FIELD PRACTICE REPORT ON THE CULTURE PRACTICES OF RED SEAWEED (*Eucheuma denticulatum*) AT MARINE SCIENCE LABORATORY- PALAWAN STATE UNIVERSITY, PUERTO PRINCESA CITY, PALAWAN

by

MA. FATIMA M. ESGUERRA

Department of Aquatic Post-Harvest
COLLEGE OF FISHERIES
CENTRAL LUZON STATE UNIVERSITY
Science City of Muñoz, Nueva Ecija
Philippines

2018

FIELD PRACTICE REPORT ON THE CULTURE PRACTICES OF RED SEAWEED (*Eucheuma denticulatum*) AT MARINE SCIENCE LABORATORY- PALAWAN STATE UNIVERSITY, PUERTO PRINCESA CITY, PALAWAN

by

MA. FATIMA M. ESGUERRA

Undergraduate Field Practice Report presented to the faculty of
College of Fisheries, Central Luzon State University in
partial fulfillment of requirements for the degree

of

BACHELOR OF SCIENCE IN FISHERIES

Approved:

REA MAE C. TEMPLONUEVO
Adviser

JANET O. SATURNO
Critic

JANET O. SATURNO
Department Chairperson

CLAIRE SAMANTHA T. JUANICO
Field Practice Coordinator

Accepted:

RAVELINA R. VELASCO
Acting Dean

Department of Aquatic Post Harvest
COLLEGE OF FISHERIES
CENTRAL LUZON STATE UNIVERSITY
Science City of Muñoz, Nueva Ecija
Philippines

2018

BIOGRAPHICAL DATA

Personal Data

Name	Ma. Fatima M. Esguerra
Birthday	June 23, 1997
Birth Place	Cabanatuan City, Nueva Ecija
Address	Purok III, Brgy. Sta. Clara, Quezon, Nueva Ecija
Parents	Silverio G. Esguerra and Marcela M. Esguerra

Educational Attainment

Elementary	Casanova Elementary School Purok V, Brgy. Sta. Clara Quezon, Nueva Ecija
Secondary	Holy Family Academy of Quezon, Nueva Ecija Inc. Tomas Joson Ave., Brgy. II Quezon, Nueva Ecija
Tertiary	Central Luzon State University Science City of Muñoz, Nueva Ecija

ACKNOWLEDGEMENTS

"For all that God in mercy sends; For health and children, home and friends; For comfort in time of need, for every kindly word and deed, for happy thoughts and holy talk, for guidance in our daily walk- For everything give thanks!" – Anonymous

It took a lot of guts to write this manuscript. Nevertheless, guts were not enough. The trainee needed people to make this thing possible. The word thank you is not even enough.

There are a lot of people who have shared and contributed their time and efforts, in one way or the other;

First and foremost, the author would like to thank Lord Jesus Christ, the Saviour for giving wisdom and strength, and for the everyday life that He has given to the author. All praise and glory are given to Him.

Furthermore, to the family of the author for the endless support and inspiration during the field practice; to her father, Silverio G. Esguerra, the epitome of courage, for the encouragement and limitless enthusiasm to keep the author going each day; to her mother, Marcela M. Esguerra, the eternal model of humility, for the constant comfort; and to her siblings; Francis and Tatin, who is always there to motivate and support her.

The author wants to express her deepest gratitude to her relatives in Palawan; Uncle Vic and Auntie Pepay who accommodate the author and her co-trainees in their house; Ate Gigi and Ate Maila, for the foods and for talks; Kuya Vincent and his wife Ate Ampy, for the free adventure trips and for the efforts that they exert to make this field practice possible; Kyle, James, Kevin, Mico, Bogs and Jong, for the laughter and joy.

Appreciation is also expressed to her adviser, Ms. Rea Mae C. Templonuevo, for the support and patience and for the shared knowledge and skills to make this paper work better; to

her critic, Prof. Janet O. Saturno, for the comments and criticism to improve this paper; and to the On-The-Job Training Coordinator of the College of Fisheries, Ms. Claire Samantha T. Juanico, for the dedication, hard work, patience and all her effort. Advices from them made this field practice report even better.

Gratefulness is also expressed to Dr. Lorna C. Gelito, OIC of Palawan State University; and Dr. Floredel D. Galon, the head of PSU-MSL, who whole-heartedly accepted the author and her co-trainees at Palawan State University.

To ate Mace, ate Van, and ate Ren, the lab aides, the author is so grateful for the companionship, for the happiness and delights, for the skills, knowledge and patience. Moreover, to kuya Ryan and kuya Mario, the laboratory assistants, for all the jokes and for the exerted efforts. Without these people, this paper can't be done.

The author would like to thank Sir Wendell F. Galon, for the knowledge and skills that the author gained.

To the author's co-trainee, Xyrra and Mercedes, for the memories and adventures. Those experiences will always stay in her heart. The memories will always be remembered.

To all her friends and classmates, the author is very thankful and blessed to have this good people in her life.

