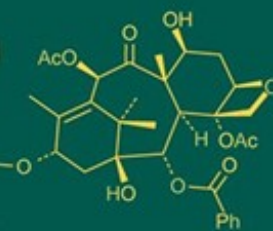
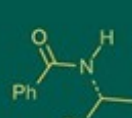
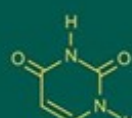


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Evaluation of local genotypes of brinjal for growth and yield parameters

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ABSTRACT

The present investigation entitled “Evaluation of Local Genotypes of Brinjal” was conducted during 2025–2026 at the Experimental Farm, Horticulture Section, College of Agriculture, Nagpur, with the objective of evaluating ten local brinjal (*Solanum melongena* L.) genotypes for their growth, flowering, yield and fruit quality performance under the agro-climatic conditions of Eastern Vidarbha. The experiment was conducted in a Randomized Block Design with three replications. Significant variation was observed among the genotypes for major growth and yield-attributing characters. Among the genotypes, BG-8 recorded superior performance for major growth and yield attributes, followed by BG-1 and BG-9. BG-8 recorded the highest number of fruits per plant (22.07) and maximum fruit yield (423.23 q ha⁻¹), indicating its superior yield potential under the prevailing conditions. The observed variation in performance among the genotypes may be attributed to differences in their genetic constitution and interaction with the prevailing environmental conditions. Based on overall performance, BG-8 emerged as the most promising genotype, followed by BG-1 and BG-9, for growth, yield and fruit quality under Eastern Vidarbha conditions. These findings suggest that BG-8 has considerable potential for cultivation in Eastern Vidarbha. However, further evaluation across different seasons and locations is necessary to confirm its stability and suitability for commercial cultivation and future breeding programmes in brinjal.

Keywords: Brinjal, *Solanum melongena* L., Local genotypes, Growth, Flowering, Fruit set, Yield, Fruit quality, BG-8, Eastern Vidarbha

Introduction

Brinjal (*Solanum melongena* L.) is an important vegetable crop widely cultivated in tropical and subtropical regions. It is valued for its nutritional and economic importance, continuous market demand and wide diversity in fruit size, shape, colour and quality. The crop also possesses considerable genetic variability, providing opportunities for selection and crop improvement.

Local genotypes are an important source of genetic variability as they may possess better adaptation to local agro-climatic conditions, stable yield and desirable fruit characteristics. However, many locally cultivated genotypes remain inadequately characterized and evaluated. Systematic evaluation of these genotypes for growth, flowering, fruit and yield attributes is therefore necessary to identify superior and adaptable genotypes.

In Eastern Vidarbha of Maharashtra, particularly in *Bhandara*, *Gondia* and *Gadchiroli* districts, locally cultivated brinjal genotypes, commonly known as ‘Bhatai’, exhibit considerable variation in fruit colour, shape, size, growth and yield characteristics. These genotypes are predominantly cultivated during the summer season, making their evaluation under the prevailing regional conditions important for identifying promising material.

Therefore, the present investigation was undertaken to evaluate ten local genotypes of brinjal for growth, yield and quality parameters and to identify suitable genotypes for cultivation under Eastern Vidarbha conditions.

Materials and methods

The experiment was conducted during December 2025 to April 2026 at the Experimental Farm, Horticulture Section, College of Agriculture, Nagpur, Maharashtra, on medium-black, well-drained soil. Ten local genotypes of brinjal (*Solanum melongena* L.) were evaluated in a Randomized Block Design with three replications. The crop was planted at 60 × 45 cm spacing with a gross plot size of 3.0 × 2.25 m and 30 plants per plot.

The genotypes BG-1 to BG-10 were raised in pro-trays using coco-peat, sand and soil (1:1:1) after seed treatment with carbendazim @ 2 g kg⁻¹ seed. Thirty-day-old healthy seedlings were transplanted in the field. FYM @ 20 t ha⁻¹ and the recommended N:P:K dose of 100:50:50 kg ha⁻¹ were applied.

