

**STUDIES ON THE VEGETATIVE AND MICROPROPAGATION OF
SOME MEDICINAL AND ENDANGERED PLANTS OF ASSAM**

**A thesis submitted to Assam University in partial fulfillment of the requirement for the
degree of Doctor of Philosophy in Science.**

By

Sri Naba Jyoti Borah

Ph.D Registration No.-Ph. D/1191/2010 dated 28/7/2010



DEPARTMENT OF ECOLOGY AND ENVIRONMENTAL SCIENCE

E.P. ODUM SCHOOL OF ENVIRONMENTAL SCIENCES

ASSAM UNIVERSITY

SILCHAR-788011, INDIA

YEAR OF SUBMISSION: 2015



**Department of Ecology and Environmental Science,
E.P. Odum School of Environmental Sciences
ASSAM UNIVERSITY, SILCHAR
(A Central University constituted under Act XIII of 1989)
Silchar - 788 011, Assam, India**

DECLARATION

I, Naba Jyoti Borah bearing Registration No. Ph.D/1191/2010 dated 28/7/2010, hereby declare that the subject matter of the thesis entitled ‘STUDIES ON THE VEGETATIVE AND MICROPROPAGATION OF SOME MEDICINAL AND ENDANGERED PLANTS OF ASSAM’ is the record of work done by me and that the contents of this thesis did not form the basis for award of any degree to me or to anybody else to the best of my knowledge. The thesis has not been submitted in any other University / Institute.

Place:

(Naba Jyoti Borah)

Date:

DEDICATED

TO

My Beloved Uncle Late Makhon Borah

My Beloved Aunty Late Makhoni Borah

Prof. P.B. Mazumder
M.Sc., Ph. D., B. Ed.,
PGDBT., Post Doc (USA)
Professor
Department of Biotechnology
Assam University, Silchar-
788011

A. Kr. Das M.Sc., M. Phil.,
Ph. D.
Associated Professor
Department of Ecology and
Environmental Science
Assam University, Silchar-
788011

Prof. B. K. Dutta M.Sc., Ph. D.
(Wales)
F.P.S.I., F.B.S., F.L.S.(London)
Professor
Department of Ecology and
Environmental Science
Assam University, Silchar-788011

Date.....

CERTIFICATE

Certified that the thesis entitled "STUDIES ON THE VEGETATIVE AND MICROPROPAGATION OF SOME MEDICINAL AND ENDANGERED PLANTS OF ASSAM", submitted by Naba Jyoti Borah for award of the Degree of Doctor of Philosophy in Ecology & Environmental Science is a bonafied research work. This work has not been submitted previously for any other degree of this or any other university. It is further certified that the candidate has complied all the formalities as per the requirements of Assam University. We recommend that the thesis may be placed before the examiners for consideration of award of the degree of this university.

Prof. P.B. Mazumder
(Co – Supervisor)

Dr Ajit Kr. Das
(Co – Supervisor)

Prof. B.K. Dutta
(Supervisor)

ACKNOWLEDGEMENT

I express my humble and sincere gratitude and thanks to my Supervisor Prof. (Dr.) Biman Kumar Dutta, Department of Ecology and Environmental Science, Assam University, Silchar, for his excellent and constant guidance and encouragement with valuable suggestions throughout the course of my research work and preparation of the thesis

I am also extremely thankful to Prof. P. B. Mazumder, Department of Biotechnology, Assam University, Silchar, for helping me as a co-supervisor, his constant guidance and encouragement and extending the laboratory facilities (including all the chemicals and glassware's) for my micropropagation work.

I would also like to thanks to Dr Ajit Kumar Das, Associated Professor, Department of Ecology and Environmental Science, Assam University, Silchar, for his valuable suggestions and guidance as a co- supervisor.

I also express my sincere gratitude to Prof. Abhik Gupta, Dean E.P. School of Environmental Science, Assam University, Silchar, and Prof. Jayashree Rout, Head Department of Ecology and Environmental Science, Assam University, Silchar, for providing me the laboratory facilities to carry out my research work.

My sincere thanks to Dr. Padmeshar Gogoi, Emeritus Scientists for his valuable advice and suggestions, which inspired me to work with the selected endangered medicinal and aromatic plants.

I am also extremely thankful to Mr. Supratim Roy Choudhury, Sreedhar Apex Biotech, Bagbahar, Cachar, for allowing the laboratory facilities for micropropagation of the orchid species i.e. *Paphiopedilum spicerianum* (Rchb.f) Pfitz.

I would like to extend my special thanks to Miss Garima Raj for her handsome lesson to me on the basic knowledge of Micropropagation, which eventually helped me for successful completion of the Micropropagation work.

I would also thanks to Priyadarshani Yengkokpam for her constant help in my micropropagation part of the work.

I owe my thanks to Prof. S.P. Biswas and Prof. L. R. Saikia, Department of Life Sciences, Dibrugarh University, Dibrugarh for their moral support and valuable advice and suggestions.

I am also thankful to Mr. Appu Roy, (Durgakona) who always helped me as a local guide in my field work as well as for his tireless help in my research work.

I would also thank Dr. Hillol Jyoti Singh and Dr. Panna Deb, Centre for Natural Resource and biodiversity Conservation Department of Ecology and Environmental Science, Assam University, Silchar for their valuable suggestions and moral support.

My sincere thanks to Mr. Pear Ahmed Barbhuiya for his sincere help during the field work.

I am thankful my senior research scholars Dr. O. Gangarani Devi, Dr. Pranjal Morang, Dr. Romila Thoudam, Mr. Nikhil Chandra Das, Abdur Razzak Ahmed, Dr. Rosalind Thinnbaijam, Dr. Soram Inaobi Singh, Anuradha Das, my colleagues Yunam Devashree, Deepti Mala Singha, Sikhashmita Nath, Mukta Chandra Das, Bijita Barman, Binku Dutta, Bhoben Chowdhora, Pankaj Borghaign, and my juniors Dipankar Debnath, Arunima Borah.

I also thank the Non teaching staff and laboratory assistants (Kamala Kanta Sinha and Siddhartha Sen) for their help related to my laboratory work.

I am also thankful to Miss Ushamoni Kakoti, Research Scholar, Department of Assamese, Dibrugarh University.

I am extremely thankful to UGC for the financial assistance (Non NET Fellowship) received through Assam University, Silchar.

Lastly I owe my thankful to all the family members, father Mr. Rama Kanta Borah, and mother Mrs. Bina Borah, my elder brother Anup Jyoti Borah, sister Kobita Borah, Kayboshree Borah Talukdar, Manash Boruah for their moral support. Without their moral and constant support I could not have complete my research work. At last my thanks to almighty God for the blessings and help extending to me during my research work.

Place:

(Naba Jyoti Borah)

Date: