

Dedicated to my parents

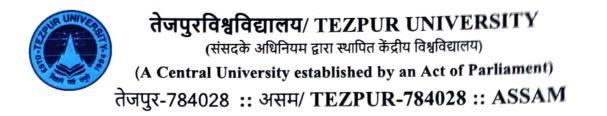


I do hereby declare that the thesis entitled, "Impact of Moisture Deficit Stress on Nitrogen and Phosphorous Mineralization Under Legume Cultivation: Role of Soil Amendments" being submitted to the Department of Environmental Science, Tezpur University, in partial fulfillment for the award of the degree of Doctor of Philosophy in Environmental Science, is a record of original research work carried out by me under the supervision of Dr. Nirmali Gogoi and Co-Supervision of Dr. Dhrubajyoti Nath. All help received by me from various sources have been duly acknowledged. I also declare that neither this work as a whole nor a part of it has been submitted to any other university, institute or other organizations for any other degree, diploma or award.

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Place: Tezpur, Assam Date: 31 01 2023 (Subham Chandra Mondal)

Regn No.: TZ155560 of 2015



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## **CERTIFICATE OF SUPERVISOR**

This is to certify that the thesis entitled, "Impact of Moisture Deficit Stress on Nitrogen and Phosphorous Mineralization Under Legume Cultivation: Role of Soil Amendments" submitted to the School of Sciences, Tezpur University in partial fulfilment for the award of the degree of Doctor of Philosophy in Environmental Science, is a record of research work carried out by Mr. Subham Chandra Mondal under my supervision and guidance.

All help received by him from various sources have been duly acknowledged. No part of this thesis has been submitted elsewhere for award of any other degree.

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Place: Tezpur, Assam Date: 31/01/2023



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

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

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Place: Tezpur, Assam Date: 27/10/23

(Dr. Dhrubajyoti Nath)



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## **CERTIFICATE OF EXTERNAL EXAMINER**

This is to certify that the thesis entitled, "Impact of Moisture Deficit Stress on Nitrogen and Phosphorous Mineralization: Role of Soil Amendments" submitted to the School of Sciences, Tezpur University in partial fulfillment for the award of the degree of Doctor of Philosophy in Environmental Science, has been examined by us on 27.10.2023 and found to be satisfactory.

The committee recommends for the award of the Degree of Doctor of philosophy

Supervisor

(Dr. Nirmali Gogoi) Date: 27/10/2023

11-12023 External Examiner 27.10.2023 Date:

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# List of Abbreviations

Ν	Nitrogen
Р	Phosphorus
FYM	Farmyard Manure
SON	Soil organic nitrogen
MBN	Microbial biomass nitrogen
SOC	Soil oxidizable carbon
RBD	Randomized block design
DAS	Days after sowing
LWP	Leaf water potential
С	Carbon
FDA	Fluorescein di-acetate
PME	Phosphomonoesterase
CFU	Colony forming units
MBC	Microbial biomass carbon
TCA	Trichloro acetic acid
KSCN	Potassium sulfocyanate
IVPD	In-Vitro protein digestibility
ICP-MS	Inductively coupled plasma- Mass spectroscopy
POD	Peroxidase
SOD	Superoxide dismutase
DHA	Dehydrogenase
ANOVA	Analysis of variance
HSD	Honestly significant difference
LEA	Late embryogenesis abundant
CDSP	Chloroplastic drought-induced stress protein