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RESPONSE ON EGGPLANT GROWTH AND YIELD UNDER DIFFERENT ORGANIC POTTING MEDIA

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A B S T R A C T

The pot experiment aimed to assess the response on eggplant growth and yield under different organic potting media. A trial was conducted in a complete randomized design (CRD) at the Department of Horticulture, Sindh Agriculture University Tandojam, and featured triple replications. The treatments included; T1: (control) a mixture of canal debris and soil in a ratio of 2:0.5 T2: a mixture of poultry feces with canal debris and soil in a ratio of 1:2:0.5 T3: a blend of Sheep dung with canal debris and soil in a ratio of 1:2:0.5 T4: incorporation of compost (Terminix Pro) with canal debris and soil in a ratio of 1:2:0.5. It was examined that the eggplant cultivars was significantly ($P<0.05$) affected by different organic manures. The eggplant receiving sheep dung with canal debris and soil (1:2:0.5) produced 49.64 cm plant stature, 26.60 leaf count plant-1, 27.54 blossom count plant-1, 5.68 cm leaf dimension, 1.66 cm internodes interval plant-1, 47.38 day to debut blossom initiation, 0.83 g blossom weight, 2.22 cm floral span, 59.66 g fruit weight and 49.51 cm fruit diameter. This finding suggests that the eggplant growth increased simultaneously with crop fertilized with sheep dung, canal debris, and soil (1:2:0.5). In the context, "Black Beauty" variety exhibited a significant maximum growth yield compared to the variety "Round black".

Key Words: Compost; Eggplant; Organic manure; Canal debris

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INTRODUCTION

Vegetable crops have traditionally been the main source of food for subsistence in many developed countries including Pakistan (Naeem and Ugur, 2019). Since vegetables are now a necessary diet for supplying nutrients, vegetable farming is becoming more and more crucial in meeting the demands of the global population growth rate (Mahamad et al., 2022). *Solanum melongena* or eggplant is a vegetable crop that is grown all over the world and produces 56.618 million tons of production. Specifically in Pakistan, 99416 tons of egg fruit were produced from the 7327 hectares of total harvested land; with a standard yield of 13.5684 metric tons/ha (FAO, 2021). Eggplants are classified as dicotyledons, and their root system is a long tap root. The leaves and stems of eggplant are purple with a tint of green, and the plant is upright and branched. The fruit of the eggplant is long and thin, with a purple-black color and a greenish hue. (Mat-Sulaiman et al., 2020).

Eggplants are a great source of calories, carbs, fats, sugars, dietary fiber, calcium, magnesium potassium, iron, and protein among many other nutrients. All of these nutritional components help the body grow, replenish depleted parts,

and safeguard the human body (Ahmad et al., 2022; Naeem and Ugur, 2019). Moreover, eggplants are rich in minerals, antioxidants, vitamins, protein, and a variety of phytochemicals with scavenging qualities (Mahamad et al., 2022; Shahid et al., 2017). Eggplant is also used in traditional medicine and contains a lot of polyphenols, which are occurring plant components that may improve how effectively diabetic cells handle sugar. The white eggplant and its roots are also effective in curing asthma and diabetes (Palia et al., 2021).

Organic manure is composed of partially decomposed plant straw, urine, and feces, which contribute to enhancing various soil properties such as water retention, erosion prevention, and gas exchange (Haska et al., 2022). With the rising costs of commercial fertilizers, there's a growing recognition of the significance of farmyard manure as an organic fertilizer (Ujjwal et al., 2022). It not only provides ample macro and micronutrients to the soil but also enhances its physical, chemical, and biological characteristics. Typically, traditional organic manure contains approximately 0.73% nitrogen, 0.18% phosphorus, and 0.71% potassium (Pujiastuti et al., 2018).

