

**MAJOR PRACTICE IN DAIRY PRODUCTION  
AND MILK PROCESSING**

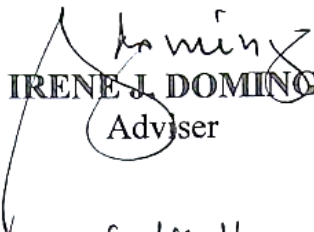
**CLIFFORD JAN VALDEZ**

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

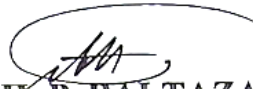
**BACHELOR OF SCIENCE IN AGRICULTURE  
(Animal Science)**

**SEPTEMBER 2016**

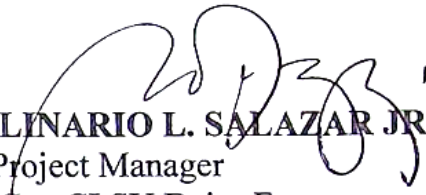
This major practice report entitled "MAJOR PRACTICE IN DAIRY PRODUCTION AND MILK PROCESSING", prepared and submitted by CLIFFORD JAN VALDEZ in partial fulfillment of the requirements for the degree Bachelor of Science in Agriculture (Animal Science) is hereby accepted.

  
**IRENE J. DOMINGO**  
Adviser

8-18-16  
Date Signed

  
**CYRIL P. BALTAZAR**  
Coordinator  
PCC Gene Pool

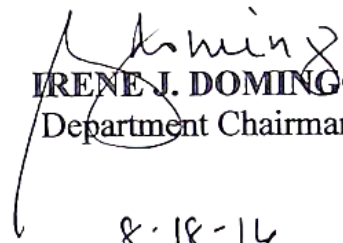
8-18-16  
Date Signed

  
**APOLINARIO L. SALAZAR JR.**  
Project Manager  
PCC at CLSU Dairy Farm

9-4-16  
Date Signed

  
**OLIVER F. CELESTINO**  
Department Major Practice Coordinator

8-19-16  
Date Signed

  
**IRENE J. DOMINGO**  
Department Chairman


8-18-14  
Date Signed

Approved:

  
**ERNESTO A. MARTIN**  
College Dean

8-19-16  
Date Signed

Recorded:

  
**JAYSON J. JUAN**  
College Major Practice Coordinator

8-23-14  
Date Signed

## BIOGRAPHICAL SKETCH

The author, Clifford Jan Valdez was born in Cabanatuan City, Nueva Ecija on the 8<sup>th</sup> day of April 1995. He is the second among the three children of Alma Rodora S.J. Valdez.

He finished his primary and secondary education at College of the Immaculate Conception in the year 2011. He then enrolled his college degree at Central Luzon State University and took Bachelor of Science in Agriculture, Major in Animal Science with Dairy Production and Milk Processing as his field of Specialization. He finished his major practice in the Philippine Carabao Center, Genepool and CLSU Dairy Farm, Science City of Muñoz, Nueva Ecija

During his College days, he became an active member of the ORDER OF DeMOLAY and became a Vice Herdsman External of the Society of Animal Science (SAS). The Organization taught him to be a responsible leader, deal with different people and become better person.

He promised his parents to become successful one day that's why he prioritized his studies because seeing themselves happy and contented is the greatest gift he can give to himself.

## ACKNOWLEDGMENT

First of all, the author would like to convey his endless thanks to Almighty God, who gave him chances even in the beginning to stand every time he falls and for the challenges that made him a stronger person and for all the blessings, guidance and knowledge in accomplishing his work and for giving the strength to overcome all the trials and challenges in life.

To his adviser and Department chairperson Dr. Irene J. Domingo for her great supervision, sharing her expertise unending patience in giving recommendations, constructive criticism, guidance, encouragement that inspired and challenged him to finish his manuscript. To Prof. Jayson J. Juan, College Major Practice Coordinator, Dr. Oliver F. Celestino, Department Major Practice Coordinator for teaching us on what we must do and learn to experience a better and right major practice. And all of the Faculty and staff members of Department of Animal Science.

To Dr. Ernesto A. Martin. Dean of College of Agriculture, and to all the Faculty and staff of the College of Agriculture in sharing their knowledge and ideas.

To Dr. Apolinario L. Salazar Jr., Farm Manager of the PCC CLSU Dairy farm, Rogelio Antiquera, Project Manager of PCC Genepool, Sir Ronaldo L. Salazar, Major Practice Coordinator of the farm, and to all the laborers that shared their experience and taught us what we must learn during our major practice.

Honor and gratitude is deservedly given to his parents Alma Rodora S.J. Valdez and George R. Tolentino Jr. for being their inspiration and strength in doing his best to

pursue his dreams. Wholehearted thanks for their moral and financial support. A warm thanks to his Siblings, Kathlyn and Lance for their love and kindness to him.

To Jerra Mie H. Garcia, an endless gratitude for giving him inspiration, encouragement, support and love for being understanding that greatly added so much happiness in his life.

