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Role on biofertilizer (Blue green algae) in paddy crop

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Abstract
Blue-green algae (BGA) are known to contribute up to 80 kg N/ha per season in the rice ecosystem (Kannaiyan *et al.*, 1983). Algae is simple living. Like most algae plants, the presence of sunlight in the presence of photosynthesis creates its food by itself, i.e. self-absorbed. These can be from a cellular to multi-cellular multiple forms, but similar to the plants, the roots, leaves, etc. are not found in the compositions. These damp land, alkaline and saline water, bark of trees, green, brown or some black layers are found on damp walls. Nitrogen is an essential nutrient for the proper development of plants. In addition to chemical fertilizers, some species of algae and bacteria stabilize atmospheric nitrogen (80%) and give it to mudas and plants and increase the crop productivity. This action is called biological nitrogen fixation. These micro-organisms are called biofertilizers only. Neel-green algae is a special type of moss and Bio-fertilizers "eco-friendly" fertilizers Biofertilizers are the substances which contain living microorganism which when applied to the plant helps then to grown without causing any nutrient loss of soil and pollution.

Keywords: nitrogen fixation, BGA, blue green algae rice cultivation rice crop

Introduction
Blue-green algae (BGA) are known to contribute up to 80 kg N/ha per season in the rice ecosystem (Kannaiyan *et al.*, 1983) [2]. Under water logged conditions of rice fields, Blue Green algae plays a vital role in maintaining soil fertility and crop yield even in the absence of any added agrochemicals. In recent years, algalisation has been recognized as an important input in rice cultiva-tion as its form a per-petually renewable source of nutrients and improve soilhealth (Venkatraman, 1981; Goyal, 1993) [6, 1]. Cyano bacteria biofertilizer for rice cultivation is an eco friendly, easily manageable in-put forming a self generating system contributing to about 25 Kg N/ha per season and also they add or-ganic matter and growth promoting substances to the soil (Roger and Kulasooriya, 1980) [5].
The application of Biofertilizer is cheaper than the inorganic fertilizers. The biofertilizer do not causes damage to the soil and environment like inorganic fertilizers. Rhizobium, Azotobacter, Azospirilium and *Pseudomonas fluorescens* BGA have been in use a long time. leguminous crops used to Rhizobium (ojha *et al. 2016*) [3].
Rice (Oryza sativa L.) is one of the first leading ancient (3,000B.C.) cultivated crops of the world. Now the food habit of global people is changing rapidly and cultivation of rice is also increasing tremendously through the world. (Paudel *et al* 2012) [4].

Materials and Methods
1. Production Method of Blue Green algae Organic Fertilizer 1 Make 5 meter long, 1 meter chara and 10 to 15 cm deep pavement tank. The length of the tank, the reduction can be increased as needed. The tank should be in high and open space. At the place of the tank, about 12 to 15 cm deep, 1 meter wide and can make a long crude crust as needed. Lay 400-500 gauge thick polythene in the raw pit.
2. Fill the water in the tank and pit by 5 to 6 inches and by adding one hundred and a half kilograms of clean soil, 100 grams of single super phosphate and 10 gram carbohydrane according to the length of meter and mix well and two 7 three Leave for hours.
3. If the soil is saturated, according to the length of 100 grams per meter, algae starter culture should be scattered evenly over the water.
4. Almost 1 week becomes a thick layer of algae. At the same time water also dries up. If the water becomes dry before the layer becomes due to the strong sunlight, then pour more water into the tank, carefully pour the water carefully from the edges.
5. Leave the tank to dry in the sunshine. After drying, after collecting the algae, keep it in the polythene bag and keep it for use in the fields.

6. If after a week of becoming a thick layer of algae, if the water is filled with gates and tank, then carefully remove it from the compartment etc.
7. Sendy loame soil is most suitable for the production of bio-fertilizer of Neel-Green. April, May, June are suitable for its production. Precautions in the production of Blue Green algae Organic Fertilizers:

1. Blue Green algae should be clean and tidy to be used in organic fertilizer production.
2. The soil being used in the production should not be of the soil in the soil.
3. Filter the pebble with stone and grass in the soil.
4. Use only good quality starter culture tested by the laboratory for bio fertilizer production.
5. Make sure scientists examine the quality of organic fertilizers produced here.
6. Use algae organic fertilizers with nitrogen fertilizers.

Sowing Method of transplantation- By this method, the first plantation of paddy is prepared in limited area and 25 to 30 days of plant is transplanted by cultivating the field.
Sowing time- As soon as the rainfall starts, start the work of sowing of paddy. Bonnie's time is most suitable from mid-June to the first week of July.
The seeds were sown in a seed bed measuring 1m x 0.5m.