Natural components found in organic fertilizers are less damaging to the environment than those found in chemical fertilizers. Most organic fertilizers consist of just one element, and their many forms originate from plant, animal, or mineral sources (Mahamad et al., 2022). Vegetables grown in enriched soils with organic matter showed enhanced quality and safety due to reduced chemical residues and a superior taste profile (Pujiastuti et al., 2018). Considering the importance, the purpose of this study is to examine the response on eggplant growth and yield under different organic potting media. Thus, the objectives of this study were to assess the impact of various organic manures on eggplant development, as well as to compare and determine which organic manure is appropriate for which eggplant variety based on optimal growth responses.

MATERIAL AND METHODS

Experimental details

A pot experiment titled “Response on eggplant growth and yield under different organic potting media” was laid out at the Department of Horticulture, Sindh Agriculture University Tandojam in 2017-18. The study employed a completely randomized design with three replications. Each replication consisted of three pots, and eight seedlings were grown into each pot. The earthen pots were filled with a growing medium, leaving approximately one inch of space from the top.

Preparation of organic manures used as a treatment.

Treatment (T1), which was created by combining soil and canal debris in a 2:1 ratio, was also included as a control in the study. For the second treatment (T2), a mixture of poultry feces, canal debris, and soil was prepared in a 1:2:0.5 ratio with additions. Sheep manure, canal debris, and soil were combined in a 1:2:0.5 ratio to prepare the third treatment (T3). Vermicompost (Terminix Pro) is a mixture of decaying vegetable or food waste, bedding materials, and vermicast that is produced by a decomposition process involving different kinds of worms, primarily red wigglers, white worms, and other earthworms. The last treatment consisted (T4) of a 1:2:0.5 ratio of vermicompost, canal debris, and soil.

Crop management

Black beauty and round black were the two eggplant varieties that were the main focus of the investigation, and observations were made for each plant of both varieties. The plants were consistently maintained at field capacity conditions and were frequently irrigated with tap water. Weeding and thinning were done as needed. During the growth season, appropriate plant protection measures were implemented. There were no pesticides or chemicals utilized. General growth metrics such plant stature (cm), leaf count plant^{-1}, flower count plant^{-1}, leaf dimension (cm), internodes interval plant^{-1} (cm), day to debut blossom initiation, blossom weight (g), floral span (cm), fruit weight (g) and fruit diameter (cm) are seen visually and recorded.

Statistical analysis

The performance of an eggplant was evaluated by the analysis of variance (ANOVA) where Statistix 8.1 computer software (Statistix, 2006) was used to estimate varying measured variables with to the effect of different treatments. Differences among treatments were determined by the Least Significant Difference (LSD) at P<0.05%.

RESULTS

Plant stature (cm)

The results in regards to plant stature of eggplant varieties “Black Beauty” and “Round Black” as affected by different organic media levels are presented in Table 1. The maximum plant stature of eggplant (49.64 cm) was determined in pots given sheep dung + canal debris + soil (1:2:0.5), followed by average plant stature of 44.26 cm recorded in the pots fertilized with poultry feces + canal debris + soil (1:2:0.5), respectively. The eggplant fertilized

with compost (Terminix Pro) + canal debris + soil (1:2:0.5) produced 40.73 cm plant stature, respectively; while the minimum plant stature (22.61 cm) was noted from canal debris + soil (2:0.5). In case of varieties, the plant stature of eggplant variety "Black Beauty" was significantly higher (39.92 cm) than variety "Round Black" (38.70 cm). The interactive effect of sheep dung + canal debris + soil (1:2:0.5) × variety "Black Beauty" produced plant of maximum plant stature (50.13 cm); and the lowest plant stature (22.18 cm) were obtained in the interaction of canal debris + soil (2:0.5) × variety "Round Black". The results of the LSD test showed that there were significant ($P<0.05$) variations in plant stature between the amounts of organic medium as well as between the other treatments and varieties.

