



Role of organic nutrient on growth and yield of brinjal

Somanath Routray¹, Ujjwal Naik¹, Milan Mahapatra¹, Atisha Mohapatra¹, Saurav Barman², B Praveen³

¹ Department of Botany, School of Applied Sciences, Centurion University of Technology and Management, Odisha, India

² Department of Soil Science and Agricultural Chemistry, MS Swaminathan School of Agriculture, Centurion University of Technology and Management, Odisha, India

³ Department of Plant Pathology, MS Swaminathan School of Agriculture, Centurion University of Technology and Management, Odisha, India

Abstract

Now a day the recent study was performed to analyse the outcome of organic nutrient on growth and production capacity in brinjal plant. In control and investigational plots, the physio-chemical characters of soils were examined and punctuated with outcome. It is resulted that, by using organic nutrient inflate the growth and yield promoters. In trial plot the flowering and fruiting properties was remarkably high. By the following experiment, it is resulted that, extract of organic product provide a useful resource which is beneficial for increasing the productivity of brinjal. Organic based product are productive quality yielder and economically better for sustainable agriculture.

Keywords: organic nutrient, soil, yield promoter

Introduction

Solanum melongena also known as Brinjal, Eggplant belongs to the family Solanaceae and genus Solanum. The plant is a short lived biennial herb branching inhabit with a height of 0.5 to 1.5m. Brinjal or eggplant being a good source of protein, minerals and vitamins ^[1]. Brinjal helps in lowering blood cholesterol level and regulating high blood pressure ^[2]. Being a biennial crop Brinjal requires high quality of nutrients to encourage its growth. The need of nutrients can be made available by using inorganic fertilizers but there are some major disadvantages in using inorganic fertilizers like leaching, soil degradation, underground water pollution and rapid release of nutrient. But in case of Organic nutrient supplements and fertilizers like organic manure are used which supplies plant nutrients and improves the soil structure. It has been observed that by applying organic manure there is a significant increase in yield rather than inorganic manure in eggplant production ^[3, 6].

By using organic manure as a source of organic nutrient and applying it as bio fertilizers has improved the productivity of soil and crop production ^[4]. The rate of organic manure application has been seen to effect the growth and yield of plants ^[5]. The need of nutrient in each crop is vital. *S. Melongena* has a great demand as an important vegetable crop and restricted information is available on its nutrient requirements for better nutrient uptake, fruit quality and crop yield ^[3, 6]. In Eggplants the yield of fruits are remarkably low after six weeks of first harvest. The reduction in yield of brinjal is mainly attributed to inadequate supply of nutrients to replenish the last ones due to continuous picking of fruits.

Hence, the objectives of this review is to determine the highest rate of organic nutrient and frequency of its application on the growth, yield and some nutrient composition of the fruit of *Solanum melongena* "Brinjal"

Role of Organic nutrient on different Growth parameters of Brinjal

1. Plant height

On using organic nutrients as treatment on lateral stages (90 and 60 DAT), the treatment was combined with bio fertilizer + bio control agents which showed a significance growth of brinjal as compared to treatment receiving only FYM equivalent dose of recommended NPK. In the treatment consisting organic nutrients as treatment has recorded the maximum plant height (45.63 cm), the number of branches (11.17) and number of leaves (50.05) as compared to normal treatment method with maximum plant height (25.92 cm), number of branches (9.03) and the number of leaves (18.68). Organic nutrients in the form of bio fertilizers and bio control agents were found to be effective in increasing vegetative growth of brinjal. Organic nutrients are responsible for higher vegetative growth in plants which has improved the plant mineral concentration through better nitrogen fixation ^[8], increase in phosphorus uptake by plant which is caused by phosphate solubilising bacteria ^[9] and also protection from diseases by growth-promoting rhizobacteria ^[10].

Increase in plant height, number of branches and number of leaves by the application of bio fertilizer as a source of organic nutrient has been reported in tomato ^[11, 12]. On the other hand, the application of bio control agents as organic nutrients may have protected plants from diseases occurred by colonizing the rhizosphere of the plant ahead to the occurrence of disease causing pathogens as beneficial plant growth-promoter rhizobacteria and to improve the growth (plant height, number of branches and number of leaves) ^[13]. Similar findings were also reported by ^[14] and ^[15].

