Dedicated to my parents

DECLARATION

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

Supervisor

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Date: 27/10/2023

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List of Abbreviations

N	Nitrogen
P	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
C	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