Table 1: Plant stature (cm) of eggplant varieties under different organic manures

Treatments	Varieties		
	Black Beauty	Round Black	Mean
T_1 = (Control) canal debris + soil (2:0.5)	23.05	22.18	22.61 D
T_2 = Poultry feces + canal debris + soil (1:2:0.5)	45.31	43.21	44.26 B
T_3 = Sheep dung + canal debris + soil (1:2:0.5)	50.13	49.14	49.64 A
T_4= Compost (Terminix Pro) + canal debris + soil (1:2:0.5)	41.2	40.26	40.73 C
Mean	39.92 A	38.70 B	
	Treatment	Varieties	T x V
SE±	0.0211	0.0299	0.0149
LSD 0.05	0.0453	0.0641	0.0321

Leaf count plant^{-1}

The results in regards to leaf count plant^{-1} of eggplant varieties "Black Beauty" and "Round Black" as affected by different organic media levels are presented in Table 2. The maximum leaf count plant^{-1} of eggplant (20.91) was determined in pots given compost (Terminix Pro) + canal debris + soil (1:2:0.5), followed by average leaf count plant^{-1} of 22.61 recorded in the pots fertilized with poultry feces + canal debris + soil (1:2:0.5), respectively. The eggplant fertilized with lower sheep dung + canal debris + soil (1:2:0.5) produced the plant of 26.60 leaf count plant^{-1}, respectively; while the minimum leaf count plant^{-1} (15.68) was noted in plant obtained from canal debris + soil (2:0.5). In case of varieties, the leaf count plant^{-1} of eggplant variety "Black Beauty" was significantly higher (22.03) than variety "Round Black" (20.87). The interactive effect of compost (Terminix Pro) + canal debris + soil (1:2:0.5) × variety "Black Beauty" produced plant of maximum leaf count plant^{-1} (27.14); and the lowest leaf count plant^{-1} (15.16) were obtained in the interaction of canal debris + soil (2:0.5) × variety "Round Black". The results of the LSD test revealed that there were significant ($P<0.05$) variations in leaf count plant^{-1} among the amounts of organic medium as well as between the other treatments and varieties.

Blossom count plant^{-1}

The results in regards to blossom count plant^{-1} of eggplant varieties "Black Beauty" and "Round Black" as affected by different organic media levels are presented in Table 3. The maximum blossom count plant^{-1} of eggplant (27.54) was determined in pots given sheep dung + canal debris + soil (1:2:0.5), followed by average blossom count plant^{-1} of 22.51 recorded in the pots fertilized with poultry feces + canal debris + soil (1:2:0.5), respectively. The eggplant fertilized with compost (Terminix Pro) + canal debris + soil (1:2:0.5) produced 19.51 blossom count plant^{-1}, respectively; while the minimum blossom count plant^{-1} (11.49) was noted in plant obtained from canal debris + soil (2:0.5). In case of varieties, the blossom count plant^{-1} of eggplant variety "Black Beauty" was significantly higher (20.83) than variety "Round Black" (19.69). The interactive effect of sheep dung + canal debris + soil (1:2:0.5) × variety "Black Beauty" produced (28.12) maximum blossom count plant^{-1}; and the minimum blossom count plant^{-1} (10.92) were obtained in the interaction of canal debris + soil (2:0.5) × variety "Round Black". The outcomes of the LSD indicated that there were significant ($P<0.05$) variations in blossom count plant^{-1} between the levels of organic media as well as between the other treatments and varieties.

Leaf dimension (cm)

The results in regards to leaf dimension of eggplant varieties "Black Beauty" and "Round Black" as affected by different organic media levels are presented in Table 4.

Table 2: Leaf count plant^{-1} of eggplant varieties under different organic manures

Treatments	Varieties		
	Black Beauty	Round Black	Mean
T_1 = (Control) canal debris + soil (2:0.5)	16.19	15.16	15.68 D
T_2 = Poultry feces + canal debris + soil (1:2:0.5)	21.7	20.12	22.61 B
T_3 = Sheep dung + canal debris + soil (1:2:0.5)	27.14	26.07	26.60 A
T_4= Compost (Terminix Pro) + canal debris + soil (1:2:0.5)	23.08	22.15	20.91 C
Mean	22.03 A	20.87 B	
	Treatment	Varieties	T x V
SE±	0.0168	0.0238	0.0119
LSD 0.05	0.0361	0.0511	0.0255

