



E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2018; 7(4): 2466-2468
Received: 09-05-2018
Accepted: 13-06-2018

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Effect of mulching on varietal influence of brinjal (*Solanum melongena*) in agroforestry system

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Abstract

The experiment was laid out in RBD with 3 replication, 8 treatments separately. Studies revealed, significantly effect on the growth performance such as plant height, no. of branches, no. of Fruits, fruits wt. yield of Brinjal (*Solanum melongena*) was observed better in Pusa Purple (V₁) with Rice mulching (M₁) (99.70 cm) number of branches per plant was observed better in variety in Pusa Purple (V₁) with Rice mulching (M₁) (29.87). The maximum weight of fruit was observed better in variety in Pusa Purple (V₁) with Rice mulching (M₁) (756.67 gm). The maximum yield was observed better in variety in Pusa Purple (V₁) with Rice mulching (M₁) (5.70 q/ha). The maximum profit in terms of benefit: cost ratio was obtained with treatment T₁ (1:1.8) and T₂ (1:1.6).

Keywords: brinjal, rice mulching, plant height, branch, weight of fruit, yield

Introduction

Brinjal, *Solanum melongena* L. is a popular vegetable crop grown in the subtropics and tropics. It is called brinjal in India and aubergine in Europe. The name "brinjal" derives from the shape of the fruit of some varieties, which are white and shaped similarly to chicken eggs. Brinjal, also known as brinjal or aubergine belonging to the family "Solanaceae", is a vegetable commonly grown by the farmers throughout the world. The family contains more than 2000 species distributed in 75 genera. In the genus "*Solanum*" there are three main species viz; *esculentum* (large round), *serpentium* (long slender) and *depressum* (dwarf brinjal). Currently, it is extensively grown in Bangladesh, India, Pakistan, Nepal, U.A.E, Sri Lanka, Egypt and other warm countries of the world. Among all summer grown vegetables with semi-perennial nature, brinjal is almost available throughout the year and consumed in various forms by all classes of people. World's statistics reveal that brinjal is second to potato and sweet potato in terms of production.

Materials and Methods

A field study was conducted at the research area of a Department of Agroforestry, Sam Higginbottom University of Agricultural, Technology and Sciences, Allahabad (UP) during the period September, 2015 to January, 2016. In their treatments such as T₁, T₂, T₃ and T₄ there were used four types of mulching such as rice straw mulching, wheat straw mulching, polythene sheet and green grass mulching along with variety Pusa Purple respectively same as with the rest of treatments such as T₅, T₆, T₇ and T₈ same mulching but different variety Banarasi Gola respectively. The different pre harvest observation of growth parameters such as Plant height, Number of branches and Number of flowers per plant were recorded for each treatment and for each replication at an interval of 30, 60, 90 and 120 days. The different post-harvest observation such as, the Number of fruit per plant and Weight of fruit per plant and yield of fruit were taken after final harvesting i.e. at 120 days.

Result and Discussion

Among these treatments the maximum plant height was found in treatment T₁ (99.70 cm) followed by treatment T₂ (96.73 cm) and minimum was observed in T₇ (86.20 cm) and was also statistically significant over the all other treatments at 30, 60, 90 and 120 DAP. Scrutiny of the summary shows that the maximum number of branches per plant was found in treatment T₁ (29.87) followed by treatment T₂ (25.73) and minimum number of branches was observed in T₈ (21.23). The maximum number of flower was found in treatment T₁ (6.90) followed by treatment T₂ (5.83) and minimum was observed in T₈ (2.83). The result was found similarly by Khan *et al.* (2008) was reported the earlier 50 % flowering could be attributed to the effective weed management which encouraged the crop growth and consequently enabled to attain

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maturity in a shorter duration and mulching helped to suppress the growth of weed and it influence the growth of plants. Among these treatments the maximum number of fruits per plant was found in treatment T₁ (5.97) followed by treatment T₂ (5.27) and minimum number of fruit was observed in T₈ (2.77) and was also statistically significant over the all other treatments at 30, 60, 90 and 120 DAP Scrutiny of the summary shows that the maximum weight of the fruit was found in treatment T₁ (756.67gm) followed by treatment T₂ (630.33gm) and minimum weight of fruit was observed in T₇ (201.57gm). The maximum yield was found in treatment T₁ (5.70 q/ha) followed by treatment T₂ (3.93 q/ha)

and minimum yield was observed in T₈ (2.47 q/ha). Among these treatments the maximum profit in terms of benefit: cost ratio was obtained with treatment T₁ (1.8) which is followed by with treatment T₂ (1.7) while the minimum profit in terms of benefit cost was obtained with treatment T₃ (1.3). The decreasing order of benefit cost ratio is as follows – T₁>T₂>T₅>T₆>T₄>T₈>T₇>T₃. The result was found similar results were found by Devi *et al.* (2002) [11]. They observed that the treatment with 50 %N +25 % poultry manure and bio fertilizer resulted in the highest yield and benefit cost ratio (1:1.8) in brinjal.