2. Plant weight

The use of Farm Yard Manure has remarkable effect on plant weight of 370.67 gm to 407.67 gm in comparison with

other source of organic products. In corporation of dissimilar sources of organic nutrients has a remarkable result on vegetative growth of brinjal which is indicated by the height and weight. It is observed that the plant fresh weight of 405 gm and 371 gm by the application of FYM as compared to 230 gm and 179 gm in controls respectively. The organic source of different nutrient had a significant effect on the vegetative growth of brinjal which can be seen by fresh weight compared to their controls.

The soil which is totally organic supplied higher than the nutrient i.e. nitrogen and phosphorus. Most composite compound has been found in organic products which supply variety of nutrient and include important constituents of the soil. Humus included in the soil acted as the outstanding substrate for the growth of the plant. The organic product applied in brinjal explant particularly in FYM was very much healthy, longer and weighty as compared to inorganically grown brinjal plant. It is the fact that the nutrient of the organic product is released slowly by the process of mineralisation [16] continuing excellent level of soil taking a longer period of time. Most of the organic products delivered at the process of mineralization will help in improving of ions and other micro nutrients [17].

3. Number of leaves

The effect of organic manure is noticeable in eggplant. The number leaves are more when the eggplants are treated with organic manures plants with natura and neem oil treatment shows maximum number of leaves.

4. Number of branches

Different foliar application effect on producing the number of branches. Effective treatment produces maximum no of branches. The organic manure lie neem leaf extract water is more effective to decrease shoot infection, so that the number of branches of eggplant develops easily [20].

5. Plant yield

In common all organic fertilizers have the ability to increase the yield of plants as compared to inorganic fertilizers. The recorded number of fruits per plant (38.90) and fruit yield/plant (810 g) in treatment with included organic nutrient, which is significantly higher than treatment with only FYM. The nitrogen present in the soil is enhanced by the azotobacter present [10], plant N and P uptake has been enhanced by inoculation of micro-organism which are phosphate solubilising [14], which leads to increase in yield of brinjal. The growth in number of fruits, plant and yield is because of using organic nutrients and it is recorded by [11] in tomato, [9] in sunflower, [10] in gherkin and [18] in brinjal. Growth promoting rhizobacteria and antagonistic endophytic bacteria plays an important role for growth in number of fruits/ plant and fruit yield/plant [13, 19].

6. Flower number per plant

The number of flowers varies with respect to different treatments by natura and neem oil mixture is effective in production of maximum number of flowers. The quality of flower also upgraded by applies of bio-fertilizers [21].

7. Number of fruits

Number of fruits in brinjal plant is influenced by different sources of nutrients applied on it. Application of only organic nutrient maintains the health of soil but inorganic

fertilizer application effect the soil health which also effect the flowering and fruiting therefore combine use of manure and fertilizer may supply nutrients which suitable for the flowering, fruiting and their growth [22]. Poultry manure can replace inorganic fertilizer and capable of highest fruit production [23].

8. Length of fruit

Length of fruits defers in different cultivars. The highest fruit length is seen in cultivar purple lawn but cultivar black beauty shows minimum length of fruit. The increase in fruit length may be due to the fact that the organic fertilizers provide maximum nutrients which increases the production of leaves indirectly increasing the process of photosynthesis so that higher amount of carbohydrate is produced and translocated from leaves and results in increase of fruit length [24-25].

9. Diameter of fruits

Noticeable variation is seen for fruit diameter of brinjal cultivars. Maximum diameter is seen in cultivar long black. The maximum fruit diameter is seen in plants grown under organic region conditions. The increased diameter of the fruit is due to organic nutrients provided by cultivars which is the reason of improved nutrient status of soil which resulted in vigorous plants and also increased the leaves production. More food production and vigorous growth of plant resulted in an increase in fruit diameter [26].

Conclusion

From the following research we have observed that organic nutrient plays very important role in managing the fertility of the soil as well as productivity of plant.

The growth and productivity of Brinjal plant depends on the provided nutrients by regular mineralisation of organic manures. We concluded that by using organic products as a row material for the productivity of Brinjal plants has enhanced the quality and productivity of Brinjal.

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