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Effect of Jeevamrutha on growth and yield of hybrid TMOH-375 & SAMRAT in Okra [*Abelmoschus esculentus* (L.) Moench.] under Agro climatic condition at Prayagraj

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Abstract
The present investigation was carried out at Research Farm, Department of Horticulture, Naini Agricultural Institute, SHUATS, Naini, Prayagraj, Uttar Pradesh during the *Zaid*-2023 with a view to identify the effects of different doses of jeevamrutha and its role in growth, yield and quality of two varieties of okra. The experiment was laid in Factorial Randomized block design with 10 treatments and 3 replications. Under this experiment, overall, treatment combination was taken V_1T_0 (TMOH-375+water spray); V_1T_1 (TMOH-375+ 4% jeevamrutha); V_1T_2 (TMOH-375+ 6% jeevamrutha); V_1T_3 (TMOH-375+ 8% jeevamrutha); V_1T_4 (TMOH-375+ 10% jeevamrutha); V_2T_0 (SAMRAT + water spray); V_2T_1 (SAMRAT+ 4% jeevamrutha); V_2T_2 (SAMRAT + 6% jeevamrutha); V_2T_3 (SAMRAT + 8% jeevamrutha); and V_2T_4 (SAMRAT + 10% jeevamrutha). From the above experimental finding it was concluded that among various doses of jeevamrutha applied amid two varieties of okra, combination V_1T_4 (TMOH 375 + 10% spray of jeevamrutha) was found to be best in the terms of growth parameters like highest height of plant (60.90 cm at 60 DAT), maximum number of branches per plant (8.45 branches); yield parameters like maximum number of fruits per plant (9.85 fruits); maximum fruit length (10.36 cm) was observed in V_1T_4 (TMOH 375 + 10% spray of jeevamrutha) and maximum fruit yield per hectare (10.38 t/ha).

Keywords: Okra, Jeevamruth, growth, yield

Introduction
Okra [*Abelmoschus esculentus* (L.) Moench] usually known as Bhindi or lady's finger belongs to the Malvaceae family, has a chromosome number of 2n = 130. It is supposed to originate from Ethiopia. It is an annual crop of vegetables in tropical and subtropical parts of the world. In India, it is one of the most important nutritious vegetable crops grown round the year.

Its fruits are appreciated primarily for its curry, soup of its edible young leaves is also admired. It finds use, to a small degree in dehydrated, canned or frozen forms for military off-season use at high altitudes and for export (Sharma *et al.*, 2015) [5]. The green pods (per 100 g edible portion) of okra contain 89.6 g moisture, 6.4 g carbohydrates, 0.2 g fat, 1.9 g protein, 66 g calcium, 56 mg phosphorus, 43 mg magnesium, 103 mg potassium, 13 mg vit. C and 88 IU vit. Tender fruits of okra are used in soups and gravies and contain high mucilage content.

The best fruit colour and quality is obtained at a temperature range of 23-27°C. Okra is one of the versatile crops in the world because of its fast and wide climate adaption and it is universally treated as protective food. Okra also contributes to a healthy, well-balanced diet. They are rich in minerals, vitamins, essential amino acids, sugars, dietary fibres, and it has many other uses okra seed contain 24% of oil is used as salad oil and in the manufacture of oleic and linoleic acid.

The jeevamrutha environmentally safe organic amendment made from the products of cow. Jeevamrutha is acidic in nature and good source of macro and micronutrients (1.89 percent N, 0.21 percent P, 0.29 percent K, 47 ppm Mn and 50 ppm Cu). Jeevamrutha promotes immense biological activity in soil and provides the nutrients for the crop stand.

Mixing cow urine, cow dung, pulse flour and jaggery (gur), it is prepared and allowed to ferment for a week. Fermented liquid manures apart from readily available nutrients, they have higher microbial load and contain plant growth promoters, which helps in improving plant growth, metabolic activities and resistance to pest and diseases.

