

MAJOR PRACTICE IN SWINE PRODUCTION

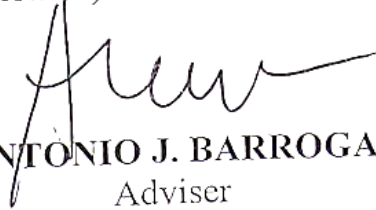
MA. NERIZA JANE A. MANIEGO

Submitted 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

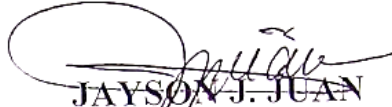
BACHELOR OF SCIENCE IN AGRICULTURE
(Animal Science)

SEPTEMBER 2016


This major practice report entitled "MAJOR PRACTICE IN SWINE PRODUCTION", prepared and submitted by MA. NERIZA JANE A. MANIEGO in partial fulfillment of the requirements for the degree Bachelor of Science in Agriculture (Animal Science) is hereby accepted.


ANTONIO J. BARROGA
Adviser

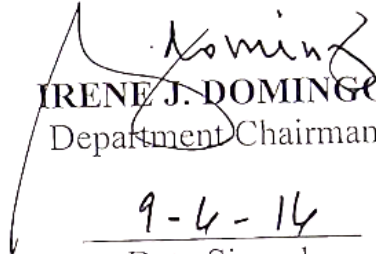
May 15 2016
Date Signed


JAYSON J. JUAN
Project manager
APO Swine Module 1

5-26-14
Date Signed


OLIVER F. CELESTINO
Department Major Practice Coordinator

8-19-16
Date Signed


IRENE J. DOMINGO
Department Chairman

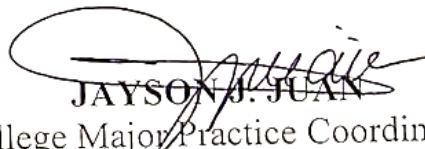
9-4-14
Date Signed

Approved:


ERNESTO A. MARTIN
College Dean

9-14-16
Date Signed

Recorded:


JAYSON J. JUAN
College Major Practice Coordinator

9-8-14
Date Signed

BIOGRAPHICAL SKETCH

The author was born January 1st 1995 at Malibay, San Miguel, Bulacan. She is the youngest among the three children of Mrs. Marilyn A. Maniego.

She finished her primary education at Malibay Elementary School in Malibay, San Miguel, Bulacan and her secondary education at San Miguel National High School in Scuala St., San Juan, San Miguel, Bulacan. After finishing her secondary education, she pursued her tertiary education at Central Luzon State University in Science City of Muñoz, Nueva Ecija. She took up Bachelor of Science in Agriculture Major in Animal Science with Swine production as her specialization.

While in college, she became the president of Ladies Dormitory #4 for two consecutive year, academic year 2014-2015 and 2015-2016.

ACKNOWLEDGEMENT

Through her hard work, the author would like to take this opportunity to give her grateful thanks to all who shared their kind and generous help that made this work possible.

The author would like to express her unending gratitude and praises to our Almighty God for the gift of life, knowledge, strength and guidance in all times and for the countless blessings and love she received, for making her fulfill her goals in life.

To Dr. Antonio J. Barroga, her ever supportive adviser, for all the advices, comments and unending guidance during her major practice.

To Dr. Irene J. Domingo, Department Chairperson; Dr. Oliver F. Celestino Department Major Practice Coordinator; Mr. Jayson J. Juan, College Major Practice Coordinator; Dr. Federico O. Perez, former Dean of College of Agriculture; Dr. Ernesto A. Martin, new dean of College of Agriculture; the faculty and staff members of the Department of Animal Science, for their encouragement, insightful and inspiration.

To Dr. Joel J. De Guzman, the owner of the farm who allowed her to conduct her major practice in their farm; Ms. Myra Montemayor “Madam My”, the farm technician, her mentor during the conduct of her major practice in J.B De Guzman farm, Madam Lyn, Madam Jessica and Madam Khim for their assistance and instruction throughout her training.

