Biological Forum – An International Journal **15(9): 28-33(2023)**

ISSN No. (Print): 0975-1130
ISSN No. (Online): 2249-3239

Studies on *per se* Performance of Sponge Gourd Genotypes (*Luffa cylindrica* L.) for Growth and Yield Attributes

Sivabharathy B.*, V. Kanthaswamy, V. Sundaram, V. Krishnan and M. Manikandan
Department of Horticulture,
Pandit Jawaharlal Nehru College of Agriculture and Research Institute, Karaikal, UT of Puducherry, India.

(Corresponding author: Sivabharathy B.)*
(Received: 26 June 2023; Revised: 14 July 2023; Accepted: 18 August 2023; Published: 15 September 2023)
(Published by Research Trend)

ABSTRACT: Vegetables are considered as essential one for a well-balanced diet. Karaikal is one of the regions of Union Territory of Puducherry located in the East Coast, almost at the end of the Cauvery Delta Zone. Diversification of cropping as an alternate to paddy is highly recommended for augumenting the farmers income and to sustain farming in this region. However, identification of suitable crop and variety to suit the existing soil and climatic conditions becomes essential. Since sponge gourd is grown in negligible areas despite its tremendous nutritional and diversified utility due to the lack of awareness of this crop and less concerted effort on crop improvement programmes, it was chosen and the present investigation was carried out to study the *per se* performance of different bitter gourd hybrids in the Coastal condition of Karaikal for various growth and yield attributes. The study materials comprised of 21 different sponge gourd genotypes assembled from various parts of the country and was performed at the Department of Horticulture, Pandit Jawaharlal Nehru College of Agriculture and Research Institute, Karaikal, Puducherry, India. The study revealed the presence of significant differences among the genotypes evaluated for all the growth and yield contributing characters observed. Among the 21 genotypes, Ranking based on *per se* performance, revealed that the genotype Kashi Sheya was the best among the 21 genotypes evaluated. It recorded better performance 12 characters out of 16 characters. The genotype Pusa Sneha which ranked second excelled in performance for seven characters. The genotype L.C-13 which ranked third exceled in performance for the six characters. The present study suggested that among the 21 sponge gourd genotypes evaluated, the genotype Kashi Shreya was found to be the best for yield and other yield related traits followed by Pusa Sneha and L.C-13. These genotypes can be further utilized in crop improvement programme for yield and other yield related traits in coastal region of Karaikal.

Keywords: Sponge gourd, genotypes, *per se* performance, growth and yield attributes.

INTRODUCTION

Vegetables are considered to be the vital component of a well-balanced diet. Vegetables make up a major proportion of the diet of human in many parts of the World and play a significant role in human nutrition, especially as sources of Phytonutraceuticals, vitamins, minerals and dietary fiber (Mohan, 2005). The phytochemicals from vegetables are strong antioxidants and are reported to reduce the risk of chronic diseases by protecting against free-radical damage, modified metabolic activation and detoxification of carcinogens and through influencing processes that could alter the course of tumor cells (Dias, 2012).

Sponge gourd (*Luffa cylindrica* L.) is an important emerging high potential underutilized vegetable crop having chromosome number (2n=26). Loofah (genus *Luffa*), also called vegetable sponge, sponge gourd or rag gourd, genus of seven species of annual climbing vine of the gourd family (Cucurbitaceae), native to the old world tropics. The sponge gourd cultivation history states that they have been originated in tropical countries of Africa and Asia particularly in India (Kalloo, 1993). It is popular as spring summer and rainy season crops. Luffa has nine species out of which *Luffa acutangula* (L.) Roxb., *L. cylindrica* M. Roem., *L. echinta* Roxb., *L. graveolens.*, *L. tuberosa* Roxb. are grown throughout India in tropical region. In India, sponge gourd is grown as a mixed crop along river banks and as a single crop in arable areas.