Table 3: Blossom count plant^{-1} of eggplant varieties under different organic manures

Treatments	Varieties		
	Black Beauty	Round Black	Mean
T_1 = (Control) canal debris + soil (2:0.5)	12.06	10.92	11.49 D
T_2 = Poultry feces + canal debris + soil (1:2:0.5)	23.07	21.95	22.51 B
T_3 = Sheep dung + canal debris + soil (1:2:0.5)	28.12	26.96	27.54 A
T_4= Compost (Terminix Pro) + canal debris + soil (1:2:0.5)	20.08	18.94	19.51 C
Mean	20.83 A	19.69 B	
	Treatment	Varieties	T x V
SE±	0.0267	0.0377	0.0189
LSD 0.05	0.0572	0.0809	0.0404

Table 4: Leaf dimension (cm) of eggplant varieties under different organic manures

Treatments	Varieties		
	Black Beauty	Round Black	Mean
T_1 = (Control) canal debris + soil (2:0.5)	4.99	4.56	4.78 C
T_2 = Poultry feces + canal debris + soil (1:2:0.5)	7.26	6.02	6.64 A
T_3 = Sheep dung + canal debris + soil (1:2:0.5)	6.1	5.26	5.68 B
T_4= Compost (Terminix Pro) + canal debris + soil (1:2:0.5)	7.12	6.58	6.85 A
Mean	6.37 A	5.61 B	
	Treatment	Varieties	T x V
SE±	0.1852	0.2619	0.131
LSD 0.05	0.3972	0.5618	0.2809

The maximum leaf dimension of eggplant (6.85 cm) was determined in pots given compost (Terminix Pro) + canal debris + soil (1:2:0.5), followed by average leaf dimension of 6.64 cm recorded in the pots fertilized with poultry feces + canal debris + soil (1:2:0.5), respectively. The eggplant fertilized with lower sheep dung + canal debris + soil (1:2:0.5) produced the 5.68 cm leaf dimension, respectively; while the minimum leaf dimension (4.78 cm) was obtained from canal debris + soil (2:0.5). In case of varieties, the leaf dimension of eggplant variety "Black Beauty" was significantly higher (6.37 cm) than variety "Round Black" (5.61 cm). The interactive effect of compost (Terminix Pro) + canal debris + soil (1:2:0.5) × variety "Black Beauty" produced plant of maximum leaf dimension (7.12 cm); and the lowest leaf dimension (4.56 cm) were obtained in the interaction of canal debris + soil (2:0.5) × variety "Round Black". The out turn of the LSD test discovered that there were significant ($P<0.05$) discrepancies in leaf dimension among the amounts of organic medium as well as between the other treatments and varieties. Plant of eggplant varieties "Black Beauty" and "Round Black" as affected by different organic media levels are presented in Table 5. The maximum internodes interval plant^{-1} of eggplant (2.10 cm) was determined in pots given compost (Terminix Pro) +

canal debris + soil (1:2:0.5), followed by average internodes interval plant^{-1} of 1.73 cm recorded in the pots fertilized with poultry feces + canal debris + soil (1:2:0.5), respectively. The eggplant fertilized with lower sheep dung + canal debris + soil (1:2:0.5) produced the 1.66 cm internodes interval plant^{-1}, respectively; while the minimum internodes interval plant^{-1} (1.46 cm) was obtained from canal debris + soil (2:0.5). In case of varieties, the internodes interval plant^{-1} of eggplant variety "Black Beauty" was significantly higher (2.26 cm) than variety "Round Black" (1.22 cm). The interactive effect of compost (Terminix Pro) + canal debris + soil (1:2:0.5) × variety "Black Beauty" produced plant of maximum internodes interval plant^{-1} (2.60 cm); and the lowest internodes interval plant^{-1} (0.96 cm) were obtained in the interaction of canal debris + soil (2:0.5) × variety "Round Black". The outcomes of the LSD test examined that there were significant ($P<0.05$) differences in internode intervals plant^{-1} between the levels of organic medium as well as between the other treatments and varieties.