Mode of Treatments: BGA and BGA with NPK

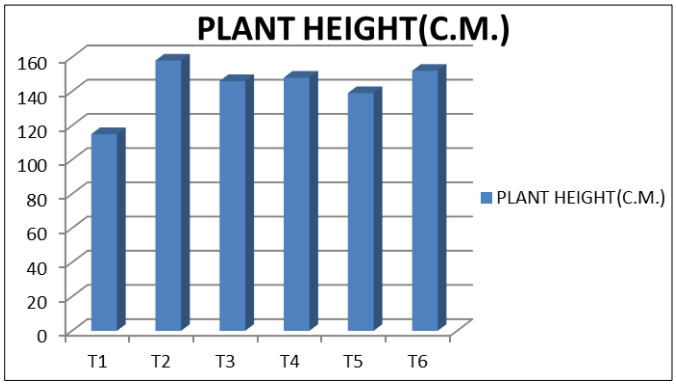
Treatment	N(Kg/ha)	P(Kg/ha)	K(Kg/ha)	BGA (Kg/ha)
T1	0	0	0	0
T2	80	60	40	20
T3	80	50	30	20
T4	40	60	40	40
T5	60	60	40	0
T6	60	60	40	40

Growth Measurement of Plants
Plant height (cm)
Panicles /hill
Spikes Panicle
No of graind/ panicle
Wt of 1000 grains (gm)
Grain yield (t/ha)

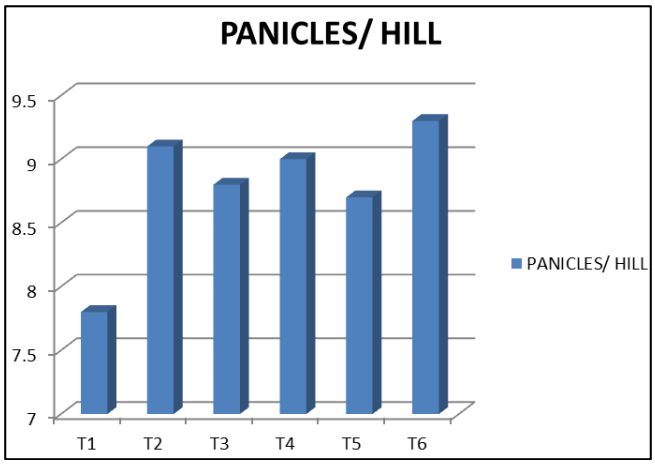
Results
Effect of BGA on yield parameters of rice (*Oryza sativa*)

Treatment	Plant height (cm)	Panicles /hill	Spikes / panicle	No. of grains/ panicle	Wt.of 1000 grains (gm)	Grain Yield (t/ha)
T1	115	7.8	8.0	108	20.32	8.45
T2	158	9.1	9.9	120	22.65	10.56
T3	146	8.8	9.0	112	21.50	9.54
T4	148	9.0	9.3	114	22.08	9.88
T5	139	8.7	8.6	111	21.08	9.10
T6	152	9.3	9.6	118	22.55	10.25

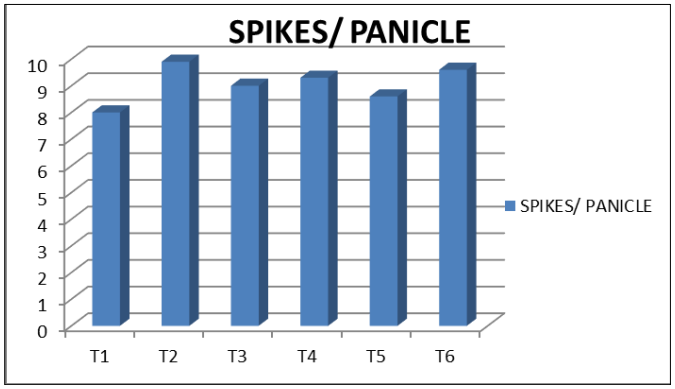
Plant height
On analyzing effect of different treatment of NPK and BGA on plant height of rice (*Oryza sativa*) it was observed that maximum average plant height (in cm) as compared to control, was obtained in T2 comprising combination of NPK, BGA 158 CM (NPK AND BGA) showed the next best growth in terms of plant height from T6 152cm (75% dose NPK and full dose of BGA) then found significant. Control plant have least hight T1 115cm



Panicles /Hill
On analyzing effect of different treatment of NPK and BGA on Panicles /hill Of rice (*Oryza sativa*) it was observed that maximum average panicle/hill as compared to control, was obtained in T6 9.3 (NPK AND BGA) showed the next best Panicles /hill in terms of T2 9.1 found significant. Control plant have panicles /hill T1 7.8.