Sponge gourd is commonly grown for its immature tender fruits as well as for sponge which is used for scrubbing purpose. The fruits of sponge gourd are easily digestible and increase appetite when consumed. Sponge gourd being a nutrition rich vegetable, contains moisture of 93.2 g, 1.2 g protein, 0.2 g fat, 2.9 g carbohydrates. Tender fruit contains 0.06 mg riboflavin, 0.4 mg niacin and 120 mg β carotene), minerals (36 mg calcium, 19 mg phosphorous and iron 1.1 mg) and fibers 0.20 g per 100 g of edible portion. The immature fruits are used for cooking purpose and also used in the preparation of chutneys and curries (Gopalan *et al.*,

1999). The dried sponge is used as bathing sponge, increase blood circulation, and credited as a relief for rheumatic and arthritic suffers.

Matured fibres are often used to clean ships and decks, as well as to make slippers or baskets for use as shoe mats and hat inner cloths. The fibrous vascular system inside the fruit can be used as a bathroom sponge, a component of shock absorbers, a sound proof lining, a utensil cleaning sponge, packing materials, for making crafts, as filters in factories, and as a utensil cleaning sponge after being separated from the skin, flesh, and seeds (Bal *et al*., 2004).

It is a cross pollinated vegetable, thus, its natural population has tremendous variability for fruit shape, colour, taste *etc.* Evaluation of genotypes to assess the exiting variability is considered as preliminary step in any crop improvement programme. In order to pursue an effective breeding programme, the present investigation was carried out to gather information on *per se* performance for different characteristics of sponge gourd.

MATERIAL AND METHODS

The treatment comprised of 21 diverse sponge gourd genotypes (Table 1). The experiment was carried out at Department of Horticulture, Pandit Jawaharlal Nehru College of Agriculture and Research Institute, Karaikal, U.T. of Puducherry during Rabi summer 2022 in randomised block design with two replication. All the recommended agronomic package and practices and plant protection measures were followed to raise a good crop. Observations were recorded on five plants from each replication for sixteen characters *viz.*, vine length, number of primary branches vine^{-1}, number of nodes vine^{-1}, node of first staminate flower, node of first pistillate flower, days to first staminate flower anthesis, days to first pistillate flower anthesis, sex ratio, days to first fruit harvest, individual fruit length, individual fruit girth, number of fruits vine^{-1}, individual fruit weight, total soluble solids, crude fibre and fruit yield vine^{-1}. The mean data was subjected to statistical analysis as suggested by Panse and Sukhatme (1978).

RESULTS AND DISCUSSION

Analysis of variance in the experiment indicated that the genotypes evaluated differed significantly for all the sixteen traits (Table 2). The mean performance of different genotypes evaluated for all the sixteen charecters were presented in Table 3. Vine length is considered as one of the important traits for growth and vigour of the plants. In the present investigation all the genotypes exhibited significant differences for vine length. Among the 21 genotypes, the genotype L.C- 3 recorded the maximum vine length (545.84 cm). Number of primary branches vine^{-1} is another yield increasing trait in sponge gourd. The genotype Kashi Sheya (T_{21}) recorded more number of primary branches vine^{-1} followed by genotype Pusa Sneha (T_{17}). On the basis of phenotypic observation, number of primary branches vine^{-1}showed positive relationship with yield. Genotype with more number of primary branches vine^{-1}was found to produce dwarf vines with high yield.

Number of nodes vine^{-1} is another yield increasing trait in sponge gourd. The genotype Pusa Supriya (T_{20}) recorded more number of nodes vine^{-1} followed by genotype Kashi Divya (T_{19}). The node of first staminate flower and node of first pistillate flower anthesis is a trait implying earliness of plants to enter the reproductive phase from vegetative phase. Minimum value for node of first staminate flower and node of first pistillate flower was noted in the genotype Kashi Sheya (T_{21}). Similar pattern of result was reported by Singh *et al.* (2019); Chauhan *et al.* (2018); Som (2018) in sponge gourd. The variation in these traits may be due to genetic characteristics in the genotypes.

