



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; 11(7): 1769-1772
© 2022 TPI

www.thepharmajournal.com

Received: 08-03-2022

Accepted: 12-06-2022

Yogesh Kumar Patel
Research Scholar Department of
Vegetable Science, IGKV,
Raipur, Chhattisgarh, India

Dr. PC Chaurasiya
Assistant Professor, CARS,
Mahasamund (Horticulture),
Chhattisgarh, India

Evaluation of brinjal (*Solanum melongena* L.) genotypes for growth and yield parameters under Chhattisgarh plains

Yogesh Kumar Patel and Dr. PC Chaurasiya

Abstract

The present experiment entitled "Evaluation of Brinjal (*Solanum melongena* L.) Genotypes for growth and yield parameters under Chhattisgarh plains" was investigated at College of Agriculture and Research Station Mahasamund (Chhattisgarh) during the *rabi* of 2021-2022. The experimental materials included seven genotypes of brinjal and arranged in Randomized Block Design with three replications. According to the mean performance analysis, the genotype Kashi Taru had the best total fruit output per hectare (q) (555.84 q) followed by Pant Samrat (272.57 q). The genotype Kashi Taru also found to be highest value for fruit yield/plant (1.70 kg), marketable fruit yield (522.33 q/ha), fruit length (18.55), days to first flowering in plant (27.33 DAT), days to 50% flowering in plant (38.00 DAT), number of pickings, while, more number of branches (9.77) and fruit girth (20.57) recorded in genotype Mukta Keshi. The genotype Green Long recorded highest number of flowers/cluster (4.89). While, highest number of number of fruits/plant, fruits/cluster was recorded in genotype Indira Safed Baigan (2.86). Genotype Brinjal Green Round recorded highest stalk length (10.94).

Keywords: Evaluation, brinjal, growth, genotypes, yield

Introduction

Brinjal (*Solanum melongena* L.) is also known as aubergine or eggplant. Brinjal is native to India. While, China perhaps being a secondary origin. It is a member of the solanaceae family and has the chromosome number $2n = 24$. It is cultivated in subtropical and tropical regions mainly for its tender and immature fruits. It is a popular and significant vegetable that is grown in a wide range of climatic conditions from north to south and east to west, with the exception of hilly places where it is only grown in the summer. Brinjal's fruit is extremely popular among people of all social classes, gaining the title "vegetable of the masses" (Choudhary and Kalda, 1968) [5]. Vegetarians and non-vegetarians both prefer it. Fresh and mature fruits contain 92.7 percent moisture and a variety of chemical components such as vitamin A, vitamin C, and thiamine (124 I.U., 12.0 mg, and 0.04 mg, respectively). The leaves are used as narcotics and the seeds are used as stimulants, but they can cause dyspepsia and constipation (Nadkarni, 1997) [7]. It is utilised as an appetizer, aphrodisiac, cardiotoxic and useful in "vats" and "kaph," etc. in Ayurveda (Chadha and kalloo, 1993) [4]. In 2019, India produced about 12.66 million metric tons from 0.728 million hectares area (NHB Data base 2018-19). In Chhattisgarh, brinjal is cultivated over an area of 37.768 thousand hectare and produced about 699.663 thousand tons in 2020-21 (agriportal.cg.nic.in). There are significant changes in customer tastes and demand, which vary depending on the colour, size, and form of the fruit. There was a wide range of genotypes available, ranging from long, oblong, and round fruited varieties; white, green, purple, and black colour fruits; thorny to non-thorny, and erect to bushy plant habits. Improved varieties or cultivars that are recommended for a specific region play a significant impact in growth and yield and hence in achieving higher returns. The cultivars differ not only genetically in a wide range of traits, such as plant height, blooming time, and other fruit features, but also geographically. Plant breeders are currently working to generate potential cultivars. Keeping in view the above facts this investigation has been carried out to increase the production productivity of brinjal crop by using suitable genotypes at proper sowing time.