Standard intercultural and plant protection practices were followed throughout the crop period. Observations were recorded on five randomly selected plants per treatment per replication. Growth observations were taken at 30, 60 and 90 days after transplanting, while yield parameters were recorded during the crop period.

Results and discussion

Growth parameters

Plant height

Plant height ranged from 18.77–23.07 cm, 33.98–50.43 cm and 47.81–71.66 cm at 30, 60 and 90 DAT, respectively. Genotype BG-8 recorded the maximum plant height at 60 DAT (50.43 cm) and 90 DAT (71.66 cm), while BG-6 recorded the minimum (33.98 and 47.81 cm, respectively). The variation in the height of the plants could be determined by genetic structure of the plant and its interaction with the environment. Similar results were reported by Damodar (2018) [1] in brinjal.

Plant spread

Plant spread ranged from 13.83–20.20 cm, 25.76–39.55 cm and 31.64–46.45 cm at 30, 60 and 90 DAT, respectively. BG-8 recorded the maximum plant spread at 60 DAT (39.55 cm) and 90 DAT (46.45 cm), whereas BG-6 recorded the minimum (25.76 and 31.64 cm, respectively). A plant's unique genetic composition and interactions with its surroundings may be the cause of the variation in plant spread. The same findings in brinjal were reported by Shinde *et al.* (2012) [2].

Number of primary branches plant⁻¹

The number of primary branches plant⁻¹ varied from 1.57–2.53 at 30 DAT, 5.12–9.28 at 60 DAT and 6.12–10.28 at 90 DAT. BG-8 recorded the maximum number of primary branches at 60 DAT (9.28) and 90 DAT (10.28), while BG-6 recorded the minimum (5.12 and 6.12, respectively). Similar results were supported in brinjal by Kumar *et al.* (2011) [3].

Yield parameters

Fruit yield plant⁻¹

Fruit yield plant⁻¹ is an essential factor since it directly affects crop production. Fruit yield plant⁻¹ ranged from 0.53–1.43 kg, with BG-8 recording the maximum yield (1.43 kg), followed by BG-1 (1.34 kg) and BG-9 (1.27 kg), while BG-6 recorded the minimum (0.53 kg). The same findings were also observed by Kumar *et al.* (2013) [4].

Fruit yield plot⁻¹

The yield plot⁻¹ data for the several brinjal genotypes under investigation. Fruit yield plot⁻¹ varied from 15.82–42.85 kg. The maximum fruit yield was recorded in BG-8 (42.85 kg), followed by BG-1 (40.07 kg) and BG-9 (37.99 kg), whereas BG-6 recorded the minimum yield (15.82 kg).

Fruit yield hectare⁻¹

The data on variation in yield hectare⁻¹ among ten brinjal genotypes are presented. Fruit yield hectare⁻¹ ranged from 156.24–423.23 q. Genotype BG-8 recorded the highest yield (423.23 q ha⁻¹), followed by BG-1 (395.74 q ha⁻¹) and BG-9 (375.24 q ha⁻¹), while BG-6 recorded the lowest yield (156.24 q ha⁻¹). The genetic makeup of the plant and its interactions with the environment were found to be responsible for variations in yield hectare⁻¹. These findings are in agreement with earlier reports of Haldavanekar (2015) [5].

Table 1. Plant height of local brinjal genotypes

Treat. No.	Genotypes	Plant height (cm)		
		30 DAT	60 DAT	90 DAT
T ₁	BG – 1	20.91	43.67	61.23
T ₂	BG – 2	21.87	41.83	56.37
T ₃	BG – 3	19.13	36.80	52.22
T ₄	BG – 4	19.33	34.24	54.07
T ₅	BG – 5	19.93	37.11	49.75
T ₆	BG – 6	18.77	33.98	47.81
T ₇	BG – 7	20.13	39.50	52.55
T ₈	BG – 8	23.07	50.43	71.66
T ₉	BG – 9	22.73	48.97	67.89
T ₁₀	BG – 10	21.27	42.69	60.50
	F test	NS	Sig	Sig
	SE (m) ±	1.15	1.25	1.83
	CD at 5%	-	3.71	5.43