Days to first staminate and pistillate flower anthesis is also considered one of the most important in exercising character in selection. Most genotypes or varieties are preferred when higher yield is coupled with earliness. Early flowering is an important trait and an advantageous feature in sponge gourd to have early access to market. The genotype Kashi Shreya recorded the earliest days to first staminate flower anthesis (26.01 days) and the genotype L.C-7 recorded the earliest days to first pistillate flower anthesis (22.08 days). The result is in line with the findings of Singh *et al*. (2019) from 25.10 days to 47.93 days with population mean of 38.67 days for days to first staminate flower anthesis.

Sex ratio is a principal yield deciding trait in monoecious crops like sponge gourd. Low sex ratio is desirable for more number of female flowers and in turn more fruit yield. The genotypes Kashi Shreya showed lower sex ratio indicating a high potentiality of the genotypes to bear female flowers as was evident from appreciably high fruit yield recorded in this genotype. This is in accordance with the findings of Manoj *et al.* (2018) from 4.42 to 19.05 in ridge gourd.

Early harvest is considered as one of the important characters in any crop improvement programme. The present study also brought out few genotypes which are significantly early in harvest. The genotype L.C-7 (T_6) had the earliest harvest, followed by genotype L.C-8 (T_7) which might be due to early flowering in these genotypes. Comparable reports on days to first harvest have also been given by Singh *et al.* (2019) in sponge gourd and

Fruit length is an important character to be considered to have indirect selection of a sponge gourd genotype for high yield. Longer fruits were observed in the genotype Kashi Shreya (T_{21}), followed by genotype Kashi Rakshita (T_{16}). Study conducted by Singh *et al.* (2019) had also observed similar trend of results for fruit length in the genotype Kashi Shreya. Greater fruit girth was recorded in the genotype Phule Prajaktha (T_{14}) followed by genotype L.C-10 (T_9) and genotype Kashi Rakshita (T_{16}). This is in accordance with the findings of Kumar *et al.* (2019) in sponge gourd.

Among the 21 entries investigated in the present study, the maximum individual fruit weight was observed in the genotype Kashi Shreya (T_{21}), while the minimum fruit weight was observed in genotype L.C-3 (T_2). The increase in

weight of the fruit might be due to increased fruit length, inherent character of the genotype and gene action. The similar pattern of result was reported by Kumar *et al*. (2019); Singh *et al.* (2019); Chauhan *et al*. (2018); Islam *et al*. (2009) in sponge gourd.

Number of fruits vine^{-1} is the prime criterion among yield contributing characters. In respect of number of fruits vine^{-1}, the genotype Pusa Sneha(T_{17}) was the best performing genotype among 21 genotypes followed by the genotype Kashi Shreya(T_{21}) and genotype Phule Prajaktha (T_{14}). More number of primary branches vine^{-1} might have contributed for more number of fruits vine^{-1} in all the three genotypes.

In respect of fruit yield vine^{-1} the genotypes Kashi Shreya (T_{21}), Pusa Sneha (T_{17}) and L.C-14 (T_{12}) excelled all other genotypes. The least one was shown by the genotype L.C-3 (T_2). High marketable fruit yield vine^{-1} recorded by these genotypes might have been due to the presence of more number of primary branches vine^{-1}, number of fruits vine^{-1} and higher individual fruit weight. Similar trend of high marketable fruit yield was obtained by Kumar *et al.* (2019); Singh *et al.* (2019); Kumar *et al.* (2013); Islam *et al.* (2009) in sponge gourd.

From nutritive point of view, quality is considered as an important factor in release of varieties in sponge gourd. The parameters like total soluble solids and crude fire content are important factors that contribute for elite genotypes. The study being undertaken on sponge gourd which is specially used for vegetable purpose, genotypes with less crude fibre content are preferred to be used for vegetable purpose. In the present investigation, the genotype L.C-7 recorded the lowest crude fibre content. Kashi Rakshita was found to be consistent in total soluble solids. Therefore, these genotypes could be utilized as parents in quality breeding programme of sponge gourd with objective to improve total soluble solids in fruits.

The genotypes were given ranking based on their superiority with respect to each trait and the ranking obtained by each genotype for all the 16 traits observed is presented in Table 4.

Table 1: Details of sponge gourd genotypes used in the study.