To Dr. Aswin Promsopa, the acting Assistant President for Academic Affairs, Dr. Suwit Wuthisuthimethavee, Dean, School of Agricultural Technology, to Mam China

Suppakron, Mam Krittika Kapbloy for the warm welcome they gave, for the accommodation and specially for teaching her valuable things in her chosen field.

To her mother, Mrs. Marilyn A. Maniego for all her sacrifices and hardship, her unconditional love, guidance, support, care, and encouragement. To her beloved sisters Princess and Liezell Maniego for their love and undying support. To her two niece, Aaliyah Zhammil and Precious Lianne for bringing happiness in her life.

To Mr. Sylvester D. Tuazon, who serves as her inspiration and for making her stay in CLSU more meaningful, for his encouragement, companionship and endless support.

Finally, to all the people whose name failed to mention, their contributions will never be forgotten. You are all part of her success and she will never forget all those things you have done for her. Thank you very much!

MA. NERIZA JANE A. MANIEGO

TABLE OF CONTENTS

	PAGE
TITLE PAGE	i
APPROVAL SHEET	ii
BIOGRAPHICAL SKETCH	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS	vi
LIST OF TABLES	x
LIST OF FIGURES	xii
LIST OF APPENDIX TABLES	xiv
ABSTRACT	xv
INTRODUCTION	1
Importance of the Major Practice	1
Objectives of the Major Practice	2
Time and Place of the Major Practice	2
REVIEW OF RELATED LITERATURE	3
Swine Industry	3
Piglet Management	3
Feeding Management	5
Breeding Management	7
Health Management	8
Nutrition Management	10

Housing	11
Waste Management	12
Identification and Record Keeping	14
DESCRIPTION OF ACTIVITIES	16
Orientation of the Major Practice	16
Inputs Required	17
Management Practices	16
Activities Performed	17
Breeding Management	19
Selection Criteria for Gilts	19
Breeding Management for Gilts and Sows	20
Breeding Management for Boars	22
Feeding Management	23
Feeding Management of Gestating Sows	24
Feeding of Lactating Sow	24
Feeding of Dry Sows	25
Feeding Management of Sucklings	25
Feeding Management of Weanlings	26
Feeding of Replacement Gilts	26
Feeding Management of Boars	27
General Herd Health Management	27
Management of Gestating Sow	27

Management of Farrowing Sow	29
Management of Lactating Sow	30
Management of Piglets	30
Weaning Piglets	39
Management of Replacement Gilts	40
Management of Boar	40
General Herd Health Management	41
Disinfection Program	41
Deworming Program	41
Vaccination Program	43
Recording System	48
Marketing Procedures	48
OUTPUTS AND DISCUSSION	50
Description of the Farms	50
J.B De Guzman Farm	50
Walailak University	51
APO Swine Module 1	52
Agro-Climatic Description of the Area	53
Technical Analysis of the Enterprise	57
Production Performance	57
Litter Index	57
Farrowing rate	58

Piglets Born Alive per Litter	59
Average Birth Weight	61
Average Weaning Weight	62
Piglets Weaned per litter	63
Average Stillborn per Litter	65
Mummified Fetuses per Litter	67
Cost and Return Analysis of Fattener	69
Growth Performance of Fattener at APO Swine Module I	70
Inventory at APO Swine Module I	71
PROBLEMS ENCOUNTERED AND RECOMMENDATION	72
LESSONS LEARNED	73
LITERATURE CITED	74
APPENDICES	78

