

Dedicated to
My Mother and Father

DECLARATION BY THE CANDIDATE

I hereby declare that the thesis entitled “**Utilization of vermitechnology for rapid degradation of lignocellulosic wastes: A quest for useful microorganisms**” submitted to the **School of Sciences** Tezpur University in part fulfillment for the award of the degree of Doctor of Philosophy in **Environmental Science** is a record of research work carried out by me under the supervision of **Dr. Satya Sundar Bhattacharya**, Department of Environmental Science, Tezpur University, Assam - 784028. No part of this work has been presented for any other degree or diploma earlier.



(Ratan Chowdhury)

Date: 07-04-2025

Place: Tezpur



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Certificate of the Supervisor

This is to certify that the thesis entitled “**Utilization of vermitechnology for rapid degradation of lignocellulosic wastes: A quest for useful microorganisms**” submitted to the **School of Sciences** Tezpur University in part fulfillment for the award of the degree of Doctor of Philosophy in **Environmental Science** is a record of research work carried out by **Mr. Ratan Chowdhury** under my supervision and guidance.

All help received by her from various sources have been duly acknowledged.

No part of this thesis has been submitted elsewhere for award of any other degree.

(Satya Sundar Bhattacharya)

Date: 07-04-2025

Place: Tezpur

ACKNOWLEDGEMENT

First and above all, I would like to express my heartfelt gratitude to my PhD Supervisor, **Dr. Satya Sundar Bhattacharya** for accepting me as a PhD student. This thesis is the result of his thoughtful guidance, warm encouragement, healthy criticisms, and moral support.

I earnestly thank the Honorable Vice-chancellor Tezpur University for extending necessary infrastructural facilities to carry out my research work.

I also convey my sincere regards to the senior faculty members, head of the department and other faculty members in the Department of Environmental Science, Tezpur University for their constructive comments and advice.

I also take the opportunity to thank my doctoral committee members, Dr. Nayanmoni Gogoi and Prof. Deben Chandra Baruah for their suggestions and keen monitoring of my work progress.

I would like to thank **Dr. Prasanta Raul, Defence Research Laboratory, Tezpur,** for providing laboratory facilities.

I would also thank the technical staffs of the Sophisticated Instrumentation and Analytical Centre, Department of Environmental Science, Chemical Science, and Molecular Biology and Biotechnology for rendering their active involvement in sample analysis.

I am thankful to my lab mates: Subhashish Das, Soma Barman, Nazneen Hussain, Ananya Mondal, Jinnashri Devi, Ratul Pegu, Himadri Mandal and Dhriti Sundar Boro for maintaining a good working environment and helping me in various ways. A special thanks to Dhriti for his immense support and help throughout.

I would also like to thank Mr. Mofijul Ahmed for his assistance in conducting vermicomposting experiments and Mr. Saiful Islam for his help in conducting field experiments.

I would take the opportunity to thank my friends Manithoi Thingujam, Surjit Sharma, Research Scholars Department of Environmental Science for their constant support.

I convey my sincere regards to all my friends and well-wishers who supported me in this journey till the end.

Finally, I would like to thank family members, my mother and my wife and in laws for their constant support and motivation. A special thanks to my mother for her unconditional love and support.

My sincere gratitude to the University Grants Commission, Government of India for conferring the NET-JRF fellowship that enabled me to complete my work.

Last but not the least; I thank the Almighty for keeping me in good health and granting me the capability to proceed successfully.

(Ratan Chowdhury)

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ABBREVIATIONS

ANOVA	Analysis of variance
BD	Bulk density
FAC	Fulvic acid carbon
HAC	Humic acid carbon
HPLC	High-performance liquid chromatography
LCW	Lignocellulosic wastes
MBC	Microbial biomass carbon
NFB	Nitrogen-fixing bacteria
PSB	Phosphate-solubilizing bacteria
QA	Quality assurance
QC	Quality control
RBD	Randomized block design
RT-PCR	Real-time polymerase chain reaction
SEM	Scanning electron microscope
TBC	Total bacterial count
TFC	Total fungal count
TN	Total nitrogen
TOC	Total organic carbon
VC	Vermicompost
WHC	Water holding capacity