Materials and Methods

The current study was conducted at College of Agriculture and Research station Mahasamund (Chhattisgarh) with the title "Evaluation of Brinjal (*Solanum melongena* L.) genotypes for

Corresponding Author:
Yogesh Kumar Patel
Research Scholar Department of
Vegetable Science, IGKV,
Raipur, Chhattisgarh, India

growth and yield parameters under Chhattisgarh plains” during the *rabi* season of 2021-2022. Mahasamund is located in the central-east part of the Chhattisgarh state. Mahasamund is located at 21.1 North to 82.1 East. The trial was contained of 7 genotypes (treatment) of aubergine. Seven genotypes Indira Safed Baigan, Navin, Kashi Taru, Brinjal Green Round, Green Long, Mukta Keshi and Pant Samrat were sown in different rows on a raised bed nursery followed by normal nursery practices. The experiment was laid out in Randomized Block Design with three replications at spacing of 50 cm and 50 cm between rows and plants. All the cultural practices were followed to raise a healthy crop and data were observed for plant height (cm), number of branches per plant, fruit length (cm), stalk length (cm), fruit girth (cm), fruit weight (g), number of fruits per plant, fruit yield per plant (g), marketable fruit yield (q/ha), total fruit yield per hectare (q), days to first flowering, days to 50% flowering, number of pickings, number of flowers per cluster, number of fruits per cluster, fruit setting percentage, shape of fruit, colour of fruit, stalk colour. The data thus obtained were analyzed statistically for the study of performance of brinjal genotypes, work out the association of growth and yield parameter with fruit yield, path coefficient for growth and yield parameters and to identify suitable genotype for growth and yield under plains of Chhattisgarh.

Results and Discussion

Plant height (cm)

The average plant height ranged from minimum of 64 cm to maximum of 101.8 cm with an average value for plant height was 81.35 cm. The maximum plant height was recorded with the genotype Mukta Keshi (101.8 cm) followed by genotype Kashi Taru (98.2 cm). The shortest plant height was observed for genotype Indira Safed Baigan (64 cm).

Number of branches per plant

The number of branches per plant ranged from minimum of 6.7 to maximum of 10.5 with an overall mean of 8.25. The genotype Mukta Keshi (10.5) was found to have more number of branches per plant followed by genotype Kashi Taru (10.2). Genotype Green Long (6.7) was recorded with the lowest branches per plant.

Days to first flowering in plant

The days to first flowering ranged from minimum of 25 days to maximum of 60 days with an overall average of 42.71 days. Kashi Taru is the genotype was taken the shortest time (25 days) for initial blooming followed by genotype Indira Safed Baigan. Green Long had the longest duration (60 days) for blossoming.

Days to 50% flowering in plant

Days to 50% blooming ranged from minimum of 36 days to 73 days with an overall average of 54.66 days. The genotype Kashi Taru took the shortest time to achieve 50% (36 days). While, Green Long (73.00 days) took the longest time for 50% blossoming.

Number of flowers per cluster

The number of flowers per cluster varied from minimum of 1.1 to maximum of 5.2 with an overall average value of 3.12. the maximum number of flowers per cluster was observed in genotype Green Long followed by genotype Brinjal Green

Round. While, the minimal number of flowers per cluster was found in the genotype Mukta Keshi (1.1).

Number of fruits per cluster

The number of fruits per cluster varied from minimum of 0.93 to maximum of 2.91 with an average value of 1.98. Genotype Indira Safed Baigan (2.91) had the more number of fruits per cluster followed by Pant Samrat (2.64). While, least number of fruits per cluster was observed in genotypes Mukta Keshi (.93).

Fruit setting percentage

Fruit setting percentages ranged from minimum of 47.07 percent to 88.18 percent with an overall average of 66.40 percent. Genotype Indira Safed Baigan had the highest fruit setting percentage (80.18 percent) followed by genotypes Mukta Keshi (86.36 percent) and genotypes Brinjal Green Round had the lowest fruit setting percentage (47.07).

Fruit length (cm)

The average fruit length ranged from minimum of 7.68 cm to maximum of 19.45 cm with a mean of 14.73 cm. The genotype Kashi Taru had the longest fruit length (19.45 cm) followed by genotype Green Long (19.6 cm) and the genotype Brinjal Green Round had the shortest fruit length (7.68 cm)

Stalk length (cm)

The average stalk length ranged from minimum of 5.3 cm to maximum of 11.5 cm with an overall mean of 7.90 cm. The stalk length was highest in genotype Brinjal Green Round (11.5 cm) followed by Pant Samrat (11.11 cm). While, genotype Navin had the shortest stalk length (5.3 cm).