Sr. No.	Treatment	Name of the Accession/Genotype/ variety	Source of Collection
1.	T_1	L.C-1	IIVR – Varanasi
2.	T_2	L.C-3	
3.	T_3	L.C-4	
4.	T_4	L.C-5	
5.	T_5	L.C-6	
6.	T_6	L.C-7	
7.	T_7	L.C-8	
8.	T_8	L.C-9	
9.	T_9	L.C-10	
10.	T_{10}	L.C-11	
11.	T_{11}	L.C-12	
12.	T_{12}	L.C-13	
13.	T_{13}	L.C.14	
14.	T_{14}	Phule Prajaktha	MPKV- Rahuri
15.	T_{15}	Kalyanpur Hari Chikani	CSAUASDT, Kalyanpur
16.	T_{16}	Kashi Rakshita	IIVR – Varanasi
17.	T_{17}	Pusa Sneha	IARI- New Delhi
18.	T_{18}	Pusa Chikni	
19.	T_{19}	Kashi Divya	IIVR – Varanasi
20.	T_{20}	Pusa Supriya	IARI- New Delhi
21.	T_{21}	Kashi Shreya	IIVR – Varanasi

Table 2: Analysis of variance for 16 different characters in sponge gourd.

Sr. No.	Characters	Replication mean sum of squares	Treatment mean sum of square	Error mean sum of square
1.	Vine length (cm)	0.50	4925.20**	122.70
2.	Number of primary branches vine^{-1}	0.333	2.397**	0.053
3.	Number of nodes vine $^{-1}$	0.045	108.678**	2.175
4.	Node of first staminate flower	0.383	9.987**	0.163
5.	Node of first pistillate flower	3.220	15.453**	0.762
6.	Days to first staminate flower anthesis	0.043	46.039**	1.032
7.	Days to first pistillate flower anthesis	0.195	89.329**	1.276
8.	Sex ratio	0.197	66.149**	1.421
9.	Days to first fruit harvest	0.022	75.855**	2.997
0.	Individual fruit length (cm)	0.349	48.510**	1.241
11.	Individual fruit girth(cm)	0.017	7.329**	0.130
12.	Individual fruit weight (g)	2.00	11579.00**	46.00
13.	Number of fruits vine $^{-1}$	1.566	29.415**	0.348
14.	Fruit yield vine^{-1} (kg)	0.217	8.682**	0.068
15.	Total Soluble Solids (°brix)	0.000952	0.190**	0.0014
16.	Crude fibre (g)	0.0000024	0.015**	0.00019

**Significance at 1 per cent level.

Table 3: Mean performances of 21 genotypes of sponge gourd for 16 characters.