Materials and Methods

A field experiment was conducted to understand the plant growth, fruit yield of fruit under influence of jeevamrutha of Okra. The investigation was carried out at Horticultural Research Farm, Department of Horticulture, Naini Agricultural Institute, Sam Higginbottom University of Agriculture, Technology and Sciences (SHUATS), Prayagraj during the *Zaid* season of 2022-23. In the present investigation the design used for analysis of variables were Factorial Randomized Block Design (FRBD) comprising two varieties of okra as factor I and different doses of Jeevamrutha as factor II replicated thrice all total ten treatment combinations was prepared overall, treatment combination comprised; V_1T_0 (TMOH 375+ water spray); V_1T_1 (TMOH 375+ 4% jeevamrutha); V_1T_2 (TMOH 375+ 6% jeevamrutha); V_1T_3 (TMOH 375+ 8% jeevamrutha); V_1T_4 (TMOH 375+ 10% jeevamrutha); V_2T_0 (SAMRAT+ water spray); V_2T_1 (SAMRAT+ 4% jeevamrutha); V_2T_2 (SAMRAT+ 6% jeevamrutha); V_2T_3 (SAMRAT+ 8% jeevamrutha); and V_2T_4 (SAMRAT+ 10% jeevamrutha). Observations were recorded at different stages of growth for parameters like plant height, number of branches per plant, days to 50% flowering, number of fruits per plant, fruit length, fruit yield per hectare. The data were statistically analysed by the method suggested by Fisher and Yates (1963) [2].

Result and Discussion

Growth parameters

The different concentrations of jeevamrutha at 45 and 60 DAT (days after transplanting) are shown in Table 1. The results pertaining to plant height in Okra observed at 45 DAT showed significant differences for both factors at different levels of jeevamrutha applied at individual level and their interactions too. Among the different treatments applied comprising of level of jeevamrutha, T_4 (10% spray of jeevamrutha) showed tallest height of plant (27.43 cm) followed by T_3 (8% spray of jeevamrutha) with 26.26 cm. However, shortest height of plant (23.30 cm) was observed in T_0 (Water spray). Amid the two different varieties sown, V_1 (TMOH 375) showed tallest height of plant (26.72 cm) While, V_2 (SAMRAT) had shortest height of plant (23.98 cm). The interaction between two factors comprising application of jeevamrutha and two varieties showed that tallest plant height (29.22 cm) was observed in V_1T_4 (TMOH 375 + 10% spray of jeevamrutha) followed by V_1T_3 (TMOH 375 + 8% spray of jeevamrutha) with 28.22 cm. However, shortest plant height (22.97 cm) was observed in V_2T_0 (SAMRAT + water spray).

The results pertaining to plant height in Okra observed at 60 DAT showed significant differences for both factors at different levels of jeevamrutha applied at individual level and their interactions too. Among the different treatments applied comprising of level of jeevamrutha, T_4 (10% spray of jeevamrutha) showed tallest height of plant (54.45 cm) followed by T_3 (8% spray of jeevamrutha) with 50.25 cm. However, shortest height of plant (39.60 cm) was observed in T_0 (Water spray). Amid the two different varieties sown, V_1 (TMOH 375) showed tallest height of plant (51.90 cm) While, V_2 (SAMRAT) had shortest height of plant (42.06 cm). The interaction between two factors comprising application of jeevamrutha and two varieties showed that tallest plant height (60.90 cm) was observed in V_1T_4 (TMOH 375 + 10% spray of jeevamrutha) followed by V_1T_3 (TMOH 375 + 8% spray of jeevamrutha) with 57.30 cm. However, shortest plant height (38.40 cm) was observed in V_2T_0 (SAMRAT + water spray). The superior plant height of TMOH 375 over SAMRAT in okra is likely due to genetic variations favouring increased growth and development in TMOH 375. This variety may possess genes that promote greater cell elongation, division, and nutrient uptake, leading to taller plants with improved stature. Increasing the concentration of Jeevamrutha to 10% and spraying it on both varieties of okra enhances plant height through various mechanisms. Jeevamrutha contains beneficial microorganisms that improve soil health, promoting better nutrient availability and uptake by plants. These microbes aid in breaking down organic matter, releasing essential nutrients that contribute to plant growth. Additionally, Jeevamrutha stimulates root development, allowing plants to explore a larger soil volume for nutrients and water. Similar findings were reported by Chethan *et al.*, (2020) [1] in potato and Singh *et al.*, (2022) [8] in tomato for panchagavya and jeevamrutha spray.