LIST OF TABLES

TABLE		PAGE
1	Activities performed during the conduct of the major practice in JBDG Farm and APO Swine Module I	17
2	Activities performed during the conduct of the major Practice in Walailak University, Thailand	18
3	Different activities during gestation period at JBDG Farm	28
4	Activities from suckling up to weaning period at JBDG Farm	31
5	Deworming program at JBDG Farm	42
6	Deworming program at APO Swine Module 1	43
7	Vaccination program at JBDG Farm	44
8	List of veterinary drugs used at JBDG Farm	45
9	Vaccination program at APO Swine Module I	46
10	List of veterinary drugs used at APO Swine Module I	47
11	Agro-climatic data during the conduct of major practice from May to October 2015	53
12	Comparison of the production parameters at JBDG Farm and APO Swine Module I to industry performance in 2015	56
13	Cost and return analysis of fattener	69
14	Production performance of the fattener at APO Swine Module I	70

15	Beginning and ending inventory at APO Swine Module I	71
----	--	----

LIST OF FIGURES

FIGURE		PAGE
1	The major practice student while performing artificial insemination	21
2	The major practice student while doing semen collection	23
3	The major practice student while doing needle teeth cutting	32
4	The major practice student while doing ear tattooing	33
5	Ear notching code at APO Swine Module 1	34
6	The major practice student while performing ear notching	34
7	The major practice student while administering iron to the piglet	36
8	The major practice student while doing castration	37
9	Litter index at JBDG Farm and APO Swine Module I compared to the industry performance in 2015	57
10	Farrowing rate at JBDG Farm and APO Swine Module compared to the industry performance in 2015	59
11	Piglets born alive per litter at JBDG Farm and APO Swine Module I compared to the industry performance in 2015	60
12	Average birth weight at JBDG Farm and APO Swine Module I compared to the industry performance in 2015	61

14	Average weaning weight at JBDG Farm and APO Swine Module I compared to the industry performance in 2015	63
15	Piglets weaned per litter at JBDG Farm and APO Swine Module I compared to the industry performance in 2015	65
15	Stillborn per litter at JBDG Farm and APO Swine Module I compared to the industry performance in 2015	66
16	Mummified fetus per litter at JBDG Farm and APO Swine Module I compared to the industry performance in 2015	68

LIST OF APPENDIX TABLES

TABLE		PAGE
1	Breeding record form at APO Swine Module I	79
2	Farrowing record form at APO Swine Module I	80
3	Daily stock inventory record form at APO Swine Module 1	81
4	Weekly feed inventory record form at Swine Module 1	82

ABSTRACT

MANIEGO, MA. NERIZA JANE ALVARO, Department of Animal Science, College of Agriculture, Central Luzon State University, Science City of Muñoz, Nueva Ecija, July 2016.

Major Practice in Swine Production

Venue: **J.B De Guzman Farm**
Brgy. Naguilayan, San Carlos City,
Pangasinan

Walailak University
Nakhon Si Thammarat,
Thailand

APO Swine Module 1
Central Luzon State University
Science City of Munoz, Nueva Ecija

Adviser: **DR. ANTONIO J. BARROGA**

The Department of Animal Science, College of Agriculture, Central Luzon State University, Science City of Muñoz, Nueva Ecija offered the major practice program with the aim of producing graduates with adequate knowledge, skills and expertise in their field of specialization.

The actual training started in May to June 2015 at J.B De Guzman Farm, July 2015 at Walailak University, Thailand and ended November to December at APO Swine Module 1. The major practice student was exposed to different management practices from breeding up to weaning. All management practices such as feeding, breeding herd

health sanitation and vaccination were properly done with the careful supervision of the farm manager and the caretaker. All farm inputs such as stocks, feeds, veterinary drugs, light water, feed supplement, housing facilities and equipment were provided by the farm. All production inputs required in the farm operation was provided by the J. B De Guzman Farm, Walailak University Thailand and the APO Swine Module I.