(continued on next page)

Table 2. Plant spread of local brinjal genotypes

Treat. No.	Genotypes	Plant spread (cm)		
		30 DAT	60 DAT	90 DAT
T ₁	BG – 1	20.12	37.53	44.56
T ₂	BG – 2	18.24	33.28	42.31
T ₃	BG – 3	16.20	32.36	41.37
T ₄	BG – 4	16.04	29.12	38.14
T ₅	BG – 5	14.78	31.94	38.93
T ₆	BG – 6	13.83	25.76	31.64
T ₇	BG – 7	16.37	34.81	42.82
T ₈	BG – 8	20.20	39.55	46.45
T ₉	BG – 9	19.17	38.22	45.14
T ₁₀	BG – 10	17.77	36.62	41.7 1
	F test	NS	Sig	Sig
	SE (m) ±	1.61	1.27	1.28
	CD at 5%	-	3.78	3.81

Table 3. Number of primary branches plant⁻¹ of local brinjal genotypes

Treat. No.	Genotypes	Number of primary branches plant ⁻¹		
		30 DAT	60 DAT	90 DAT
T ₁	BG – 1	2.47	8.86	9.74
T ₂	BG – 2	2.53	7.96	8.95
T ₃	BG – 3	1.83	6.87	7.81
T ₄	BG – 4	1.80	7.42	8.35
T ₅	BG – 5	2.33	6.57	7.32
T ₆	BG – 6	1.93	5.38	6.35
T ₇	BG – 7	1.80	7.65	8.50
T ₈	BG – 8	1.87	9.34	10.28
T ₉	BG – 9	2.07	8.25	9.13
T ₁₀	BG – 10	1.57	7.79	8.67
	F test	NS	Sig	Sig
	SE (m) ±	0.21	0.42	0.46
	CD at 5%	-	1.26	1.35

Table 8. Fruit yield plant⁻¹, yield plot⁻¹ and yield ha⁻¹ of brinjal genotypes

Treat. No.	Genotypes	Yield plant ⁻¹ (kg)	Yield plot ⁻¹ (kg)	Yield hectare ⁻¹ (q)
T ₁	BG – 1	1.34	40.07	395.74
T ₂	BG – 2	1.01	30.19	298.17
T ₃	BG – 3	0.92	27.69	273.52
T ₄	BG – 4	1.08	32.28	318.82
T ₅	BG – 5	0.96	28.82	284.68
T ₆	BG – 6	0.53	15.82	156.24
T ₇	BG – 7	0.66	19.71	194.69
T ₈	BG – 8	1.43	42.85	423.23
T ₉	BG – 9	1.27	37.99	375.24
T ₁₀	BG – 10	0.69	20.80	205.40
	F test	Sig	Sig	Sig
	SE (m) ±	0.04	1.08	10.71
	CD at 5%	0.11	3.22	31.81

Conclusion

The present study involving ten local genotypes of brinjal demonstrated considerable variability in growth and yield performance. Among the genotypes evaluated, BG-8 exhibited superior performance for most of the important traits, recording the highest plant height (71.66 cm), plant spread (46.45 cm), and number of primary

branches plant⁻¹ (10.28). It also produced the maximum fruit yield plant⁻¹ (1.43 kg), yield plot⁻¹ (42.85 kg), and yield hectare⁻¹ (423.23 q ha⁻¹), indicating its better productive potential under the prevailing conditions.

On the other hand, BG-6 showed comparatively inferior performance, recording the lowest values for major growth and yield attributes, including plant height, plant spread, number of primary branches, and

fruit yield. Genotypes BG-1 and BG-9 also demonstrated favourable performance for several traits, indicating their potential as promising genotypes under similar growing conditions.

Overall, the findings emphasize the significance of evaluating and selecting suitable local genotypes for enhancing brinjal productivity. Considering its consistent performance for growth and yield attributes, BG-8 may be considered a promising genotype for cultivation under the eastern Vidarbha conditions along with the BG-1 and BG-9. However, further evaluation across different seasons and locations would be useful to confirm its stability and wider adaptability.

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