

**MAJOR PRACTICE IN ORGANICALLY GROWN AND OFF-SEASON
PRODUCTION OF TOMATO (*Lycopersicon esculentum* Mill.) AT
RAMON MAGSAYSAY CENTER FOR AGRICULTURAL
RESOURCES AND ENVIRONMENTAL STUDIES
(RM CARES)¹**


ADRIAN MARCELO GALLARDO

An undergraduate major practice manuscript presented to the faculty of the
Department of Crop Science College of Agriculture,
Central Luzon State University in partial
fulfillment of the requirements
for the degree of

**BACHELOR OF SCIENCE IN AGRICULTURE
(Crop Science-Horticulture)**

JANUARY 2018

This major practice report entitled "MAJOR PRACTICE IN ORGANICALLY GROWN AND OFF-SEASON PRODUCTION OF TOMATO (*Lycopersicon esculentum* Mill.) AT RAMON MAGSAYSAY CENTER FOR AGRICULTURAL RESOURCES AND ENVIRONMENTAL STUDIES (RM CARES)", prepared and submitted by ADRIAN M GALLARDO in partial fulfillment of the requirements for the degree Bachelor of Science in Agriculture (Crop Science) is hereby accepted.


PACIFICO T. VIZMONTE Jr.
Adviser


1/23/18
Date Signed


JONATHAN L. GALINDEZ
Project Manager

1/23/18
Date Signed


EFRELITO JAY M. GUITTAP
Department Major Practice Coordinator

1/25/18
Date Signed


ROSEMARIE T. TAPIC
Department Chairman

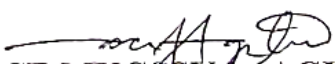
1/26/18
Date Signed

Accepted:


ERNESTO A. MARTIN
College Dean

1-29-18
Date Signed

Recorded:


ACE MUGSSY L. AGUSTIN
College Major Practice Coordinator

01/29/18
Date Signed

BIOGRAPHICAL SKETCH

The author was born on November 1, 1991 at Dolores, Sto. Domingo, Nueva Ecija. He is the 3rd children of a loving couple, Mr. Romeo P. Gallardo Sr. and Mrs. Juliana M. Gallardo.

He finished his elementary education at Dolores Elementary School, and his secondary education from Julia Ortiz Luiz National High School both schools are located at Sto. Domingo, Nueva Ecija.

After completion of his secondary education, he successfully passed the entrance examination at Central Luzon State University and enrolled to pursue his higher education. He took up Bachelor of Science in Agriculture major in Crop Science with specialization in Horticulture.

The will to succeed is the driving force in every one of us; we need to work harder to pursue our dreams.

ACKNOWLEDGEMENT

The author wishes to express his profound gratitude, deepest appreciation and sincerest thanks to the One Above for the gift of wisdom, faith and good health and letting him to meet the following wonderful person who made the completion of this manuscript.

A lifetime of gratitude is due to his beloved parents, Mr. Romeo P. Gallardo Sr. and Mrs. Juliana M. Gallardo, his sisters Agnes M. Gallardo and Ailene M. Gallardo and brother Romeo M. Gallardo Jr. To his other relatives who served his inspirations and extended the much needed financial and moral support.

Million thanks to his adviser Prof. Pacifico T. Vizmonte Jr. to Prof. Jonathan L. Galindez, Project Manager of Ramon Magsaysay Center for Agricultural Resources and Environmental Studies (RM CARES) for the intelligent suggestions and advice, guidance and for being patient with his endless questions and inquiries in this preparation of manuscript.

Boundless gratitude is due to Dr. Ernesto A. Martin, the Dean of College of Agriculture; Dr. Rosemarie T. Tapic, Department of Crop Science Chairperson; Efreilito Jay M. Guittap, Department Major Practice Coordinator; Ace Mugssy L. Agustin, College Majod Practice Coordinator and to all the faculty of the Crop Science for their precious time of giving helpful suggestion and corrections.

Special thanks to all the staff of the Ramon Magsaysay Center for Agricultural Resources and Environmental Studies for their full assistance and help to make this work complete and successful.

The author wishes to express his thanks to his board mates; Cristian, Froilan, Jeric, Romel, Jerico and Jhomar. To his girlfriend Jonna May M. Felipe for making her as an inspiration, to all his classmates and friends for the support and wonderful memories, gratifying experience and for making his happy during college life.