Table 1: Effect of mulching and varietal influence on the growth and yield components of Brinjal (*Solanum melongena*)

| Treatment | Plant Height | No. of Branch | No. of Flower | No. of Fruit | Weight of Fruit | Yield | Benefit Cost Ratio |
|-----------------|--------------|---------------|---------------|--------------|-----------------|-------|--------------------|
| T ₁ | 99.70 | 29.87 | 6.90 | 5.97 | 756.67 | 5.70 | 1:1.8 |
| T ₂ | 96.73 | 25.73 | 5.83 | 5.27 | 630.33 | 3.93 | 1:1.7 |
| T ₃ | 88.87 | 23.63 | 4.47 | 5.00 | 598.33 | 3.07 | 1:1.3 |
| T ₄ | 90.27 | 24.77 | 5.20 | 5.10 | 598.00 | 3.57 | 1:1.4 |
| T ₅ | 91.10 | 25.03 | 4.40 | 4.27 | 495.33 | 3.30 | 1:1.6 |
| T ₆ | 89.67 | 22.60 | 4.33 | 3.97 | 543.30 | 3.63 | 1:1.5 |
| T ₇ | 86.20 | 21.87 | 3.07 | 3.03 | 201.57 | 2.50 | 1:1.4 |
| T ₈ | 87.43 | 21.23 | 2.83 | 2.77 | 464.33 | 2.47 | 1:1.4 |
| F- test | S | S | S | S | S | S | |
| S. Ed. (±) | 1.07 | 0.31 | 0.16 | 0.22 | 49.64 | 0.17 | |
| C. D.(P = 0.05) | 3.25 | 0.93 | 0.48 | 0.66 | 150.56 | 0.50 | |

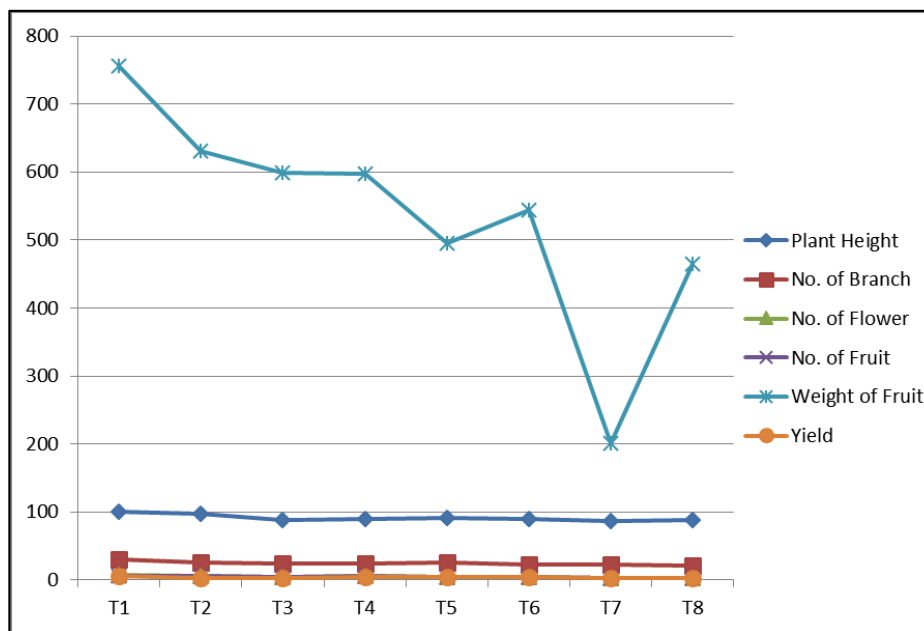


Fig 1: Effect of mulching and varietal influence on the growth and yield components of Brinjal (*Solanum melongena*)

Conclusions

The growth performance such as plant height was observed best in Pusa Purple (V₁) with Rice mulching (M₁) number of branches per plant was observed better in variety in Pusa Purple (V₁) with Rice mulching (M₁). The maximum weight of fruit was observed better in variety in Pusa Purple (V₁) with Rice mulching (M₁). The maximum yield was observed better in variety in Pusa Purple (V₁) with Rice mulching (M₁). The maximum profit in terms of benefit: cost ratio was obtained with treatment T₁ (1:1.8) and T₅ (1:1.6).

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