Day to debut blossom initiation

The results in regards to day to debut blossom initiation of eggplant varieties "Black Beauty" and "Round Black" as affected by different organic media levels are presented in Table 6. The maximum day to debut blossom initiation of eggplant (50.43) was determined in pots receive canal debris + soil (2:0.5), followed by average day to debut blossom initiation of 47.38 recorded in the pots fertilized with sheep dung + canal debris + soil (1:2:0.5), respectively. The eggplant fertilized with poultry feces + canal debris + soil (1:2:0.5) produced the 41.89 day to debut blossom initiation, respectively; while the minimum day to debut blossom initiation (37.16) was obtained from compost (Terminix Pro) +canal debris + soil (1:2:0.5). In case of varieties, the day to debut blossom initiation of eggplant variety "Black Beauty" was significantly higher (46.22) than variety "Round Black" (42.21). The interactive effect of canal debris + soil (2:0.5) × variety "Black Beauty" produced plant of maximum day to debut blossom initiation (50.94); and the lowest day to debut blossom initiation (30.27) were obtained in the interaction of compost (Terminix Pro) + canal debris + soil (1:2:0.5) × variety "Round Black". The out turn of the LSD test showed that there were significant ($P<0.05$) variations in day to debut blossom initiation among the amounts of organic medium as well as among the other treatments and varieties.

Table 5: Internodes interval plant^{-1} (cm) of eggplant varieties under different organic manures

Treatments	Varieties		
	Black Beauty	Round Black	Mean
T_1 = (Control) canal debris + soil (2:0.5)	1.97	0.96	1.46 C
T_2 = Poultry feces + canal debris + soil (1:2:0.5)	2.3	1.16	1.73 B
T_3 = Sheep dung + canal debris + soil (1:2:0.5)	2.16	1.16	1.66 BC
T_4= Compost (Terminix Pro) + canal debris + soil (1:2:0.5)	2.6	1.6	2.10 A
Mean	2.26 A	1.22 B	
	Treatment	Varieties	T x V
SE±	0.107	0.1513	0.0757
LSD 0.05	0.2295	0.3245	0.1623

Blossom weight (g)

The results in regards to blossom weight of eggplant varieties "Black Beauty" and "Round Black" as affected by different organic media levels are presented in Table 7. The maximum blossom weight of eggplant (1.01 g) was determined in pots given compost (Terminix Pro) + canal debris + soil (1:2:0.5), followed by average blossom weight of (0.97 g) recorded in the pots fertilized with poultry feces + canal debris + soil (1:2:0.5), respectively. The eggplant fertilized with lower sheep dung + canal debris + soil (1:2:0.5) produced the (0.83 g) blossom weight, respectively; while the minimum blossom weight (0.40 g) was obtained from canal debris + soil (2:0.5). In case of varieties, the blossom weight of eggplant variety "Black Beauty" was significantly higher (0.83 g) than variety "Round Black" (0.78 g). The interactive effect of compost (Terminix Pro) + canal debris + soil (1:2:0.5) × variety "Black Beauty" produced plant of maximum blossom weight (1.06 g); and the lowest blossom weight (0.30 g) were obtained in the interaction of canal debris + soil (2:0.5) × variety "Round Black". The LSD test indicated that there were significant ($P<0.05$) differences in blossom weight among the amounts of organic medium as well as among the other treatments and varieties.

Floral span (cm)

The results in regards to floral span of eggplant varieties "Black Beauty" and "Round Black" as affected by different organic media levels are presented in Table 8. The maximum floral span of eggplant (3.03 cm) was determined in pots given poultry feces + canal debris + soil (1:2:0.5), followed by average floral span of 2.33 cm recorded in the pots fertilized with compost (Terminix Pro) + canal debris + soil (1:2:0.5), respectively. The eggplant fertilized with lower sheep dung + canal debris + soil (1:2:0.5) produced the 2.22 cm floral span, respectively; while the minimum floral span (1.43 cm) was obtained from canal debris + soil (2:0.5). In case of varieties, the floral span of eggplant variety "Black Beauty" was significantly higher (2.59 cm) than variety "Round Black" (1.91 cm). The interactive effect of poultry feces + canal debris + soil (1:2:0.5) × variety "Black Beauty" produced plant of maximum floral span (3.93 cm); and the lowest floral span (1.40 cm) were obtained in the interaction of canal debris + soil (2:0.5) × variety "Round Black". The LSD test demonstrated that there were significant ($P<0.05$) differences in floral span between the levels of organic media as well as among the other treatments and varieties.