Of all, to ALMIGHTY GOD for giving him endless love, guidance, blessings and support to be able to reach his dreams in life and to cope up with difficulties.

ADRIAN MARCELO GALLARDO

TABLE OF CONTENTS

	PAGE
TITLE PAGE	i
APPROVAL SHEET	ii
BIOGRAPHICAL SKETCH	iii
ACKNOWLEDGEMENT	iv
LIST OF TABLES	x
LIST OF APPENDIX TABLES	xi
LIST OF FIGURES	xii
LIST OF APPENDIX FIGURES	xiii
ABSTRACT	xv
INTRODUCTION	1
Importance of Major Practice	1
Objectives of Major Practice	4
Time and Place of Major Practice	4

REVIEW OF RELATED LITERATURE	5
Soil Requirements	5
Climatic Requirements	5
Cultural management Practices	6
Land Preparation	6
Seedling Production	6
Seedling Hardening	7
Planting	7
Irrigation	8
Disease Management	8
Harvesting	8
Yield	9
Handling after harvest	10
METHODOLOGY	11
Orientation	11

Cultural Management Practices	11
Variety Used	11
Land preparation	11
Seedling Production	12
Hardening of seedlings	12
Transplanting	12
Nutrient Management	12
Replanting	13
Water Management	13
Trellising	13
Pest Management	13
Harvesting	14
Postharvest handling/Operation	14
Marketing	14
DATA GATHERED	15
RESULTS AND DISCUSSION	17

SUMMARY AND CONCLUSION	26
PROBLEM ENCOUNTERED	28
LITERATURE CITED	29
APPENDICES	31

LIST OF TABLES

TABLE		PAGE
1	Monthly weather data from July 2017 to November 2017	19
2	Different parameter observed in organic tomato production	19
3	Summary of cost and return analysis of organic tomato production (300 m ²) area	23
4	Summary of cost and return analysis of organic tomato production (10,000 m ²) area	24

LIST OF APPENDIX TABLES

TABLES		PAGE
1	Actual Cost and Return Analysis for (10,000 m ²) are	32
2	Actual Cost and Return Analysis for (300 m ²) area	33

LIST OF FIGURES

FIGURES		PAGE
1	Total weight (kg) of marketable fruits harvested every priming.	22
2	Price of tomato per kg in the market from July to November	22

LIST OF APPENDIX FIGURES

FIGURES		PAGE
1a	Variety used	34
1b	Land preparation	34
2a	Sowing of seeds	35
2b	Application of vermicast in seedlings	35
3a	Hardening of seedlings	36
3b	Pricking of seedlings	36
4a	Manual transplanting of seedlings	37
4b	Cultivation of soil	37
5a	Hilling up	38
5b	Trellising	38
6a	Manual weeding	39
6b	Manual harvesting	39
7a	Packaging of harvested product	40

7b	Marketable fruits	40
8a	Non-marketable fruits	41
8b	Cut worm as one of the major pests observed	41
9a	Tomato Yellow Leaf Color Virus (TYLCV) disease observed	42
9b	Mutha or Barsanga (<i>Cyperus rotundus</i>) weeds observed	42
10a	Bakiskisan (<i>Eleusine indica</i>) weeds observed	43
10b	Uray (<i>Amaranthus spinosus</i>) weeds observed	43

ABSTRACT

GALLARDO, ADRIAN M., Department of Crop Science, College of Agriculture,
Central Luzon State University, Science City of Muñoz, Nueva Ecija, January 2018.

Major Practice in Organically Grown and Off-season Production of Tomato (*Lycopersicon esculentum* Mill.) at Ramon Magsaysay Center for Agricultural Resources and Environmental Studies (RM CARES)

Venue: **Ramon Magsaysay Center for Agricultural Resources
and Environmental Studies (RM CARES)**
Central Luzon State University
Science City of Muñoz, Nueva Ecija

Adviser: **Prof. Pacifico T. Vizmonte Jr.**

The Major Practice in Organically Grown and Off-season Tomato Production was conducted from July 2017 to November 2017 in an area of 300 m² at the Ramon Magsaysay Center for Agricultural Resources and Environmental Studies (RM CARES) in Muñoz, Nueva Ecija. It was done to develop the student skills regarding the Organic Tomato Production. The major practice student was exposed to actual activities of Organic Tomato Production such as seedling production, land preparation, transplanting, nutrient management, weeding, cultivation, irrigation, trellising, insect pest and harvesting.