In Walailak University Thailand, the major practice student performed new birth piglet procedures such as clipping of needle teeth (10 piglets), castration (5 piglets), ear notching (10 piglets), tail docking (10 piglets), iron administration (10 piglets) in different farms like Natthawood Farm and Walailak University Swine Farm. These procedures were carried out to 10 piglets at 7 days of age. The student was also exposed to molecular technique for breeding using PCR (Polymerase Chain Reaction) Machine.

In APO Swine Module 1, the farm had a litter index of 2.23 and a farrowing rate of 81.82%. The pre-weaning and post-weaning mortality was 2.13 and 0 respectively while the piglets reared per sow per year was 22.79.

The J.B De Guzman Farm had a total of 610 sows, average litter index of 2.12 with a 76.15% farrowing rate. On the average, the farm had 6.83% pre-weaning and 7.33% post weaning mortality resulted to 18.43 piglet's reared per sow per year. The J.B De Guzman farm was able to earn a total revenue of Php 9,426,375.00 from the sales of 945 fatteners. The total production expenses amounting to Php 8,357,227.31 was spent for weanlings (Php 1,890,000), feeds (Php 5,854,275.00), salaries (Php 176,228.25), gas & oil (40,097.92), electric bill (Php 165,527.25), repair & maintenance (Php 85,588.56),

veterinary drugs (Php 185,658.25). The net income was Php 1,069,097.69 while the net return per fattener was Php 1,131.32 and the return on expenses (ROE) was 11.32 %.

LITERATURE CITED

- ABAYGAR, C. 2009. Livestock.Tags: Artificial insemination, business, meat, pigs, swine. RSS 2.0 Retrieved from <http://www.agribusinessweek.com> on March 14, 2015
- ALIBES, F. B. 2010. Crude Protein in Piglet Diets. Retrieved from <http://www.pig333>. on March 14, 2015.
- ALTHOUSE, G. C. 2011. Feeding Levels and Practices in Pigs. Retrieved from http://www.merckmanuals.com/vet/management_and_nutrition/nutrition_pigs/feeding_levels_and_practices_in_pigs.html on March 10, 2015
- ARGAÑOSA, V.G. 2006. Genetic parameter estimates in yorkshire and landrace breeds of swine. Genetic analysis of commercial purebred swine population Retrieved from <http://www.elib.gov.ph> on March 14, 2015.
- BAKER J., S. CURTIS, O. HOGSETT and F. HUMENIK 2008. Safety in Swine Production System.Retrieved from <http://www.bae.nesu.edu/> on February 15, 2015.
- BIZMIND. 2009.Hog Raising Business Guide. Retrieved from <http://entrebankph.com> on February 7, 2015
- BUREAU OF AGRICULTURAL STATISTICS (BAS). 2014. Swine Industry Performance Report. Retrieved from <http://www.bas.gov.ph/> on February 24,2015.
- CANARIO, L., CANTONI, E., LE BIHAN, E., CARITEZ, J. C., BILLON, Y., BIDANEL, J. P. & FOULLEY, J. L. (2006). Between-breed variability of stillbirth and its relationship with sow and piglet characteristics. *Journal of Animal Science*, 84 (12), 3185–3196.
- FADPREP Swine Industry Manual. 2006. Retrieved from <http://inside.aphis.usda.gov/vs/em/fadprep.shtml> on March 20,2015
- FRIENDSHIP, R. M. 2014.Overview of Health-Management Interaction: Pigs.Retrieved from<http://www.merckmanuals.com/> on March 14,2015.
- GOBOUT, S., S. P. LEMAY., C. TREMBLAY.,F. PELLETIER, J-P. LAROUCHE and BEIZILE. 2008. Swine production impact on ambient air, odor and public health. american society of agricultural and biological engineers, st. joseph, michigan.

Retrieved from <http://asae.frymulti.com/abstract.asp?aid=25506&t> on March 10,2015.

GREINER, L. 2013. Gestation Diet's Impact on Pig birth weights. Retrieved from <http://www.thepigsite.com> on December 5,2015.