Sr. No.	Genotypes	Vine length (cm)	Primary branches vine^{-1}	Number of nodes vine $^{-1}$	Node of first staminate flower	Node of first pistillate flower	Days to first staminate flower anthesis	Days to first pistillate flower anthesis	Sex ratio	Days to first fruit harvest	Individual fruit length (cm)	Individual fruit girth (cm)	Individual fruit weight (g)	Number of fruits vine^{-1}	Fruit yield vine^{-1} (kg)	Total Soluble Solids (°brix)	Crude fibre (g)
1.	L.C-1	364.42	3.18	36.93	5.27	7.49**	37.54	38.45	29.13	46.75	24.82	12.91	148.36	12.33	1.65	1.86	0.32
2.	L.C-3	**545.84****	1.74	32.88	4.585*	8.52*	**43.71**	45.80	20.80**	52.90	25.55	12.27	112.07	13.61	1.48	2.24	0.46**
3.	L.C-4	454.62*	3.65	39.68	4.645	10.83	38.78	40.00	27.77	50.87	19.29	12.34	181.61	14.80	2.57	2.13	0.49**
4.	L.C-5	420.85	3.69	43.11	3.455**	8.75*	42.81	42.23	25.99	53.63	26.73	16.40**	194.30	14.82	2.76	2.13	0.29
5.	L.C-6	458.36*	2.51	41.15	4.1*	10.15	43.34	45.60	19.13**	57.25**	19.96	13.17	182.17	9.92	1.69	1.93	0.36
6.	L.C-7	427.37	3.13	38.07	5.51	12.43	36.16	22.08**	28.79	32.58	26.58	12.96	214.79	15.18	3.01	1.96	0.26
7.	L.C-8	422.73	3.06	46.75	4.285	11.16	41.03	33.22**	32.08	39.95	19.46	14.6	159.00	15.87	2.40	1.89	0.49**
8.	L.C-9	446.30	2.37	40.85	6.88	12.74	38.74	**48.61**	24.04	**58.59****	18.41	14.87	200.78	14.48	2.56	2.21	0.43**
9.	L.C-10	485.68**	3.13	42.95	4.73*	11.45	41.38	41.88	26.89	55.48*	32.18**	17.43**	235.88**	13.40	3.04	2.23	0.37
10.	L.C-11	474.80**	2.69	34.01	4.28*	11.93	39.56	39.25	**30.61**	48.19	23.50	17.07**	142.13	15.95	2.14	2.32	0.47**
11.	L.C-12	453.16*	3.71	36.98	3.44**	7.62**	32.68**	36.04**	28.63	54.74*	27.79	15.42	239.39**	15.29	3.53	2.16	0.29
12.	L.C-13	474.73**	4.61**	39.87	2.555**	7.84**	29.29**	34.06**	24.45	46.09	31.14**	16.53	338.23**	17.03*	5.41**	2.10	**0.57****
13.	L.C-14	375.35	2.73	46.38	5.31	10.92	42.95	45.32	28.88	54.72*	22.42	15.9**	142.82	16.06	2.10	2.46	0.43**
14.	Phule Prajaktha	449.57	4.33**	45.31	9.075	11.83	37.88	36.06*	18.50**	52.72	27.66	**17.97****	132.00	21.69**	2.67	2.35**	0.29
15.	Kalyanpur HariChikani	367.78	2.75	49.92**	9.33	13.23	32.17**	37.99	18.09**	49.05	28.24	15.60*	147.50	16.89	2.37	2.53**	0.33
16.	Kashi Rakshita	421.64	4.57**	47.78*	**9.79**	9.00*	36.94	45.53	15.50**	53.06	33.18**	16.59**	174.49	15.57	2.60	**3.17****	0.42*
17.	Pusa Sneha	377.13	5.19**	54.04**	4.15*	9.28	40.70	27.82**	11.61**	52.87	31.85**	15.49	349.13**	**26.06****	8.79**	2.14	0.38
18.	Pusa Chikni	440.14	2.93	48.53*	5.635	11.23	34.43**	40.83	19.50**	55.43*	31.83**	13.90	125.23	13.28	1.54	2.20	0.28
19.	Kashi Divya	323.56	2.56	57.08**	5.14	**15.33**	32.89**	37.11	21.81	48.86	26.04	15.48	153.49	12.11	1.73	2.29	0.43**
20.	Pusa Supriya	425.46	2.34	**61.32****	9.495	18.58	38.37	42.81	31.41	55.15*	27.91	12.84	264.23**	13.43	3.43	2.42	0.27
21.	Kashi Shreya	407.28	**6.31****	48.42*	2.335**	7.21**	26.01**	28.82**	18.83**	44.78	**35.60****	11.27	**379.18****	23.82**	**8.91****	2.84**	0.39
	Mean	429.37	3.39	44.38	5.43	10.83	37.49	38.54	23.92	50.65	26.67	14.81	200.8	15.79	3.16	2.26	0.38
	Sed	11.077	0.229	1.4748	0.438	0.8731	1.016	1.1297	1.192	1.731	1.113	3.617	6.784	.59	.261	0.371	0.013
	CD (0.05)	23.1	0.48	3.08	0.84	1.82	2.12	2.36	2.49	3.61	2.32	0.75	14.15	1.23	0.54	0.08	0.03
	CD (0.01)	31.52	0.65	4.2	1.15	2.48	2.89	3.21	3.39	4.92	3.17	1.03	19.30	1.68	0.74	0.10	0.04
	CV (per cent)	2.58	6.77	3.23	7.44	8.06	2.71	2.93	4.98	3.42	4.18	2.44	3.38	3.38	8.26	1.64	3.65

Table 4: Score chart for sponge gourd genotypes based on their mean performance.