Fruit girth (cm)

The average fruit girth ranged from minimum of 6.87 cm to maximum of 21.83 cm with a 13.71 cm mean value. Fruit girth was highest in genotype Mukta Keshi (21.83 cm) followed by genotype Brinjal Green Round (19.25 cm) and lowest in genotype Indira Safed Baigan (6.87 cm).

Fruit weight (g)

The average fruit weight ranged from minimum of 16.14 g to maximum of 230 g with a mean value of 13.71 g. The genotype Mukta Keshi had the highest fruit weight (230 g) followed by genotype Kashi Taru (112.65 g) and the genotype Indira Safed Baigan (16.14 g) had the lowest fruit weight.

Number of fruits per plant

The average number of fruits produced per plant ranged from minimum of 1.16 to maximum of 18.2 with an overall mean value of 9.61. The genotype Indira Safed Baigan (18.2) produced the most fruits per plant followed by genotype Green Long (16.43). While, genotype Mukta Keshi (1.16) produced the fewest fruits per plant.

Fruit yield per plant (kg)

Fruit yield per plant ranged from minimum of 0.25 kg to maximum of 1.49 kg with a mean value of 0.54 kg. The genotype Mukta Keshi (1.49 kg) produced the more number of fruits per plant followed by genotype Pant Samrat (679.38 kg). While, genotype Mukta Keshi (.25 kg) produced the least fruit per plant.

Number of pickings

The average number of pickings per plant ranged from minimum of 5 to maximum of 14 with an overall mean of 9.38. The maximum number of pickings were observed in genotype Kashi Taru (14) followed by Indira Safed Baigan (11). Whereas, genotype Mukta Keshi received the minimum number of pickings (5).

Marketable fruit yield (q/ha)

Marketable fruit yield ranged from 55 q/ha to 557 q/ha with an average of 183.24 q/ha. The genotype Kashi Taru (557 q/ha) had the highest marketable fruit yield followed by Pant Samrat (251.84 q/ha). While, the genotype Mukta Keshi (55 q/ha) had the lowest marketable fruit yield.

Total fruit yield per hectare (q)

Total fruit yield per hectare ranged from minimum of 102 q to maximum of 597.48 q with an average of 218.6 q. The genotype Kashi Taru (597.48 q) had the highest total fruit yield per hectare followed by genotype Pant Samrat (293.56 q). While, the genotype Indira Safed Baigan (102 q) had the lowest total fruit yield per hectare. These observations of present study are in conformity with the findings reported by Tripathy *et al.* (2017) [3] and Jaiswal *et al.* (1997) [6]. The differences among the cultivars are due to the climatic and

genetic factors. The minimum marketable yield under Chhattisgarh plains was found in Mukta Keshi (55 q). Similar types of findings were also reported by Rai *et al.* (1998) [8]. Evaluation of genotypes is required to know the performance of the varieties in terms of yield and other yield attributing characters. Based on these results, the promising genotypes can be identified. Unlike many other vegetables, brinjal has considerable regional consumer preference for shape, size and colour of the fruit. So the morphological characters of the fruit are also to be considered while identifying suitable variety for a particular region. Among the all genotypes studied Kashi Taru and Pant Samrat were the best for their yield potential and also Kashi Taru and Pant Samrat were the best performing genotypes on the basis of marketable yield per hectare. In Chhattisgarh, purple, green and white coloured brinjal is preferred over striped brinjal. The choice for shape varies depending upon the requirement of the dish being prepared but mostly round, oval and oblong shaped fruits are opted. Among the top performing brinjal genotypes Kashi Taru, Pant Samrat, Indira safed Baigan and Brinjal Green Round were dark purple, dark purple, white and green with long, long, long and round shaped respectively. Taking these preferences into consideration the genotypes Indira Safed Baigan, Kashi Taru and Brinjal Green Round can be suggested for commercial cultivation in Chhattisgarh plains.