The results pertaining to number of branches per plant in Okra observed at 45 DAT showed significant differences for both factors at different levels of jeevamrutha applied. Among the different treatments applied comprising of level of jeevamrutha, T_4 (10% spray of jeevamrutha) showed maximum number of branches per plant (5.55 branches) followed by T_2 (6% spray of jeevamrutha) with 4.70 branches. However, minimum number of branches per plant (3.96 branches) was observed in T_0 (Water spray). Amid the two different varieties sown, V_1 (TMOH 375) showed maximum number of branches per plant (5.25 branches) While, V_2 (SAMRAT) had minimum number of branches per plant (3.95 branches). Although the interaction was found to be non-significant. The interaction between two factors comprising application of jeevamrutha and two varieties showed that maximum number of branches per plant (6.78 branches) was observed in V_1T_4 (TMOH 375 + 10% spray of jeevamrutha) followed by V_1T_3 (TMOH 375 + 8% spray of jeevamrutha) with 5.48 branches. However, minimum number of branches per plant (3.60 branches) was observed in V_2T_0 (Water spray).

The results pertaining to number of branches per plant in Okra observed at 60 DAT showed significant differences for both factors at different levels of jeevamrutha applied. Among the different treatments applied comprising of level of jeevamrutha, T_4 (10% spray of jeevamrutha) showed maximum number of branches per plant (7.22 branches) followed by T_2 (6% spray of jeevamrutha) with 6.36 branches. However, minimum number of branches per plant (5.64 branches) was observed in T_0 (Water spray). Amid the two different varieties sown, V_1 (TMOH 375) showed maximum number of branches per plant (6.92 branches) While, $\mathbf{V_2}$ (SAMRAT) had minimum number of branches per plant (5.67 branches). Although the interaction was found to be non-significant. The interaction between two factors comprising application of jeevamrutha and two varieties showed that maximum number of branches per

plant (8.45 branches) was observed in V_1T_4 (TMOH 375 + 10% spray of jeevamrutha) followed by V_1T_3 (TMOH 375 + 8% spray of jeevamrutha) with 7.15 branches. However, minimum number of branches per plant (5.28 branches) was observed in V_2T_0 (Water spray). The superior performance of variety TMOH 375, with more branches per plant compared to SAMRAT in okra, likely stems from genetic disparities favouring leaf development and proliferation. TMOH 375 probably harbours genes that promote increased leaf initiation, expansion, and retention throughout the plant's growth cycle. These genetic traits may lead to a higher leaf area index and more efficient photosynthesis, resulting in greater biomass accumulation and overall plant vigour. Additionally, TMOH 375 may possess traits that confer enhanced resistance to environmental stressors, allowing for sustained leaf growth and longevity. Consequently, the genetic makeup of TMOH 375 predisposes it to exhibit a greater number of branches per plant, contributing to its superior performance in this aspect over SAMRAT. Increasing the concentration of Jeevamrutha to 10% and spraying it on both okra varieties enhances the number of branches per plant through several mechanisms. Jeevamrutha contains beneficial microorganisms that improve soil health, facilitating better nutrient absorption by plants. The increased availability of essential nutrients stimulates leaf initiation and expansion, promoting the development of more branches. Moreover, Jeevamrutha contains growth-promoting substances like auxins and cytokinin, which stimulate cell division and elongation, further contributing to leaf proliferation. Additionally, the enhanced microbial activity in the soil induced by Jeevamrutha promotes root growth, providing plants with a larger root system to support greater leaf development. Overall, the application of Jeevamrutha at a higher concentration fosters a more favourable environment for leaf growth, resulting in an increased number of branches per plant in both okra varieties. Similar findings were reported by Naidu *et al.,* (2009) [4] in chilli.