To his co-field practitioners: Jayson Fortunato, Pamela Evangelista, Ellen Pimentel, and Queen Bacsa for their support, sharing and creating happy moments during the major practice;

To his Brothers and Sisters in the JoDeRa club and Society of Animal Science who served as his second family during his stay in the University, for giving him motivations and delightful moments they have shared throughout his college life.

He also wants to thank all the people who were always at his back to support him in good and bad times, for sharing their knowledge, without them his success will not be possible and meaningless.

To those persons whose names were not mentioned special thanks and gratitude to all of you, for all efforts and assistance given during his major practice.

To all of you, from the bottom of my heart Thank You Very Much!

**CLIFFORD JAN VALDEZ**

## TABLE OF CONTENTS

	<b>PAGE</b>
<b>TITLE PAGE</b>	i
<b>APPROVAL SHEET</b>	ii
<b>BIOGRAPHICAL SKETCH</b>	iii
<b>ACKNOWLEDGEMENT</b>	iv
<b>LIST OF TABLES</b>	ix
<b>LIST OF APPENDIX TABLES</b>	x
<b>LIST OF APPENDIX RECORDS</b>	xi
<b>LIST OF APPENDIX FIGURES</b>	xii
<b>ABSTRACT</b>	xiii
<b>INTRODUCTION</b>	1
Importance of the Major Practice	1
Objectives of the Major Practice	2
Time and Place of the Major Practice	3
<b>REVIEW OF RELATED LITERATURE</b>	4
Dairy Industry	4
Feeding Management	4
Animal Health Management	5
Breeding of Buffalo	6

Nutrient Content of Buffalo Milk	7
Milk Production	8
Proper Milking	9
Milk Handling	9
Marketing and Economics	10
<b>DESCRIPTION OF ACTIVITIES</b>	12
Orientation and Overview of the Major Practice	12
Inputs and Facilities Required	12
General Herd Management	13
Feeds and Feeding	13
Breeding and Selection Management	15
Animal Health	16
Other Management Practices	17
Animal Identification	17
Weighing of Animals	18
Record Keeping	18
Milk Handling and Processing	19
Milk and Milk handling	19
Milking Method	20
Milk Processing	21
Test for Hygiene Quality	21
Pasteurization	21

Cooling	22
Processing of Dairy Products	22
Packaging	22
<b>OUTPUTS AND DISCUSSION</b>	23
Description of the Farm	23
Agro-Climatic Description of the Area	24
Herd Inventory	26
Technical Analysis	28
Calving Record	28
Animal Mortality	29
Milk Production and utilization	30
Cost of Producing a Kilogram of Raw Milk	32
Cost and Return Analysis	33
<b>PROBLEMS ENCOUNTERED AND RECOMMENDATION</b>	35
<b>LESSONS LEARNED</b>	36
<b>LITERATURE CITED</b>	37
<b>APPENDICES</b>	39

## LIST OF TABLES

TABLE		PAGE
1	Agro- climatic data from May to July 2015 and February to March 2016	25
2	Herd inventory of animals from May to July 2015 and February to March 2016	27
3	Calving record from May to July 2015 and February to March 2016	28
4	Animal mortality from May to July 2015 and February March 2016	29
5	Milk production and utilization from May to June 2015, February and March 2016	31
6	Cost of producing a kilogram of raw milk (Php)	32
7	Income statement of the farm from February 2016 to April 2016	34

## LIST OF APPENDIX TABLES

TABLE		PAGE
1	Activities conducted during the Major Practice in PCC National Gene Pool	40
2	Suggested nutrient requirement of buffaloes	44
3	Suggested feeding guide for calves	45
4	PCC National Gene Pool herd health program for the Year 2015	46
5	Veterinary drugs commonly used in the farm in PCC National Gene pool	47
6	Processing of choco milk	48
7	Processing of lacto juice	49
8	Processing of pastillas de leche	50
9	Processing of kesong puti	51

## LIST OF APPENDIX RECORDS

RECORD		PAGE
1	Individual animal record form	52
2	Growth record form	53
3	Health record form	54
4	Breeding record form	55
5	Daily milk production record form	56
6	Mortality record form	57

## LIST OF APPENDIX FIGURES

FIGURE		PAGE
1	Application of AI straw to AI gun	58
2	Deworming of calves	59
3	Mastitis detection through California Mastitis Test	60
4	Milk collection through hand milking	61
5	Milk collection through machine milking	62

## ABSTRACT

CLIFFORD JAN VALDEZ, Department of Animal Science, College of the Agriculture, Central Luzon State University, Science City of Muñoz, Nueva Ecija, May 2016

### **Major Practice in Dairy Production and Milk Processing**

Venue: Philippine Carabao Center (PCC) at CLSU Dairy Farm and  
Philippine Carabao Center (PCC) National Gene Pool  
Central Luzon State University  
Science City of Muñoz, Nueva Ecija

Adviser: **DR. IRENE J. DOMINGO**

The Department of Animal Science, College of Agriculture, Central Luzon State University, offers an apprenticeship program as an option to undergraduate thesis. This was designed to expose the students into actual farming situation to acquire technical and managerial skills needed in the actual farming condition and for increasing productive employment either in private government agencies.