Sr. No.	Genotype	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}	X_{15}	X_{16}	Score
1.	L.C-1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1
2.	L.C-3	1	-	-	1	1	-	-	1	-	-	-	-	-	-	1	-	5
3.	L.C-4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2
4.	L.C-5	-	-	-	1	1	-	-	-	-	-	1	-	-	-	-	-	3
5.	L.C-6	1	-	-	1	-	-	-	1	1	-	-	-	-	-	-	-	4
6.	L.C-7	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
7.	L.C-8	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	2
8.	L.C-9	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	2
9.	L.C-10	1	-	-	1	-	-	-	-	1	1	1	1	-	-	-	-	6
10.	L.C-11	1	-	-	1	1	-	-	-	-	-	1	-	-	-	1	-	5
11.	L.C-12	1	-	-	1	1	1	1	-	1	-	-	1	-	-	-	-	7
12.	**L.C-13**	**1**	**1**	**-**	**1**	**-**	**1**	**1**	**-**	**-**	**1**	**-**	**1**	**1**	**-**	**1**	**1**	**10**
13.	L.C-14	-	-	-	-	-	-	-	-	1	-	1	-	-	-	1	-	3
14.	Phule Prajaktha	-	1	-	-	-	-	1	1	-	-	1	-	1	1	-	-	6
15.	Kalyanpur Hari Chikani	-	-	1	-	-	1	-	1	-	-	1	-	-	1	-	-	5
16.	Kashi Rakshita	-	1	1	-	1	-	-	1	-	1	1	-	-	1	1	-	8
17.	**Pusa Sneha**	**-**	**1**	**1**	**1**	**-**	**-**	**1**	**1**	**-**	**1**	**-**	**1**	**1**	**-**	**-**	**1**	**9**
18.	Pusa Chikni	-	-	1	-	-	1	-	1	1	1	-	-	-	-	-	-	5
19.	Kashi Divya	-	-	1	-	-	1	-	-	-	-	-	-	-	-	1	-	3
20.	Pusa Supriya	-	-	1	-	-	-	-	-	1	-	-	1	-	-	-	-	3
21.	**Kashi Shreya**	**-**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**-**	**1**	**-**	**1**	**1**	**1**	**-**	**1**	**12**

X_1 Vine length	X_5 Node of first pistillate flower	X_9 Days to first fruit harvest	X_{13} Number of fruits vine $^{-1}$
X_2 Number of primary branches vine^{-1}	X_6 Days to first staminate flower anthesis	X_{10} Fruit length	X_{14} Total Soluble Solids
X_3 Number of nodes vine $^{-1}$	X_7 Days to first pistillate flower anthesis	X_{11} Fruit girth	X_{15} Crude fibre
X_4 Node of first staminate flower	X_8 Sex ratio	X_{12} Individual fruit weight	X_{16} Fruit yield vine^{-1}

CONCLUSIONS

Ranking based on *per se* performance, revealed that the genotype Kashi Sheya was the best among the 21 genotypes evaluated. It recorded better performance for number of primary branches vine^{-1} (6.31), number of nodes vine^{-1} (48.42), node of first staminate flower (2.33), node of first pistillate flower (7.21), days to first staminate flower anthesis (26.01), days to first pistillate flower anthesis (28.82), sex ratio (18.83), fruit length (35.60), individual fruit weight (379.18), number of fruits vine^{-1} (23.82), total soluble solids (2.84) and fruit yield vine^{-1} (8.91).

The genotype Pusa Sneha which ranked second excelled in performance for the traits *viz*., sex ratio (11.61), number of fruits vine^{-1} (26.06), number of primary branches vine^{-1} (5.19), days to first pistillate flower anthesis (27.82), individual fruit weight (349.13), fruit yield vine^{-1} (23.82) and number of nodes vine $^{-1}$ (54.04).