Earliness parameters

The different concentrations of jeevamrutha at 50% flowering in Okra are shown in Table 2. Among the different treatments applied comprising of level of jeevamrutha, T_4 (10% spray of jeevamrutha) showed minimum days to 50% flowering (35.13 days) followed by T_3 (8% spray of jeevamrutha) with 36.46 days. However, maximum days to 50% flowering (42.29 days) were observed in T_0 (water spray). Amid the two different varieties sown, V_1 (TMOH 375) showed minimum days to 50% flowering (36.00 days) While, V_2 (SAMRAT) had maximum days to 50% flowering (40.49 days). Although the interaction was found to be non-significant. The interaction between two factors comprising application of jeevamrutha and two varieties showed that minimum days to 50% flowering (34.28 days) was observed in V_1T_4 (TMOH 375 + 10% spray of jeevamrutha) followed by V_1T_3 (TMOH 375 + 8% spray of jeevamrutha) with 35.22 days. However, maximum days to 50% flowering (45.61 days) were observed in V_2T_0 (SAMRAT + Water spray). The earliness in flowering of variety TMOH 375 compared to SAMRAT in okra is likely due to genetic variations influencing flowering time. TMOH 375 likely harbours genes that promote early flowering, such as those involved in the regulation of photoperiod sensitivity or floral transition pathways. These genetic factors may enable TMOH 375 to initiate floral development sooner under favourable environmental conditions, leading to earlier flowering compared to SAMRAT. Additionally, TMOH 375 may exhibit traits that confer enhanced adaptability to environmental cues, allowing it to perceive and respond more rapidly to stimuli triggering flowering, further contributing to its earliness in flowering compared to SAMRAT. Increasing the concentration of Jeevamrutha to 10% and spraying it on both okra varieties promotes earliness in flowering through various mechanisms. Jeevamrutha contains beneficial microorganisms and bioactive compounds that enhance soil fertility and plant health. By improving nutrient availability and uptake, Jeevamrutha accelerates overall plant growth and development, including the initiation of reproductive structures like flowers. Kondapa *et al.* (2010) [3] in tomato and Veeranna *et al.* (2023) [6] in groundnut both reported similar results regarding earliness when used panchagavya and jeevamrutha.

Yield parameters

The different concentrations of jeevamrutha of number of fruits per plant in Okra are shown in Table 2. At varying levels of jeevamrutha applied, the results regarding the number of fruits per plant in okra revealed significant differences for both factors. Out of all the treatments that were applied, T_4 (10% spray of jeevamrutha) produced the highest number of fruits per plant (9.64 fruits), followed by T_3 (8% spray of jeevamrutha), which produced 9.24 fruits. However, T_0 (water spray) showed the lowest number of fruits per plant (8.03 fruits). Between the two distinct varieties that were sown, V_1 (TMOH 375) had the highest number of fruits per plant (9.04 fruits) and V_2 (SAMRAT) had the fewest number of fruits per plant (8.88 fruits). The interaction was found to be significant. The maximum number of fruits per plant (9.85 fruits) was observed in V_1T_4 (TMOH 375 + 10% spray of jeevamrutha), followed by V_2T_4 (SAMRAT+ 10% spray of jeevamrutha) with 9.42 fruits. This was the result of the interaction between two factors, which included application of jeevamrutha and two varieties. On V_2T_0 (SAMRAT+ water spray), however, the lowest number of fruits per plant (7.81 fruit branches) was noted. The higher number of fruits per plant in variety TMOH 375 compared to SAMRAT in okra can be attributed to genetic differences favouring greater fruit set and retention. TMOH 375 likely possesses genes that promote more efficient pollination, fertilization, and fruit development processes. Additionally, it may exhibit traits such as increased flower production, improved resource allocation, or enhanced resistance to abiotic and biotic stressors, all contributing to a higher fruit yield per plant. Increasing the concentration of Jeevamrutha to 10% and spraying it on both okra varieties enhances the number of fruits per plant through improved nutrient availability and uptake. Jeevamrutha beneficial microorganisms and nutrients optimize soil fertility, supporting robust plant growth and fruit development. Additionally, Jeevamrutha contains growth-promoting compounds that stimulate flowering, pollination, and fruit set processes. The bioactive substances in Jeevamrutha, such as auxins and cytokinin, may also contribute to increased fruit production by enhancing hormonal regulation and fruiting efficiency. Overall, the application of Jeevamrutha fosters a more

conducive environment for fruit formation, resulting in a higher yield per plant in both okra varieties. Singh *et al.* (2020) [8] in tomato and Veeranna *et al.* (2023) [6] in groundnut both reported similar results regarding enhancement in number of fruits when used panchagavya and jeevamrutha.