Table 6: Day to debut blossom initiation of eggplant varieties under different organic manures.

Treatments	Varieties		
	Black Beauty	Round Black	Mean
T_1 = (Control) canal debris + soil (2:0.5)	50.94	49.93	50.43 A
T_2 = Poultry feces + canal debris + soil (1:2:0.5)	41.96	41.82	41.89 AB
T_3 = Sheep dung + canal debris + soil (1:2:0.5)	47.92	46.84	47.38 A
T_4= Compost (Terminix Pro) + canal debris + soil (1:2:0.5)	44.05	30.27	37.16 B
Mean	46.22 A	42.21 B	
	Treatment	Varieties	T x V
SE±	4.4808	6.3368	3.1684
LSD 0.05	9.6103	13.591	6.7955

Table 7: Blossom weight (g) of eggplant varieties under different organic manures.

Treatments	Varieties		
	Black Beauty	Round Black	Mean
T_1 = (Control) canal debris + soil (2:0.5)	50.94	49.93	50.43 A
T_2 = Poultry feces + canal debris + soil (1:2:0.5)	41.96	41.82	41.89 AB
T_3 = Sheep dung + canal debris + soil (1:2:0.5)	47.92	46.84	47.38 A
T_4= Compost (Terminix Pro) + canal debris + soil (1:2:0.5)	44.05	30.27	37.16 B
Mean	46.22 A	42.21 B	
	Treatment	Varieties	T x V
SE±	0.1206	0.1706	0.0853
LSD 0.05	0.2588	0.366	0.183

Table 8: Floral span (cm) of eggplant varieties under different organic manures.

Treatments	Varieties		
	Black Beauty	Round Black	Mean
T_1 = (Control) canal debris + soil (2:0.5)	1.46	1.4	1.43 C
T_2 = Poultry feces + canal debris + soil (1:2:0.5)	3.93	2.13	3.03 A
T_3 = Sheep dung + canal debris + soil (1:2:0.5)	2.5	1.95	2.22 B
T_4= Compost (Terminix Pro) + canal debris + soil (1:2:0.5)	2.5	2.16	2.33 B
Mean	2.59 A	1.91 B	
	Treatment	Varieties	T x V
SE±	0.098	0.1385	0.0693
LSD 0.05	0.2101	0.2971	0.1486

Fruit weight (g)

The results in regards to fruit weight of eggplant varieties "Black Beauty" and "Round Black" as affected by different organic media levels are presented in Table 9. The maximum fruit weight of eggplant (59.66 g) was determined in pots given sheep dung + canal debris + soil (1:2:0.5), followed by average fruit weight of 56.18 g recorded in the pots fertilized with poultry feces + canal debris + soil (1:2:0.5), respectively.

The eggplant fertilized with compost (Terminix Pro) + canal debris + soil (1:2:0.5) produced the 55.20 g fruit weight, respectively; while the minimum fruit weight (47.05 g) was obtained from canal debris + soil (2:0.5). In case of varieties, the fruit weight of eggplant variety "Black Beauty" was significantly higher (59.44 g) than variety "Round Black" (49.61 g). The interactive effect of sheep dung + canal debris + soil (1:2:0.5) × variety "Round Black" produced plant of maximum fruit weight (63.82 g); and the lowest fruit weight (42.42 g) were obtained in the interaction of compost (Terminix Pro) + canal debris + soil ((1:2:0.5) × variety "Round Black". The LSD test revealed that there were significant ($P<0.05$) differences in fruit weight between the levels of organic medium as well as among the other treatments and varieties.