The student was able to observed the different growth stage, yield and determined the cost and return analysis of organic tomato production.

The days to flowering was observed 33 days after transplanting (DAT) and 39 days for fruit set after transplanting. The days to first harvest was 72 DAT and the days to final

harvest was 27 days after first harvest. The average number of fruits per plant was 27 and the average weight of fruit per plant was 46 g.

The total yield produced in the whole production area was 152 kg marketable fruits and the price per kg was 50 pesos per kg. The total gross income was Php 7,600.00. The total operating expenses was Php 5,900.00 and net income of Php 1,700.00 with ROI of 28.81%.

In per hectare basis, the yield was equivalent to 5,006.16 kilograms. The estimated sales was Php 253,308.00. The total operating expenses was Php 203,340.00 and estimated net income was Php 49,968.00 with ROI of 24.57%. This was relatively low net income due to low production, higher inputs and occurrence of pests and diseases.

LITERATURE CITED

- AGUILAR, G.D. P., 2015. Major Practice in Variety Trial of Eggplant (*Solanum melongena* L.) at Allied Agro Technology Incorporated (AATI) Under graduate Major Practice CLSU, Muñoz Nueva Ecija.
- ATHERTON, J. G. AND RUDICH, J., 1986. The tomato crop. Chapman and Hall, London/New York, United Kingdom/United States.
- BUREAU OF PLANT INDUSTRY, 2017. Plant Variety Protection Office. Retrieved on December 20, 2017 from <http://www.pvpo.bpinsicpvpo.com.ph/downloads/gazette5.pdf>
- BYIRINGIRO, F. (2003). The potential role of organic agriculture in the alleviation of land degradation in The ESCWA Region. Proceeding of the Arabic Conference on Organic Agriculture for Better Environment and Stronger Economy, Tunis, September 27-28, 2003. Pp 116-126.
- DAVIELL TREADWELL, JIM RIDDLE, MARY BARBERCHECK, DEBORAH CAVANAUGH-GRANT, ED ZA- BORSKI, 2014. "Cooperative Extension System", what is organic farming?
- DIZON, R. P., 2010. Major Practice in Tomato Production (*Lycopersicum esculentum mill.*) Under graduate Major Practice CLSU, Muñoz Nueva Ecija.
- FABIO, M. 2008. Hardening Off Tomato Seedlings for Transplanting. Retrieved on July 20, 2017 from <http://www.tomatocausal.com/>.
- GOULD, W. A., 1983. Tomato production, processing and quality evaluation. Avi Publishing Company, Westport, Connecticut, United States.
- KHARAPAGPUR, T. (2016). Organic Foods: Benefits and Market Demand Popular Kheti, (October).
- KUO, C. G. AND LAI, S. H., 2014. Suggested Cultural Practices for Tomato. International cooperator's Guide. AVRDC 79-127. Asian Vegetable Research and Development Center (AVRDC), Shanhua, Tainan, Taiwan.
- LAMPKIN, 2003. Retrieved on July 10, 2017 from http://www.fao.org/fileadmin/templates/est/meetings/organic_2003/organic_vegetable_production.pdf.

- MARTIN, H., 2014. "Ontario Ministry of Agriculture, Food and Rural Affairs". Introduction to Organic Farming, ISSN 1198-712X.
- PEÑA, R. T., 1985. Development of tomato and Chinese cabbage cultivars adapted to the hot humid tropics. *Acta Horticulture* 153: 421-436.
- AGASA, 2017. *AGROMETEOROLOGICAL DATA*, CLSU Weather Station Science City Of Muñoz, Nueva Ecija.
- ROSEA, 1996. Plant Resources of South-East Asia 8 Vegetables. Retrived on December 01, 2017 from [https://books.google.com.ph/books/about/ PROSEA _Plant _Resources_of_South_East_Asi.html?id=H-NdErdm0W4C&redir_esc=y](https://books.google.com.ph/books/about/PROSEA_Plant_Resources_of_South_East_Asi.html?id=H-NdErdm0W4C&redir_esc=y)
- ICHFORD, N., 2010. Growing Tomatoes Hardening Off Tomato Plants. Retrieved on July 2, 2017 from <http://www.associatedcontent.com/>.
- USDA BLOG, 2016. Organic 101: "Allowed and Prohibited Substances". *blog.usda.gov*. Retrieved on April 6, 2017 from <https://www.usda.gov/topics/organic>.