The different concentrations of jeevamrutha of fruit length in Okra are shown in Table 3. At varying levels of jeevamrutha applied, the results regarding the fruit length in okra revealed significant differences for both factors. Out of all the treatments that were applied, T_4 (10% spray of jeevamrutha) produced the maximum fruit length (9.85 cm), followed by T_3 (8% spray of jeevamrutha), which produced 9.46 cm. However, T_0 (water spray) showed the minimum fruit length (8.79 cm). Between the two distinct varieties that were sown, V_1 (TMOH 375) had the maximum fruit length (9.64 cm) and V_2 (SAMRAT) had the lowest fruit length (8.76 cm). The interaction was found to be significant. The maximum fruit length (10.36 cm) was observed in V_1T_4 (TMOH 375 + 10% spray of jeevamrutha), followed by V_1T_3 (TMOH 374 + 8% spray of jeevamrutha) with 9.90 cm. This was the result of the interaction between two factors, which included application of jeevamrutha and two varieties. On V_2T_0 (SAMRAT+ water spray), however, the lowest fruit length (8.46 cm) was noted. The longer fruit in okra variety TMOH 375 than in SAMRAT is probably the result of genetic differences that promote longer fruit development. Genes that encourage greater cell elongation and expansion during fruit growth stages are most likely carried by TMOH 375. Fruits with greater commercial appeal that are longer could be produced by these genetic features. Furthermore, TMOH 375 may have characteristics that allow for better nutrient utilisation or optimised fruit development pathways, which could explain why its fruits are longer than those of SAMRAT. By improving nutrient availability and uptake, Jeevamrutha 10% concentration can be sprayed on both okra varieties to extend their fruiting period. The healthy microorganisms and nutrients found in Jeevamrutha improve soil fertility and encourage healthy plant and fruit development. Furthermore, Jeevamrutha has substances that promote fruit cell elongation and expansion during growth. Fruit elongation may be facilitated by bioactive substances like cytokinin and auxins, which can regulate hormones and elongation mechanisms. In general, Jeevamrutha application improves fruit development conditions, leading to longer fruits in both okra varieties. Vishwajith and Devkumar (2018) [7] in okra reported concluded same regarding enhancement in fruit length when used panchagavya and jeevamrutha.

The different concentrations of jeevamrutha of fruit yield per hectare in Okra are shown in Table 3. At varying levels of jeevamrutha applied, the results regarding the fruit yield per hectare in okra revealed significant differences for both factors. Out of all the treatments that were applied, T_4 (10% spray of jeevamrutha) produced the maximum fruit yield per hectare (9.53 t/ha), followed by T_3 (8% spray of jeevamrutha), which produced 8.50 t/ha. However, T_0 (water spray) showed the minimum fruit yield per hectare (6.43 t/ha). Between the two distinct varieties that were sown, V_1 (TMOH 375) had the maximum fruit yield per hectare (8.28 t/ha) and V_2 (SAMRAT) had the lowest fruit yield per hectare (7.73 t/ha). The interaction was found to be significant. The maximum fruit yield per hectare (10.38 t/ha) was observed in V_1T_4 (TMOH 375 + 10% spray of jeevamrutha), followed by V_2T_4 (SAMRAT + 10% spray of jeevamrutha) with 8.68 t/ha. This was the result of the interaction between two factors, which included application of jeevamrutha and two varieties. On V_2T_0 (SAMRAT + water spray), however, the minimum fruit yield per hectare (6.00 t/ha) was noted. The enhanced fruit yield per hectare in variety TMOH 375 compared to SAMRAT in okra likely stems from genetic disparities favouring greater fruit size and biomass accumulation.

