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# Role of blue green algae on growth and composition of plants

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**Abstract**
Blue green algae play an important role in the fixation of atmospheric nitrogen in the rice fields. Recent researches have shown that blue green algae can be used as bio fertilizers for rice cultivation (Venkataraman 1997). In this paper we describe the influence of algae as manure on the yield and composition of tomato plant.

**Keywords:** blue green algae, growth, plants, nitrogen

## Introduction

## Material and Methods

Tomato (Solanum lycopersicum) plants were raised in well mixed garden soil having algae (blue green algae) as manure in pot culture conditions. the levels of algae studied were nil (control) 50,100 and 300 gm/kg soil. At 60 days' growth, top parts of plants and at 120 days' growth grains of plants were sampled, washed thoroughly in running tap water, rinsed with distilled water to avoid any surface contamination, blotted, chopped, and dried for determination of yield and tissue concentration of nutrient elements as described earlier (Sinha *et al*., 1984) [17]. Standard techniques were employed for determination of ascorbic acid, chlorophyll and catalane and peroxidase activity in fresh material of 60 days old tops, the data were artistically analysed and tested for significance at 5 % and 1 % probability levels.

## Result and Discussion

Dry matter yield to tops of 60 days old plants were found in increase over control with the increase in level of the supply of algae 100 g/kg soil supply level of algae showed maximum increase in yield and was found significant (P=0.05) over control. Similar observations were found to be highly significant (P=0.01) over control. This increase in yield is in conformity with results of Rao *et al*. (1977) [13], Huang (1978) [5], Kaushik and Venkataraman (1979) [8], Latchumanan (1979) [9], Rodgers *et al*. (1979) [14], Kannaiyan *et al*. (1981) [7], Singh *et al*. (1981) [16], Chanddrakaer *et al*. (1983) [4], Bagal and Patil (1984) [1], Bongale (1984) [3], Venkataraman (1984) [19], Main and Stewart (1985) [10], Roger *et al*. (1987), Mohan *et al*. (1987) [11].

Increase at 50 gm algae/kg soil supply level for peroxidase activity in tops of 60 days' growth and tissue magnesium and iron in grains were found to be highly significant (P=0.01) and for tissue sulphur significant (P=0.01) over control.

Ascorbic acid content in tops and chlorophyll content in leaves of 60 days old plants and tissue calcium and potassium in grain showed maximum increase at 100gm algae /kg soil level over control and these increase were found to be highly significant (P=0.01). the increase in ascorbic acid is not in conformity with the result of Kaushik and Vankatraman (1979) [8] who observed in significant effect on tomato. Although the increase in AA and chlorophyll content is in agreement with the results of Mohan *et al*. (1987) [11].

200gm algae/kg soil level for tissue catalase in 60 days plant tops and tissue nitrogen and manganese in grains showed highly significant (P=0.01) increase over control. The increase in catalase activity is in agreement with the results of Mohan *et al*. (1987) [11]. Tissue phosphorus did not show any significant change in grains of the plants.

**Table 1:** Effect of algae on growth and composition of Tomato (Solanum lycopersicum) plants.

| Observations | plant part | g/algae kg soil L.S.D. | | | | | |
|---|---|---|---|---|---|---|---|
| | | Nil | 50 | 100 | 200 | P=0.05 | P=0.01 |
| G.D.M. yield/plant | 'Tops | 0.049 | 0.064 | 0.067 | 0.054 | 0.015 | 0.022 |
| G.D.M. yield/plant | Plant | 1.76 | 2.06 | 3.03 | 2.67 | 0.06 | 0.09 |
| Mg ascorbic acid/100g F.W. | Tops | 114 | 118 | 124 | 124 | 6 | 9 |
| Mg chlorophyll/100g F.W. | Leaves | 99 | 85 | 107 | 107 | 2 | 4 |
| Unit catalase/g F.M. | Tops | 8.7 | 9.8 | 10.4 | 11.1 | 0.3 | 0.4 |
| O.D. peroxidase | Tops | 0.7 | 0.8 | 0.6 | 0.5 | 0.06 | 0.09 |
| % Ca | Grains | 0.06 | 0.07 | 0.08 | 0.07 | 0.06 | 0.09 |
| %K | Grains | 0.67 | 0.67 | 0.78 | 0.78 | 0.06 | 0.09 |
| %Mg | Grains | 0.070 | 0.073 | 0.068 | 0.060 | 0.002 | 0.003 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| %P | Grains | 0.44 | 0.43 | 0.46 | 0.41 | 0.04 | 0.06 |
| %S | Grains | 0.034 | 0.062 | 0.057 | 0.051 | 0.03 | 0.04 |
| %N | Grains | 1.00 | 1.50 | 2.10 | 2.15 | 0.07 | 0.10 |
| Ppm Fe | Grains | 10 | 15 | 10 | 15 | 2 | 3 |

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