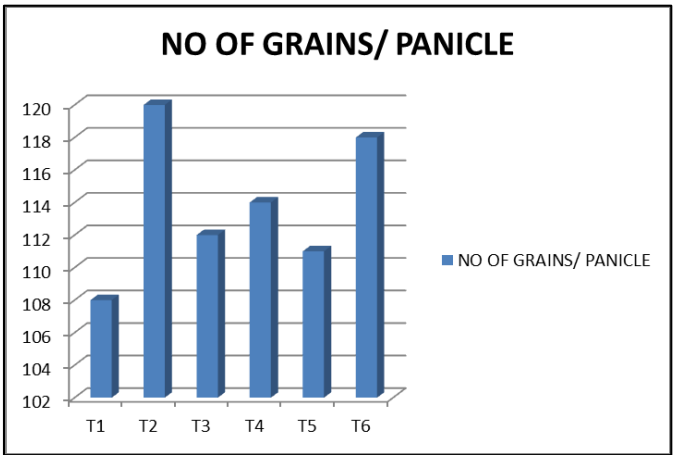


Spikes /Panicle
On analyzing effect of different treatment of NPK and BGA on Spikes / panicle of rice (*Oryza sativa*) it was observed that maximum average Spikes / panicle as compared to control, was obtained in T2 9.9 showed the next best Spikes / panicle in terms of from T6 9.6, T4 9.3, T3 9.0, T5 8.6, found significant. Control plant have Spike /panicle T1 8.0



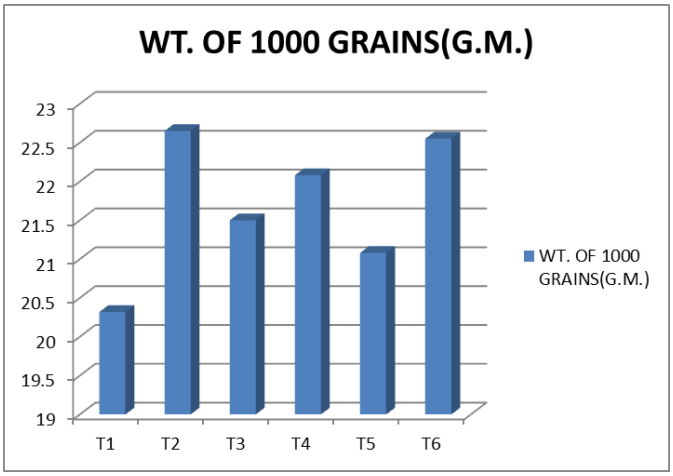
No. of grains/ panicle

On analyzing effect of different treatment of NPK and BGA on No. of grains/ panicle Of rice (*Oryza sativa*) it was observed that maximum average No. of grains/ panicle as compared to control, was obtained in T2 120 showed the next best No. of grains/ panicle in terms of from T6 118, T4 114, T3 112, T5 111, found significant. Control plant have No. of grains/ panicle T1 108 Wt. of 1000 grains (gm)



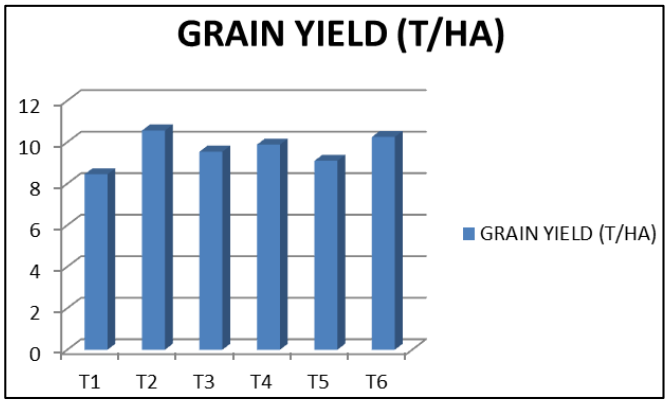
Maximum average Wt.of 1000 grains (gm)

On analyzing effect of different treatment of NPK and BGA on Wt. of 1000 grains (gm) Of rice (*Oryza sativa*) it was observed that maximum average Wt.of 1000 grains (gm) as compared to control, was obtained in T2 20.32 showed the next best Maximum average Wt.of 1000 grains (gm) in terms of Wt.of 1000 grains (gm) from T6 22.55, T4 22.08, T3 21.50, T5 21.08, found significant. Control plant have Wt. of 1000 grains (gm) T1 20.32



Grain Yield (t/ha)

On analyzing effect of different treatment of NPK and BGA on Grain Yield (t/ha) of rice (*Oryza sativa***)** it was observed that maximum average Grain Yield (t/ha) as compared to control, was obtained in T2 10. 56 showed the next best Grain Yield (t/ha) from T6 10.25, T4 9.88, T3 9.56, T5 9.10, found significant. Control plant have Grain yield (T/ha) T1 8.45



Conclusion

Blue Green Algae (BGA) are considered to be one of the remarkable group of photosynthetic simple plant forms. The cellular organization of BGA is prokaryotic, characterized by the lack of membrane bound organelles including nucleus, chloroplast or mitochondria. Thus, they are very much identical to photosynthetic bacteria and represent a link between bacteria and green plants. BGA are often called as Cyanobacteria or Cyanophycean algae. BGA are oxygen evolving and nitrogen (N2) fixing prokaryotes using sun light as the sole; energy source for the fixation of nitrogen. The heterocysts are the main sites of nitrogen fixation under aerobic condition. The study of BGA is becoming "fashionable" since the last two decades for many academic and practical reasons. The role of nitrogen fixing BGA in the maintenance of the fertility of the rice fields has been well substantiated and documented.

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