HYPOR 2009. How to attain heavy pig at weaning? The pig news desk. Retrieved from www.thepigsite.com on March 19, 2015.

KERLEY, M. and G. ALLEY. 2009 Use of oligosaccharides in swine nutrition. Retrieved from <http://www.pig333.com/> on March 10,2015.

LAPUS, Z. M.2009. Swine production in the Philippines. Retrieved from <http://www.pig333.com> on March 19, 2015.

LYNCH, P.B., CAHILL, A., LAWLOR, P., BOYLE, L., O'DOHERTY, J.V., LE DIVIDICH, J. 2006. Studies on growth rates in pig and effect of birth weight, Pig Production Development Unit, Teagasc, Moorepark, Fermoy, Co. Cork School of Agriculture, Food Science and Veterinary Medicine, University College, Dublin INRA, St. Gilles, France.

MEDINA, J.C.G. 2010. Animal Waste Management. Retrieved from <http://www.usapangbaboy.com> on March 14, 2015.

MILLER M. S.,REESE, R.C., LIBAL N-G. W., LEWIS, A. and J., BRUMM, M.C.,2007.Swine Nutrition Guide. Retrieved from http://www.735Baby_Pig_Management.com on March14, 2015.

MORGAN, W.E. 2007. Factsheet fork Information Gateway Retrieved from http://www.735Baby_Pig_Management.com on March14, 2015.

(MWPS). 2006. Livestock waste facilities handbook. MWPS-18. Midwest Plan Serv. Iowa State Univ., Ames, IA. Retrieved from <http://www.Livestockwastefacilities.org/> on March 15, 2015

NATIONAL PORK BOARD. (NPB) 2006. Feed purchasing manual. NPB, Des Moines, IA. Retrieved from <http://an11feeding.com> on March 14, 2015.

NELSSSEN,S, S. DRITZ, R.D. GOODBAND, J. L. and TOKACH M.D Swine Nutrition Guide, Kansas State University, October 2006. Retrieved from http://www.swine_nutrition_guide.com on March 15, 2015.

PCCARD. 2006. The Philippine recommend for pork production.Series 13 D.PhilippineCouncil for Agriculture, Forestry and Natural Resources Research

Retrieved from <http://asae.frymulti.com/abstract.asp?aid=25506&t> on March 10,2015.

GREINER, L. 2013. Gestation Diet's Impact on Pig birth weights. Retrieved from <http://www.thepigsite.com> on December 5,2015.

HYPOR 2009. How to attain heavy pig at weaning? The pig news desk. Retrieved from www.the-pigsite.com on March 19, 2015.

KERLEY, M. and G. ALLEY. 2009 Use of oligosaccharides in swine nutrition. Retrieved from <http://www.pig333.com/> on March 10,2015.

LAPUS, Z. M.2009. Swine production in the Philippines. Retrieved from <http://www.pig333.com> on March 19, 2015.

LYNCH, P.B., CAHILL, A., LAWLOR, P., BOYLE, L., O'DOHERTY, J.V., LE DIVIDICH, J. 2006. Studies on growth rates in pig and effect of birth weight, Pig Production Development Unit, Teagasc, Moorepark, Fermoy, Co. Cork School of Agriculture, Food Science and Veterinary Medicine, University College, Dublin INRA, St. Gilles, France.

MEDINA, J.C.G. 2010. Animal Waste Management. Retrieved from <http://www.usapangbaboy.com> on March 14, 2015.

MILLER M. S.,REESE, R.C., LIBAL N-G. W., LEWIS, A. and J., BRUMM, M.C.,2007.Swine Nutrition Guide. Retrieved from http://www.735Baby_Pig_Management.com on March14, 2015.

MORGAN, W.E. 2007. Factsheet fork Information Gateway Retrieved from http://www.735Baby_Pig_Management.com on March14, 2015.