Fruit diameter (cm)

The results in regards to the fruit diameter of eggplant varieties "Black Beauty" and "Round Black" as impacted by different organic media levels are shown in Table 10. The maximum fruit diameter of eggplant (4.85 cm) was determined in pots given compost (Terminix Pro) + canal debris + soil (1:2:0.5), followed by average fruit diameter of 5.38 cm recorded in the pots fertilized with sheep dung + canal debris + soil (1:2:0.5), respectively. The eggplant fertilized with lower poultry feces + canal debris + soil (1:2:0.5) produced the 4.80 cm fruit diameter, respectively; while the minimum fruit diameter (3.22 cm) was obtained from canal debris + soil (2:0.5). In the case of varieties, the fruit diameter of eggplant variety "Black Beauty" was significantly higher (19.92 cm) than variety "Round Black" (16.59 cm). The interactive effect compost (Terminix Pro) + canal debris + soil (1:2:0.5) × variety "Black Beauty" produced plant of maximum fruit diameter (5.92 cm), and the lowest fruit diameter (2.93 cm) were obtained in the interaction of canal debris + soil (2:0.5) × variety "Round Black". The LSD test showed that there were significant ($P<0.05$) differences in fruit diameter among the levels of organic media as well as among the other treatments and varieties.

Table 9: Fruit weight (g) of eggplant varieties under different organic manures

Treatments	Varieties		
	Black Beauty	Round Black	Mean
T_1 = (Control) canal debris + soil (2:0.5)	51.6	42.5	47.05 A
T_2 = Poultry feces + canal debris + soil (1:2:0.5)	60.7	49.7	55.20 A
T_3 = Sheep dung + canal debris + soil (1:2:0.5)	55.51	63.82	59.66 A
T_4= Compost (Terminix Pro) + canal debris + soil (1:2:0.5)	69.95	42.42	56.18 A
Mean	59.44 A	49.61 A	
	Treatment	Varieties	T x V
SE±	8.9193	6.3069	12.614
LSD 0.05	19.13	13.527	27.054

Table 10: Fruit diameter (cm) of eggplant varieties under different organic manures

Treatments	Varieties		
	Black Beauty	Round Black	Mean
T_1 = (Control) canal debris + soil (2:0.5)	44.17	34.83	39.50 B
T_2 = Poultry feces + canal debris + soil (1:2:0.5)	46.23	42.23	44.23 AB
T_3 = Sheep dung + canal debris + soil (1:2:0.5)	49.8	49.22	49.51 A
T_4= Compost (Terminix Pro) + canal debris + soil (1:2:0.5)	46.97	44.06	45.52 AB
Mean	46.79 A	42.59 A	
	Treatment	Varieties	T x V
SE±	3.8791	2.7429	5.4859
LSD 0.05	8.3198	5.883	11.766

DISCUSSION

Eggplant is a heavy feeder and remains in the pod for a long period (Aminifard et al., 2010). An increase in organic potting media levels enhanced flower count and inflorescence number (Singh and Syamal, 1995). The present study aimed to study the response of eggplant growth and yield under different organic potting media.

