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Estimation of soluble protein content on *Solanum melongena* L. by treating vermi compost and blue green algae

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Abstract
Biofertilizers are the substance that contains microorganism's living or latent cells. Biofertilizers increase the nutrients of host plants when applied to their seeds, plant surface or soil by colonizing the rhizosphere of the plant. Biofertilizers are more cost-effective as compared to chemical fertilizers.
The application of bio fertilizers to the crops is being propagated throughout the world. The popular and cheap bio fertilizers are vermi compost and Blue green alga. Blue green algae were applied to mainly to paddy fields. Recently they are applied to other crops also. Experiments were conducted to investigate soluble protein of *Solanum melangena* L. by using vermi compost and BGA in single and double combinations. It was found that Vermi compost in single fertilizer treatment; Vermi compost and BGA in double fertilizer treatment were found to have comparatively high values in soluble protein. The cultivated crops showed maximum value in double fertilizer treatment. Thus the combination of these fertilizers enhances the growth and yield.

Keywords: Bio chemical activities, crop plants, blue green algae, vermicompost

Introduction
Blue green algae are one of the most well adopted algal forms in slaine habits. It has tremendous capacity to transform saline soil into productive neutral soil with greater amount of available nitrogen and carbon. Incubation of saline or alkaline soils with native blue green algae *in vitro* or *in vivo* resulted an improvement of Physico-chemical properties of Soils. At present over 100 species of blue green algae are known to fix atmospheric nitrogen. These have been found to be very effective on the rice and banana plantation. There is considerable variation between different forms of blue green algae and sometimes within the species in the culture flasks N fixed per 100 ml nutrient medium. Under field condition overall increase in the grain yield of rice is amounted to about 586 kg/ha. In case of crops other than rice algalization increased nearly 34 per cent yield.
Vermicompost is the remnants of the earthworms which feed voraciously on organic matter. Earthworms are beneficial organic creatures which man has not explored. They eat voraciously and feed day and night all garbage if it is shredded to fine pieces. The earthworms are called intestines of the earth and are bio-refineries purifying all waste into useful compost. Every house can adapt this simple process of converting garbage waste into wealth (Sultan A Ismail 1997) [17]. The compost contains approximately 0.5 percent Nitrogen, 0.2 per cent phosphorus and potash in soluble form. It also contains sufficient quantities of micronutrients. The earthworms also release enzymes that lead to growth of microbes and bacteria.

Study plant: *Solanum melangena* L. Brinjal, eggplant,

Family: Solanaceae

Brinjal is now most important in India and the Far East. It is now consumed in a variety of ways. In japan and other parts of the orient, much of the crop is pickled. It is made into bharts, a preparation relished in most parts of India by roasting, mashing and seasoning with salt, onion, chillies, tomato, coriander leaves and fatty oil. The fruit is sliced and fried or broiled. The immature fruits are sometimes used in currries.

Experimental method

The seeds of Brinjal were obtained from the Agriculture University, Madurai. The seeds were sown in separate pots and allowed to germinate. Four pots were selected for each crop. The pots were labeled for crop. The parameters were calculated in triplicates for the purpose of statistical evaluation. The following labels were pasted for each crop.

- Control
- BGA
- Vermicompost
- BGA + Vermicompost

The vermicompost and Blue green algae were collected from the research center of the college.

After three months the fertilizers were applied in Brinjal. The yield and growth parameters were assessed.

Estimation of soluble protein

The leaves were homogenized in 80 percent acetone and centrifuged at 10,000× g for 10 minutes. To the pellet 2 ml of 0.1 N NaOH solutions was added and centrifuged again. Soluble protein content of the centrifuged homogenate was determined by the method of Bradford (1976). The absorbance was calculated from calibration graph plotted using known amount of bovine serum albumen as protein standard.

Result and Discussion

Soluble protein content in leaves ranged from 0.12 mg/g/f.wt -0.57mg/g/f.wt in Brinjal. In single fertilizer treatment maximum soluble protein was observed in Vermicompost. In double fertilizer treatment Vermicompost and Blue green algae showed higher than single fertilizer treatment.

Table 1: Soluble protein content on *Solanum melagena* L.

Crops	Control	Blue Green Algae	Vermicompost	Blue Green Algae and Vermicompost
Brinjal	0.12±0.010	0.17±0.015	0.21±0.012	0.26±0.006

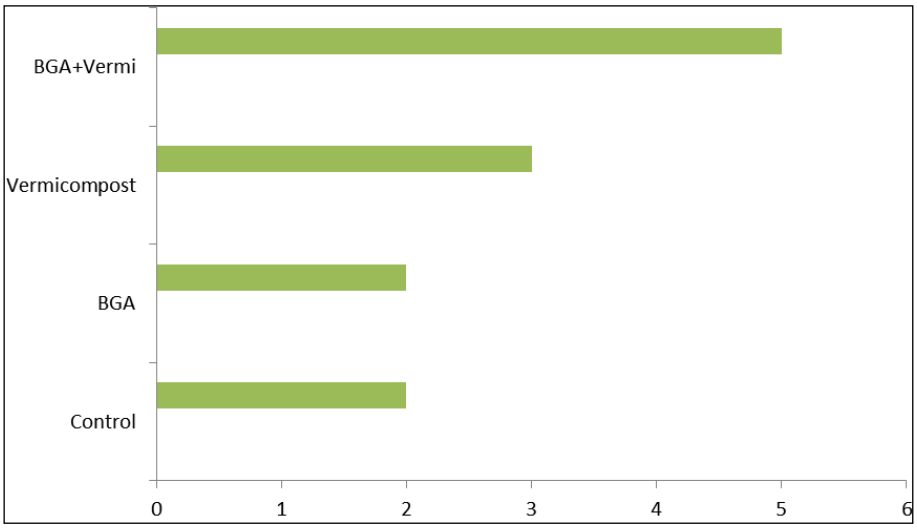

Fig 1: Chart show of control

Discussion

Chemical fertilizers are easily available to enhance the Growth of Crop plants but it has some side effect to the soil fertility when compared to Bio fertilizers. Both of these are available in markets in different commercial brands. Application of Bio fertilizers is recommended by the agronomists to save the expenditures incurred by the farmers. Cultivation of Cheap and effective fertilizers are undertaken by the farmers under the guidance of agriculturists. For example in several rural areas vermicompost is being manufactured and sold in Markets. These fertilizer products fetch a considerable income to the farmers.

In the present study application of vermicompost alone to Brinjal gives higher growth features than BGA. However, Subbiah and Sundarajan (1993) [16] made a critical study on the influence of organic and inorganic fertilizers on the yield and nutrients uptake in Bhindi fruit was significantly increased by vermicompost treatment.

In Double fertilizer treatment it was found that vermicompost and BGA shows better growth properties. Application of Azolla, Vermicompost and Urea on Paddy (Singh *et al*. 2005), Farmyard manure + Sesbania green manure+ Blue green algae+ Phosphate Solubilising bacteria on Paddy (Nguyen Van Quyen and Sharma 2003) [3] Showed better yield than control.

Vermicompost contains a good amount of macro and micronutrients. It also serves as a very good base for establishing and multiplication of beneficial symbiotic microbes which helps in fixing nitrogen in the soil, besides enhancing the availability of phosphate and nitrogen uptake of phosphate by plants (Kale 1995) [10].

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