mohammed, W.O., M.A.S. Sabry, O.E.N. Gamal, A.M.M. Khater and M.K. Mahmoud. 2014. Effect of female weight on reproduction performance of Nile tilapia (*Oreochromis niloticus*). Retrieved from http://www.braesd.com on September 09, 2015.

Nguyen N.H., R.W. Ponzonia, K.R. Abu-Bakar A. Hamzah, H.L. Hawa and H.Y. Yee. 2010. Correlated response in fillet weight and yield selection for increased harvest weight in genetically improved farmed tilapia (GIFT), *Oreochromis niloticus*. Aquaculture, 305(1-4): 1–5.

Popma, T.J. and L.L. Lovshin. undated. Worldwide prospects for commercial production of tilapia. Retrieved from http://www.aces.edu on October 14, 2015.

Popma, T. and M. Masser. 1999. Tilapia: Life History and Biology. Southern Regional Aquaculture Center.

Price, C. and H. Egna. 2014. Strategies for reducing feed costs in small-scale aquaculture. Retrieved from http://pdf.gaalliance.org on January 23, 2015.

Romana-Eguia, M.R.R.,M.A. Laronaand M.R. Catacutan. 2013.On-farm feed management practices for Nile tilapia (*Oreochromis niloticus*) in the Philippines. p. 131–158. *In*: M.R. Hasan and M.B. New (eds.). On-farm feeding and feed management in aquaculture. FAO Fisheries and Aquaculture Technical Paper No. 583. Rome, Italy.

Solomon, J.R. and M.N. Ezigbo. 2010. Polyculture of Heteroclarias/Tilapia under different feeding regimes. Retrieved from http://www.sciencepub.net on November 09, 2015.

Tayamen, M.M. 2007. Freshwater fish seed resources in the Philippines. p. 395–424.*In*: M.G. Bondad-Reantaso (ed.). Assessment of freshwater fish seed resources for sustainable aquaculture. FAO Fisheries Technical Paper No. 501. Rome, Italy. 628 p.

Tayamen, M.M., T.A. Abellaand R.C. Sevilleja. 2006. The role of public sector in dissemination of tilapia genetics research outputs and links with private sector. Retrieved from https://core.ac.uk on March 15, 2015.

Tawwab, M.M.H. and H.I.El-Marakby. undated. Length-weight relationship,natural food and feeding selectivity of Nile tilapia *(Oreochromis niloticus L.)* in fertilized earthen pond . Retrieved from https.:// ag.arizona.edu on February 12 2015.

Velasco, R.R. 2011. Biological stress markers associated with growth of Nile tilapia (*Oreochromis niloticus*) reared at different stocking density. Ph.D. Thesis. Institute of Graduate Studies, Central Luzon State University. Science City of Muñoz, Nueva Ecija, Philippines. 115 p. (unpublished).

http://www.thefreedictionary.com

http://www.fao.org

http://www.revolvy.com

http://www.safariyako.com

http://www.fao.org

http://pubag.nal.usda.gov

http://www.academia.edu

http://www.adb.org