(MWPS). 2006. Livestock waste facilities handbook. MWPS-18. Midwest Plan Serv. Iowa State Univ., Ames, IA. Retrieved from <http://www.Livestockwastefacilities.org/> on March 15, 2015

NATIONAL PORK BOARD. (NPB) 2006. Feed purchasing manual. NPB, Des Moines, IA. Retrieved from <http://an11feeding.com> on March 14, 2015.

NELSEN,S, S. DRITZ, R.D. GOODBAND, J. L. and TOKACH M.D Swine Nutrition Guide, Kansas State University, October 2006. Retrieved from http://www.swine_nutrition_guide.com on March 15, 2015.

PCCARD. 2006. The Philippine recommend for pork production.Series 13 D.PhilippineCouncil for Agriculture, Forestry and Natural Resources Research

and Development, Department of Science and Technology. Los Banos, Laguna. 188 pp

PCCARD. 2012. Swine Information Network. Philippine Council for Agriculture, Forestry, and Natural Resource and Development Retrieved from <http://www.pcaarrd.dost.gov.ph/> on March 10,2015.

RAKJUMAR, P.P. (2009). Livestock::Pig::Care Management Practices. Retrieved from <http://agritech.tnau.ac> on March 10, 2015.

REESE, D. E., T. HARTSTOCK and W. E. M. MORROW. 2009. Baby Pig Management Birth to Weaning. Retrieved from www.extension.org.com on March 14,2015.

REHFELDT, C.; KUHN, G. Consequences of birth weight for postnatal growth performance and carcass quality in pigs as related to myogenesis. Review. J. Anim. Sci. 84(2006), 113-123

SIMPSON G. 2009. ADVANCES IN Swine Nutrition to address Nutrient Management Issues. Retrieved from <http://www.omafra.gov.ph/> on March 14, 2015

SMITH, H. W. 2006. The effect of feeding pigs on food naturally contaminated with salmonellae. J. Hyg. Camb. 58:381-389. Retrieved from <http://swine.health.management.com> on March 10, 2015.

SONACO, R.M., T. B. BUIZON, N.E. ESCANDOR, E. E. CABILITAZAN, M. A.SISON, A. G. EGUI, L. O. INCIONG, M. R. DIMACULANGAN, B.J. MONTEALTO, LM. N. AGUIRRE, L. K. LIBAO. 2013. Feeding. Rearing Period, Fatteing Period. Basic Pig Keeping Manual. Book 33. p.90-91.

SONG, J.I. K.H. PARK, J. H. JEON, H. L. CHOI and A. J. BARROGA. 2013. Dynamics of air temperature, velocity and ammonia emissions in enclosed and conventional pig housing systems. Asian-Australasian Journal of Animal Science. Vol. 26. No. 3. 433-442. *pISSN 1011-2367 eISSN 1976-5517*

THE PIGSITE PIG HEALTH. 2006. Improving Key Performance Breeding Herd. Retrieved from <http://www.thepigsite.com> on December 31,2015.

THOMAS. HARTSTOCK and W. E. M. MORROW. REESE, D. E., T. 2009. Baby Pig Management – Birth to Weaning. Retrieved from www.extension.org.com on March 14,2015.

UNIVERSITY of CALIFORNIA, DAVIS 2011. Internal and External parasite control. Retrieved from <http://vetmed.ucdavis.edu> on March 12, 2015.

WALKER, W. R., R. O. MYER and J. BRENDemuHL. 2007. Swine Health Program. Animal Science Department, Florida Cooperative Extension Service, Institute of Agricultural Sciences, University of Florida

WHITTEMORE. C. T., 2005. Pig Production: the scientific and practical principles. Longman Inc. Longman Group Limited New York. 11-16 pp

YOUNG, B., DEWEY, C. E., FRIENDSHIP, R. M. The Canadian Veterinary journal. Management factor associated with farrowing rate in commercial sow herds in Ontario. Retrieved from <http://www.ncbi.nih.gov> on December 2, 2015.