TMOH 375 probably carries genes that promote enhanced cell division, expansion, and nutrient assimilation during fruit development stages. These genetic traits may result in larger fruits with increased biomass. Additionally, TMOH 375 might exhibit traits such as optimized fruit filling pathways or superior resource allocation, contributing to its heavier fruit yield per hectare compared to SAMRAT. Increasing the concentration of Jeevamrutha to 10% and spraying it on both okra varieties enhances fruit yield per hectare through improved nutrient availability and uptake. Jeevamrutha beneficial microorganisms and nutrients enrich soil fertility, supporting robust plant growth and fruit development.

The enhanced microbial activity and nutrient content promote increased cell division, enlargement, and biomass accumulation in fruits. Additionally, Jeevamrutha contains growth-promoting compounds that stimulate hormonal regulation and metabolic processes, contributing to enhanced fruit filling and weight. Overall, the application of Jeevamrutha creates optimal conditions for fruit development, resulting in heavier fruits in both okra varieties. Chethna *et al.,* (2020) [1] in potato reported concluded same regarding enhancement in yield when used panchagavya and jeevamrutha.

Table 1: Effect of different doses of jeevamrutha on plant height and number of branches per plant of Okra.

Levels of (T)	Plant height (cm)						No of branches per plant					
	45 days			60 days			45 days			60 days		
	Varieties		Mean (T)	Varieties		Mean (T)	Varieties		Mean (T)	Varieties		Mean (T)
	Samrat	TMOH 375		Samrat	TMOH 375		Samrat	TMOH 375		Samrat	TMOH 375	
T_0 -water spray	22.97	23.63	23.30	38.40	40.80	39.60	3.60	4.33	3.96	5.28	6.00	5.64
T_1 -4% spray of jeevamrutha	23.38	25.22	24.30	39.90	46.50	43.20	3.72	4.61	4.18	5.40	6.28	5.85
T_2 -6% spray of jeevamrutha	23.63	27.30	25.47	40.80	54.00	47.40	3.77	5.05	4.70	5.42	6.72	6.36
T_3 - 8% spray of jeevamrutha	24.30	28.22	26.26	43.20	57.30	50.25	4.33	5.48	4.61	6.00	7.15	6.28
T_4 - 10% spray of jeevamrutha	25.63	29.22	27.43	48.00	60.90	54.45	4.33	6.78	5.55	6.33	8.45	7.22
Mean (V)	23.98	26.72		42.06	51.90		3.95	5.25		5.67	6.92	
	F-test	S. Em. (±)	C.D. at 5%	F-test	S. Em. (±)	C.D. at 5%	F-test	S. Em. (±)	C.D. at 5%	F-test	S. Em. (±)	C.D. at 5%
Treatments (T)	S	0.577	1.179	S	1.911	3.903	S	0.486	0.993	S	0.471	0.961
Variety (V)	S	0.365	0.746	S	1.209	2.468	S	0.307	0.628	S	0.298	0.608
Interaction (T x V)	S	0.817	1.667	S	2.703	5.519	NS	0.687	1.404	NS	0.666	1.360

Table 2: Effect of different doses of jeevamrutha on days to 50% flowering and number of fruits per plant of Okra

Days to 50% flowering				No of fruits per plant		
Levels of (T)	Varieties		Mean (T)	Varieties		
	Samrat	TMOH 375		Samrat	TMOH 375	Mean (T)
T_0 -water spray	45.61	38.97	42.29	7.81	8.25	8.03
T_1 -4% spray of jeevamrutha	40.30	35.22	37.76	9.00	8.69	8.85
T_2 -6% spray of jeevamrutha	42.89	36.30	39.60	9.09	9.05	9.07
T_3 - 8% spray of jeevamrutha	37.70	35.22	36.46	9.12	9.35	9.24
T_4 - 10% spray of jeevamrutha	35.97	34.28	35.13	9.42	9.85	9.64
Mean (V)	40.49	36.00		8.88	9.04	
	F-test	S. Em. (±)	C.D. at 5%	F-test	S. Em. (±)	C.D. at 5%
Treatments (T)	S	1.886	3.850	S	0.069	0.141
Variety (V)	S	1.193	2.435	S	0.044	0.089
Interaction (T x V)	NS	2.667	5.445	S	0.097	0.199