After going through the findings of the present research, it was concluded that the growth of eggplant increased simultaneously varieties were significantly ($P<0.05$) affected by various organic manures. The eggplant receiving sheep dung + canal debris + soil (1:2:0.5) produced 49.64 cm plant stature, 26.60 leaf count plant^{-1}, 27.54 blossom count plant^{-1}, 5.68 cm leaf dimension, 1.66 cm internodes interval plant^{-1}, 47.38 day to debut blossom initiation, 0.83 g blossom weight, 2.22 cm floral span, 55.20 g fruit weight and 44.23 cm fruit diameter. Similarly, the eggplant fertilized with poultry feces + canal debris + soil (1:2:0.5) resulted in 44.26 cm plant height, 22.61 leaf count plant^{-1}, 22.51 blossom count plant^{-1}, 6.64 cm leaf dimension, 1.73 cm internodes interval plant^{-1}, 41.89 day to debut blossom initiation, 0.97 g blossom weight, 3.03 cm floral span, 59.66 g fruit weight and 49.51 cm fruit diameter. The eggplant fertilized @ compost (Terminix Pro) + canal debris + soil (1:2:0.5) resulted in 40.73 cm plant stature, 20.91 leaf count plant^{-1}, 19.51 blossom count plant^{-1}, 6.85 cm leaf dimension, 2.10 cm internodes interval plant^{-1}, 37.16 day to debut blossom initiation, 1.01 g blossom weight, 2.33 cm floral span, 56.18 g fruit weight and 45.52 cm fruit diameter. The eggplant receiving canal debris + soil (2:0.5) produced 22.61 cm plant stature, 15.68 leaf count plant^{-1}, 11.49 blossom count plant^{-1}, 4.78 cm leaf dimension, 1.46 cm internodes interval plant^{-1}, 50.43 day to debut blossom initiation, 0.40 g blossom weight, 1.43 cm floral span, 66.50 g fruit weight and 39.50 cm fruit diameter. After going through the findings of the present research, it was concluded that the growth of eggplant increased simultaneously with increasing organic manure levels; and the crop fertilized with Sheep dung + canal debris + soil (1:2:0.5) resulted in maximum growth. In case of varieties, “Black Beauty” resulted in a significant maximum growth yield as compared to variety “Round Black”. These results are further supported by the findings of Naidu *et al*. (2012) used as growing media; perlite, perlite + zeolite (1:1), cocopeat and perlite + cocopeat mixtures. They observed higher plant stature and leaf count in cocopeat than in perlite. The Same results were exhibited on tulips and strawberries as well (Naik *et al.,* 2016). The lowest fruit weight (208 g) was obtained with volcanic tuff and mushroom compost, while the highest fruit weight (226.7 g), fruit length (21.3 cm), and fruit diameter (6.1 cm) were obtained with sawdust. The amount of fruit may affect the weight of fruit, as sawdust growth media produced the fewest number of leaves (32), whilst mushroom compost (42) and cocopeat (40) growing media produced the most number of leaves.

Volcanic tuff (7.0 kg) and sawdust (7.2 kg) produced the lowest fruit production, whereas cocopeat (8.5 kg) and mushroom compost (8.4 kg) produced the most. The similar impacts of these substrates on fruit yield, leaf count, and plant stature of eggplant might be narrate as a C: N ratio. Similar results were shown on tomatoes by Nanthakumar and Veeraraghavathatham (2012). Vegetable shelf life is greatly influenced by fruit firmness. Our research revealed that the maximum fruit firmness was found in cocopeat (67.6 N), while the lowest data was found in volcanic tuff (54.7 N). Volcanic tuff had the greatest soluble solid content (SSC) value, measuring 6.3 (%); SSC values for other growth substrates were comparable. Tomato cultivation in greenhouses yielded higher yields and more fruit with organic growing media than with conventional growing systems (Prabhu et al., 2006). Our results and these results are comparable. Fruit color is a crucial marketing factor, its skin tone shifted from purple to midnight black during the maturation. Fruit color L*, a*, and b* values were statistically significantly affected by the growth media. Sawdust had the lowest color values, 25.8, 4.8, and 0.3 (L*, a*, and b*, respectively), whereas the cocopeat substrate had the greatest color values, 26.8, 6.5, and 0.6 (L*, a*, and b*, respectively). The eggplants in the cocopeat substrate had a more vivid and dark purple hue than those in the other growing media, as indicated by the change in color values (Prabhu et al., 2006).

CONCLUSIONS

The research findings concluded that the growth of eggplant increased simultaneously with increasing organic manure levels, and the crop fertilized with Sheep dung with soil and canal debris in a ratio of 1:2:0.5 resulted in maximum growth. In terms of cultivars, “Black Beauty” observed in significantly higher growth yield.

CONFLICT OF INTEREST

The authors declare that there is no conflict in the publication of this article.

AUTHOR’S CONTRIBUTION

All the authors contributed equally in the manuscript.

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