The major practice student was assigned to the production area from May to July 2015 of the Philippine Carabao Center National Gene Pool and from February to March 2016 in the PCC-CLSU Dairy Farm located at the Science City of Munoz, Nueva Ecija. The institution provided all the inputs necessary for the production such as forage, veterinary drug administration, breeding, cleaning and sanitation, milk handling and

processing with the close supervision of the farm manager, veterinarian, farm workers and his adviser.

Technical skills and management practices are the concerns like feeding; cleaning and sanitation, veterinary drugs administration, breeding, milking, milk handling and milk processing as experienced by the major practice student, with the close supervision of the farm manager and animal caretakers.

During the start of the major practice at the PCC National Gene Pool. A total herd inventory of 529 head population in the month of May 2015 was recorded initially. While in the PCC-CLSU Dairy Farm has a total herd inventory of 124 head population in the month of March 2016. The highest milk production performance was obtained in the month of May with 23,805 kg while the lowest milk production performance was obtained during the month of July with 20,573 kg. The total milk collected from the lactating buffaloes was 65,663 kg part of this was used in feeding the calves and the remaining whole milk was sold to private and to PCC at CLSU dairy farm. Pasteurized milk, Fat milk, Raw milk, Mozzarella cheese, while Soft Cheese and Butter are the products manufactured and sold in the farm

The total income of the farm during the month of February and March 2016 is Php448,367.00 Total expenses amounted to Php733,294.66. The resulting net income was Php284,927.66 and the computed return on expenses (ROE) is 38.86 %.

## LITERATURE CITED

- AKAM D.N., F.H. DODD and A.J. QUICK. 2004. FAO Animal Production and Health Paper 78. Milking, Milk production, Hygiene and Udder Health. Retrieved from <http://www.fao.org/> on January 3, 2015
- ALLEN, M and W. BRADFORD. 2009. Feeding management. London. Retrieved at [http://en.wikipedia.org/wiki/ feeding Management](http://en.wikipedia.org/wiki/feeding_Management) on April 15, 2015.
- DE LAVAL. 2011. Efficient dairy herd management. Retrieved from <http://www.delaval.com/> on February 6, 2015
- DUNHAM, D. 2007. Cow comfort: ventilation. Retrieved from <http://www.milkproduction.com/> on February 6, 2015
- FIORE, A. 2009. Seasonal influenza vaccines microbial immunol. Retrieved from <http://en.wiki.org/> on January 28, 2015
- FISCHER, D. B., M. F. HUTJENS and E. N. BALLARD. 2005. Pasture-based feeding programs for dairy cattle. Illinois. Retrieved from <http://www.livestocktrail.uiuc.edu/> on January 28, 2015
- FOOD AND AGRICULTURE ORGANIZATION (FAO). 2010. Hygienic milk production at the farm. Kenya. Retrieved from <http://www.fao.org/> on January 28, 2015
- FOOD AND AGRICULTURE ORGANIZATION( FAO). 2008. Milk Handling and food Safety. Retrieved from <http://www.fao.org> on December 21, 2014.
- HARRIS, B. Jr., and R.H. SCHMIDT. 2009. Managing a Dairy Cow on the Ranchette. Retrieved from <http://edis.ifas.ufl.edu/> on January 18, 2015.
- HENDERSON, J.L. 2007. The Fluid Industry. Retrieved From <http://www.chestofbooks.com> on April 15, 2015.
- HOGBERG, M.S. and O. LIND. 2003. Buffalo Milk Production - Chapter 6: Milking the buffalo. Retrieved from <http://www.milkproduction.com/> on January 3, 2015.
- LORENZO, D.D. 2009. Dairy Production Systems: Teaching Manual, Central Luzon State University, College of Agriculture, Department of Animal Science, Philippines

- MILLER, B. 2008. Delousing and Management Principle. New York. Retrieved at [http://en.wikipedia.org/wiki/Animal\\_Health](http://en.wikipedia.org/wiki/Animal_Health) on April 15, 2015.
- PCARRD. 2002. The Philippines Recommends for Carabao Production. Los Baños, Laguna. pp. 80.
- PCC. 2009. Dairy Buffalo Production Handbook. Science City of Muñoz, Nueva Ecija. pp. 65-115.
- QUICK, A.J. 2004. Milking International. Milk production and Hygiene. Retrieved from <http://www.fao.org> on January 18, 2015.
- RASBY, R., and R. VINTON. 2009. Beef Cattle production. Retrieved from <http://beef.unl.edu/> on February 4, 2015.
- SHAVER, R.D. 2004. Feeding Dairy Cows for Efficient Reproductive Performance. Retrieved from <http://www.learningstone.uwex.edu/> on February 6, 2015.
- SARABIA, A. S. 2009. Feeding Management and Herd Management. Dairy Buffalo Production Handbook. Science City of Munoz, Nueva Ecija: Philippine Carabao Center.
- SHANKS, R. 2011. Breeding dairy cattle is making new genetic combinations. Illinois. Retrieved from <http://www.livestocktrail.uiuc.edu/> on January 15, 2015