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Influence of Blue Green Algal Application on Rice Crop

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Field trials were conducted during *Sornavari* 1977 *Samba* 1977-78 seasons with the rice varieties ADT - 31 and IR-20. Blue green algae at the rate of 10 kg/ha were applied to the soil on 7th day after transplantation of the rice crop along with different levels of nitrogen. The composite culture blue green algae consisted of *Aulosira*, *Anabaena*, *Nostoc*, *Tolypothrix*, *Plectonema* and *Aphanothece*. The different treatments were : (1) control (no nitrogen and no blue green algae) (2) Blue green algae (BGA) alone (3) 25 kg N/ha (4) 25 kg N/ha + BGA (5) 50 kg N/ha (6) 50 kg N/ha + BGA (7) 75 kg N/ha (8) 75 kg N/ha + BGA (9) 100 kg N/ha (10) 100 kg N/ha + BGA. Increased grain yield was obtained due to inoculation with blue green algal. The yield obtained with every level of fertilizer nitrogen with algal supplementation was comparable to that in the next higher level of nitrogen.

In rice fields blue green algae play an important role in the fixation of atmospheric nitrogen. The ability of blue green algae, in fixation of nitrogen and their effect on rice crop have been well established (Goyal and Venkataraman, 1970; Venkataraman 1977, Jaganathan and Kannaiyan, 1977; Kannaiyan, 1978 a; Singh, 1978 and Kannaiyan, *et al* 1979). In the present study an attempt has been made to find out the effect of blue green algal inoculation to rice crop.

MATERIAL AND METHODS

Field trials were conducted in randomised block design with four replications during *Sornavari* - 1977 (June-September) and *Samba* 1977-78 (October-February) seasons. The available nitrogen status of the soil is low.

The rice varieties, ADT-31 and IR-20 were raised respectively during the seasons. The plot size of the experiment was 4x 2m. Blue green algae the rate of 10 kg/ha were inoculated to the soil on the 7th day after transplantation along with different fertilizer treatments. The composite culture blue green algae consisted of *Aulosira*, *Anabaena*, *Nostoc*, *Tolypothrix*, *Plectonema* and *Aphanothece*. The algal culture used in this study were isolated from the rice fields of the experimental station. The plots applied with the composite culture of blue green algae have established well. The treatments were (1) Control (no nitrogen and no blue green algae) (2) blue green algae (BGA) alone (3) 25 : 50 : 50 kg NPK/ha (4) 25 : 50 : 50 kg NPK/ha + BGA (5) 50 : 50 : 50 kg NPK/ha (6) 50 : 50 : 50 kg NPK/ha + BGA (7) 75 : 50 : 50 kg NPK/ha (8) 75 : 50 : 50 kg NPK/ha + BGA. (9) 100 : 50 : 50 kg NPK/

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ha (10) 100 : 50 : 50 kg NPK/ha + BGA. In all the treatments P and K were applied basaly as superphosphate and muriate of potash while N was applied as urea in two split doses during transplanting and 25 days after transplantation. The grain yield was recorded.

RESULTS AND DISCUSSION

The results on the grain yield of rice are presented In Tables I and II. The results have shown that the increased grain yield was recored due to the application of blue green algae. All the treatments have registered higher grain yield when compared to untreated one. The treatments with N fertilizer application and blue green algae have shown the increased grain yield. The application of blue green algae alone has significantly increased the grain yield. The varieties ADT-31 and IR-20 have responded very well with the application of blue green algae. In 1977 - *Sornavari* season and 1977-78 *Samba* season maximum grain yield was recorded in the plots treated with 100 kg N plus blue green algae. Both the rice varieties, IR-20 and ADT - 31 have recorded maximum grain yield only with 100 kg N plus blue green algae. There was no wide variation in grain yield between treatments and with varieties. The grain yield trend was more or less similar both *Sornavari* and *Samba* seasons. It is evident from the results that the inoculation with blue green algae have definite ber

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TABLE II Effect of Blue Green Algae on Rice Crop (Variety : IR 20)

Treatments	Sornavari - 1977		Samba - 1977-78	
	Plot yield (kg)	Grain yield (kg/ha)	Plot yield (kg)	Grain yield (kg/ha)
100 kg N + BGA	3.65	4562	1.84	3490
100 kg N	3.12	3908	1.69	3213
75 kg N + BGA	3.01	3771	1.60	3034
75 kg N	2.65	3312	1.55	2946
50 kg N + BGA	2.38	2978	1.48	2819
50 kg N	2.30	2875	1.37	2594
25 kg N + BGA	2.30	2875	1.32	2512
25 kg N	2.31	2887	1.30	2489
0 kg N + BGA	2.21	2771	1.29	2478
0 kg N	1.90	2375	1.20	2285
	S. E. = 0.22 C. D. = 0.66 C. D. (P = 0.05)		S. E. = 0.04 C. D. = 0.12	