Table 3: Effect of different doses of jeevamrutha on fruit length and yield per hectare of Okra

Fruit length (cm)				Fruit yield per hectare (t/ha)		
Levels of (T)	Varieties		Mean (T)	Varieties		
	Samrat	TMOH 375		Samrat	TMOH 375	Mean (T)
T_0 -water spray	8.46	9.11	8.79	6.00	6.86	6.43
T_1 -4% spray of jeevamrutha	8.66	9.26	8.96	7.80	7.58	7.69
T_2 -6% spray of jeevamrutha	8.60	9.56	9.08	7.78	7.98	7.88
T_3 - 8% spray of jeevamrutha	9.02	9.90	9.46	8.38	8.62	8.50
T_4 - 10%spray of jeevamrutha	9.34	10.36	9.85	8.68	10.38	9.53
Mean (V)	8.76	9.64		7.73	8.28	
	F-test	S. Em. (±)	C.D. at 5%	F-test	S. Em. (±)	C.D. at 5%
Treatments (T)	S	0.040	0.081	S	0.195	0.398
Variety (V)	S	0.025	0.052	S	0.123	0.252
Interaction (T x V)	S	0.056	0.115	S	0.276	0.563

Conclusions

From the project experimental finding, it was concluded that among various doses of jeevamrutha applied amid two varieties of okra, combination V_1T_4 (TMOH 375 + 10% spray of jeevamrutha) was found to be best in the terms of growth parameters like highest height of plant (60.90 cm at 60 DAT), maximum number of branches per plant (8.45 branches); yield parameters like maximum number of fruits per plant (9.85 fruits); maximum fruit length (10.36 cm) was observed in V_1T_4 (TMOH 375 + 10% spray of jeevamrutha) and maximum fruit yield per hectare (10.38 t/ha).

References

1. Chethan H, Bhairappanavar ST, Koler P, Jayaramaiah R. Influence of organic nutrient sources on growth and yield of potato (*Solanum tuberosum* L.) in Southern Transitional Zone of Karnataka. Mysore Journal of Agricultural Sciences. 2020;54(4):52–61.
2. Fisher RA, Yates F. Statistical tables for biological, agricultural and medical research. London: Oliver and Boyd; c1963 .p. 143.
3. Kondapa D, Radder BM, Patil PL, Hebsur NS, Alagundagi SC. Effect of integrated nutrient management on growth, yield and economics of tomato in vertosol. Karnataka Journal of Agricultural Sciences. 2010;22(2):438–440.
4. Naidu DK, Radder BM, Patil PL, Hebsur NS, Alagundagi SC. Effect of integrated nutrient management on nutrient uptake and residual fertility of chilli cv. byadgi dabbi in a vertisol. Karnataka Journal of Agricultural Sciences. 2009;22(2):306–309.
5. Sharma P. Growth and yield attributes of okra under influence of drip irrigation. Journal of Engineering Research and Applications. 2015;6(2):85–91.
6. Veeranna HK, Shilpa HD, Shilpa ME, Adarsha SK, Deepa AG. Response of different levels of *Jeevamrutha* and *Ghan-jeevamrut* on pod yield and yield components of rainfed groundnut (*Arachis hypogea* L.). Applied Ecology and Environmental Research. 2023;21(2):1219–1231.
7. Vishwajith, Devakumar N. Effect of organic nutrient management on growth and yield of okra (*Abelmoschus esculentus* L.). Mysore Journal of Agricultural Sciences. 2018;52(3):519–528.
8. Singh P, Deepanshu, Fatmi U. Influence of *Panchgavya* and *Jeevamrit* on growth, yield and quality of tomato (*Solanum lycopersicum* L.). International Journal of Plant and Soil Science. 2022;34(22):1633–1639.