

**EFFECT OF BLUE GREEN ALGAE IN RICE  
PRODUCTIVITY: A COMPARISON OF FIELD AND POT  
TRIALS IN KATHMANDU VALLEY OF NEPAL**

**A Dissertation Submitted to the  
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for the partial fulfillment of  
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### CERTIFICATE

This is to certify that Yagna Prasad Paudel has completed the dissertation work entitled, "**Effect of Blue Green Algae in Rice Productivity: A Comparison of Field and Pot Trials in Kathmandu Valley of Nepal**" under my supervision. To the best of my knowledge this work has not been submitted for any other academic degree elsewhere. I recommend this dissertation for the partial fulfillment of M.Sc. Botany with specialization in Biotechnology degree in Tribhuvan University.

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LETTER OF APPROVAL

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This entire dissertation is based on the results of his own work and has not been submitted for any other degree to the best of my knowledge.

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## ABSTRACT

Rice is one of the oldest cultivated crops and single most important staple food crop for more than a third of the world's population. It is the main cereal grain and important staple food crop of Nepal. Nepal is importing chemical fertilizers from other countries for rice production. On the other hand there is a problem of transportation of fertilizers in hilly areas. The inoculation of Blue Green Algale is an alternative source of nitrogen to increase the rice productivity. The mixed inoculum of *Nostoc*, *Anabaena*, *Westiellopsis*, *Aulosira* and *Scytonema* was used in field and pot trials. Similarly a single inoculum of *Anabaena* was also used to compare the most effective treatment. The rice varieties used were NR 10414 and Mansuli. From the field and pot trials the BGA mixed inoculum with N:P:K (30:20:20) was found most effective for rice productivity. The grain yield ranged from 7.1% - 23.6% whereas the increase in straw yield ranged from 7.2% - 22.2%. The BGA inoculum was found helpful in increasing the chlorophyll of rice plant. BGA added Nitrogen and Organic matter to the rice grown soil.

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## ACRONYMS AND ABBREVIATIONS

ANOVA	Analysis OF Variance
%	Percent
ARA	Acetylene Reduction Assay
BGA	Blue Green Algae
(°C)	Degree celcius
CBS	Central Bureau of Statistics
Chl.	Chlorophyll
et al.	et alebi(and others)
FAO	Food and Agricultural Organisation
F.W.	Fresh weight
g	gram
GDP	Gross Domestic Product
ha	hectare
IARI	Indian Agricultural Research Institute
ICAR	Indian Council of Agricultural Research
K	Potassium
Kg	Kilogram
LI-BIRD	Local initiatives for Biodiversity, Research and Development
MoAC	Ministry of Agriculture and Cooperatives
Mt	Metric tone
MPE	Ministry of Population and Environment
N	Nitrogen
NARC	Nepal Agricultural and Research Council
NAST	National Academy Of Science and Technology
NG	Nepal Government
O. D.	Optical Density
P	Phosphorus
PH	Negative logarithm of Hydrogen ion concentration
t/ha	ton per hectare
T.U.	Tribhuvan University
Vol.	Volume
wt.	weight