The genotype L.C-13 which ranked third exceled in performance for the traits *viz*., crude fibre (0.57), node of first staminate flower (2.55), days to first staminate flower anthesis (29.29), number of primary branches vine^{-1} (4.61), individual fruit weight (338.23), fruit yield vine^{-1} (5.41).

The present study suggested that among the 21 sponge gourd genotypes evaluated, the genotype Kashi Shreya was found to be the best for yield and other yield related traits followed by Pusa Sneha and L.C-13. These genotypes can be further utilized in crop improvement programme for yield and other yield related traits in coastal region of Karaikal.

Acknowledgement. The authors gratefully acknowledge all the faculty members who have extended their support in exhibition of this field research.

Conflict of Interest. None.

REFERENCES

Bal, K. E., Bal, Y. and Lallam, A. (2004). Gross morphology and absorption capacity of cell-fibers from the fibrous vascular system of Loofah (*Luffa cylindrica*). *Textile research journal*, *74*(3), 241-247.

Chauhan, V. B. S., Singh, D. K. and Choudhary, H. (2018). Studies on heterosis for yield and its contributing traits in sponge gourd (*Luffa cylindrica* Roem.). *International Journal of Current Microbiology and Applied Sciences*, *7*(12), 223-230.

Dias, J. S. (2012). Nutritional quality and health benefits of vegetables: A review. *Food and Nutrition Sciences*, *3*(10), 1354-1374.

Gopalan, C., Sastri, V., Balasubramanium, S. C., Rao, B. S. N., Dosthale Y. G. and Pant K. C. (1999). Nutritive value of Indian foods. Indian Council of Medical Research Technological Bulletin. National Institute of Nutrition, Hyderabad: 51.

Islam, S., Munshi, A. D., Kumar, R., Behera, T. K. and Lal, S. K. (2009). Evaluation of sponge gourd hybrids for yield and related traits. *Cucurbit Genetics Cooperative*, *31*(32), 34-35.

Kalloo, G. (1993). Loofah- *luffaspp* Genetic improvement of vegetable crops, pp. 265-266.

Kumar, R., Ameta, K. D., Dubey, R. B. and Pareek, S. (2013). Genetic variability, correlation and path analysis in sponge gourd (*Luffa cylindrica* Roem.). *African Journal of Biotechnology*, *12*(6), 539-543.

Kumar, J. S., Pandit, M. K. and Pathy, T. L. (2019). Genetic variability, diversity and character association in sponge gourd [*Luffa cylindrica* (Roem.) L. *International Journal of Current Microbiology and Applied Sciences*, *8*(3), 278-290.

Mohan, L. (2005). Heterosis and combining ability studies in bitter gourd (*Momordica charantia* L.). *M.Sc.(Ag) thesis, University of agricultural sciences, Dharwad, 104p*.

Manoj, Y. B., Lakshmana, D., Shashikala, S. K. and Chandana, B. C. (2018). Assessment of genetic diversity and variability in ridge gourd for growth and yield parameters. *Green farming*, *9*(2), 239-243.

Panse, V. G. and Sukhatme, P. V. (1978). Statistical Methods for Agricultural Workers. ICAR, New Delhi, India. Pp. 252-254.

Singh, S., Singh, V. B. and Tyagi, N. (2019). Studies on genetic variability of sponge gourd genotypes. *Journal of Pharmacognosy and Phytochemistry*, *8*(1), 2554-2557.

Som, I. (2018). Genetic variability and character association studies in sponge gourd (*Luffa cylindrica* L. Roem.) for yield and its attributing traits. M.Sc. (Hort.) Thesis, Indira Gandhi Krishi Vishwavidyalaya, Raipur (Chhattisgarh) 1-9.

How to cite this article: Sivabharathy B., V. Kanthaswamy, V. Sundaram, V. Krishnan and M. Manikandan (2023). Studies on *per se* Performance of Sponge Gourd Genotypes (*Luffa cylindrica* L.) for Growth and Yield Attributes. *Biological Forum – An International Journal, 15*(9): 28-33.