MA. FATIMA M. ESGUERRA

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDIX TABLES

FIELD PRACTICE REPORT ON THE CULTURE PRACTICES OF RED SEAWEED (*Eucheuma denticulatum)* AT MARINE SCIENCE LABORATORY- PALAWAN STATE UNIVERSITY, PUERTO PRINCESA CITY, PALAWAN

EXECUTIVE SUMMARY

The field practice was conducted at Palawan State University – Marine Science Laboratory (MSL) from June 27- July 30, 2016 which accounted to 30 working days, including Saturdays. The training focused on the culture of red seaweed (*Eucheuma denticulatum*).

The MSL is managed by Dr. Floredel D. Galon. Most of the experiments conducted in the laboratory focus on the research and development of seaweeds. One of the species studied is the *E. denticulatum*. Activities on the culture of this species was done by the author such as cleaning of aquaria, enriching of seawater, sterilization of glass wares and seawater and deployment of seaweeds in the sea. Other activities include callus induction of *Kappaphycus alvarezii* var. *Gold* and spore shedding of *Gracilaria* spp.

Strengths of the center include its sufficient facilities and equipment, and the convenient location of the laboratory. On the other hand, insufficient laboratory staff/personnel and poor security are the weaknesses identified.

1/Undergraduate Field Practice Report presented in partial fulfillment of the requirements for graduation with the degree of Bachelor of Science in Fisheries. Prepared at the Department of Aquatic Post-Harvest, College of Fisheries, Central Luzon State University under the supervision of Ms. Rea Mae C. Templonuevo

REFERENCES

Bureau of Fisheries and Aquatic Resources (BFAR). 2015. Philippine Fisheries Profile. Retrieved from http://www.bfar.da.gov.ph/publication on March 26, 2017.

Collèn, J., Mtolera, M., Abrahamsson, K., Semesi, A., and Pedersèn, M. 1995. Farming and Physiology of the Red Algae Eucheuma: Growing Commercial Importance in East Africa. Royal Sweddish Academy of Sciences, 24: 7-8.

De San, M. 2012. The Farming of Seaweeds. Retrieved from http://www.fao.org/3/a-bl759e.pdf on May 25, 2017.

Hurtado-Ponce, A.Q., Luhan, M.R.J., & Guanzon, N.G., 1992. Seaweeds of Panay. First Edition, Aquaculture Department, Southeast Asian Fisheries Development Center, Tigbauan, Iloilo, Philippines, pp. 87,

Largo, D.B. 2002. Recent developments in seaweed diseases. In: A.Q.Hurtado, N.G. Guanzon, Jr., T.R. de Castro-Mallare, and M.R.J. Luhan (Eds.) Proceedings of the National Seaweed Planning Workshop held on August 2-3, 2001, SEAFDEC AquacultureDepartment, Tigbauan, Iloilo. Tigbauan, Iloilo: SEAFDEC Aquaculture Department, pp. 35-42.

Largo, D.B., Fukami, K., and T. Nishijima. 1995a. Occasional pathogenic bacteria promoting *ice-ice* disease in the carrageenan-producing red algae *Kappaphycus alvarezii* and *Eucheuma denticulatum* (Solieriaceae, Gigartinales, Rhodophyta). Journal of Applied Phycology, 7: 545-554.

Largo, D.B., Fukami, K., and T. Nishijima. 1995b. Laboratory-induced development of the *ice-ice* disease of the farmed red algae *Kappaphycus alvarezii* and *Eucheuma denticulatum* (Solieriaceae, Gigartinales, Rhodophyta). Journal of Applied Phycology, 7: 539-543.

Largo, D.B., Fukami, K., and T. Nishijima. 1999. Time-dependent attachment mechanism of bacterial pathogen during ice-ice infection in *Kappaphycus alvarezii* (Gigartinales, Rhodophyta). Journal of Applied Phycology, 11: 129-136.

Mathur, J. and Csaba Koncz. 1998. Callus Culture an Regeneration. Methods in Molecular Biology, 82: 31-34.

McHugh, D.J. 2003. A guide to the seaweed industry. FAO Fisheries Technical Paper, No. 441. FAO. pp. 105.

Sulistiani, E., D.T. Soelistyowati, Alimuddin and S.A.Yani. 2012. Callus induction and filaments regeneration from callus of cottonii seaweed *Kappaphycus alvarezii* (Doty) collected from Natuna Islands, Riau Islands Province. Biotropia, 19(2): 103-114.

Tisera, W.L. and M.R.A Naguit. 2009. Ice-ice disease occurrence in seaweed farms in Bais Bay, Negros Oriental and Zamboanga del Norte. Universitas Kristen Artha Wacana, Kupang, East Nusa Tengara, Indonesia, 4: 1-16

Trono, G. Jr., 1992. Eucheuma and Kappaphycus: Taxonomy and cultivation. Marine Science Bull. Mar. Sci. Fish. Kochi Univ. 12: 51-65.

Trono, G. Jr., 1997. Field Guide and Atlas of the Seaweed Resources of the Philippines. Bookmark, Inc., pp. 224-225.

Trono, G. Jr., 1999. Diversity of the seaweed flora of the Philippines and its utilization. Hydrobiologia, 398/399: 1–6.