Table 1: Mean performance of brinjal genotypes

Genotype	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Indira safed baigan	68.87	8.47	29.33	46.33	3.4	2.86	85.37	12.63	6.47	7.61	18.06	16.82	301.16	12	107.67	120.46
Navin	74.93	7.49	35.67	45	1.56	1.173	72.05	15.56	6.03	14.23	90.23	5.33	480.99	10	148	192.4
Kashi taru	93.8	9.52	27.33	38	2.84	1.57	55.83	18.55	7.09	13.14	111.17	12.50	1709.63	12.33	522.33	555.84
Brinjal green round	79.67	7.51	45.33	61.67	4.24	2.01	47.31	8.42	10.94	18.58	77.46	4.21	325.40	7.33	68.33	130.16
Green long	83.54	7.21	58	71.67	4.89	2.76	56.37	19.22	7.18	10.31	25.32	14.86	375.05	8.67	135.67	150.02
Mukta keshi	99.11	9.77	55	58.33	1.27	0.95	78.43	11.33	10.11	20.57	220	1.24	271.87	5.33	58.67	108.75
Pant samrat	69.57	7.83	48.33	61.67	3.72	2.59	69.48	17.40	10.43	11.52	55.10	12.33	681.43	10	242.01	272.57
Grand mean	81.36	8.26	42.71	54.67	3.13	1.99	66.41	14.73	8.32	13.71	85.33	9.61	592.22	9.38	183.24	218.60
CD(0.05)	7.48	1.24	4.69	6.43	0.29	0.20	6.21	1.58	1.21	1.58	8.39	1.42	90.29	1.82	27.94	36.11
S.E(m)	2.43	0.40	1.52	2.08	0.09	0.06	2.01	0.51	0.39	0.51	2.72	0.45	29.30	0.59	9.06	11.71
S.E(d)	3.43	0.57	2.15	2.95	0.13	0.09	2.85	0.72	0.55	0.72	3.84	0.65	41.43	0.83	12.82	16.57
CV	5.17	8.45	6.17	6.61	5.18	5.78	5.26	6.04	8.19	6.47	5.43	8.3	9.29	10.91	8.57	9.29

- | | | |
|-------------------------------------|--------------------------------|---------------------------------------|
| 1. Plant height (90 das) | 7. Fruit setting percentage | 13. Fruit yield per plant (g) |
| 2. Number of branches per plant | 8. Fruit length (cm) | 14. Number of pickings |
| 3. Days to first flowering in plant | 9. Stalk length (cm) | 15. Marketable fruit (q/ha) |
| 4. Days to 50 % flowering in plant | 10. Fruit girth (cm) | 16. Total fruit yield per hectare (q) |
| 5. Number of flowers per cluster | 11. Fruit weight (g) | |
| 6. Number of fruits per cluster | 12. Number of fruits per plant | |

Table 2: Plant fruit colour, calyx colour and fruit shape among brinjal genotypes

S. No	Genotype	Fruit colour	Calyx colour	Fruit shape
1	Indira Safed Baigan	White	Light green	Long
2	Navin	Dark purple	Green	Long
3	Kashi Taru	Dark purple	Green	Long
4	Brinjal Green Round	Green	Green	Round
5	Green Long	Green	Green	Long
6	Mukta Keshi	Dark purple	Green	Oblong
7	Pant Samrat	Dark purple	Green	Long

References

- Anonymous. Horticultural Statistics at a glance 2018, National Horticulture Board, Ministry of Agriculture and Farmers welfare, Government of India, 2018, 1.
- Anonymous. Horticulture Statistics at a glance 2021, Department of Agriculture Development and Farmer Welfare and Bio-Technology, Government of Chhattisgarh, 2021, 13.
- Tripathy B, Sharma D, Jangde BP, Bairwa PL. Evaluation of brinjal (*Solanum melongena* L.) genotypes for growth and yield characters under Chhattisgarh condition, 2017.
- Chadha KL, Kallou G. Vegetable crops. Advances in Horticulture. 1993;5(1):105(ed.)

5. Choudhary B, Kalda TS. Brinjal: A vegetable of the masses. *Indian Hort.* 1968;12(3):21-22.
6. Jaiswal RK, Upadhyay PC, Gour BB, Tiwari YD. Performance of the brinjal varieties during Rabi (winter) season under the central Narmada Valley conditions in Madhya Pradesh, India. *Internat. J Trop. Agric.* 1997;15(1-4):199-201.
7. Nadkarni KM. Leaves and seeds of brinjal are also used as nocrotics and stimulants. *Indian meteria media*, 1997.
8. Rai N, Singh AK, Sarnaik DA. Evaluation of round shaped brinjal varieties for stability of their yield contributing attribute. *Veg. Sci.* 1998;25(2):136-140.