



A note on morphological characterization of brinjal (*Solanum melongena* L.) genotypes

H. R. PARIDA, J. MANDAL AND S. MOHANTA

Department of Horticulture and Post-Harvest Technology,
Institute of Agriculture, Visva-Bharati (A Central University),
Sriniketan - 731236 West Bengal, India

Received : 20.07.2019 ; Revised : 01.06.2020 ; Accepted: 12.06.2020

DOI: <https://doi.org/10.22271/09746315.2020.v16.i1.1302>

ABSTRACT

Thirty five brinjal genotypes were assessed and characterized using descriptors of Biodiversity International for nine vegetative, two flowering and nine fruiting traits under red and laterite zone of West Bengal. A considerable variation was noted among the genotypes for different characters. Most of the genotypes showed upright growth habit and no prickles on leaf. Wide variation was noted in corolla colour and flowers per inflorescence. Variation was also observed in prickles on fruit calyx and fruit pedicel. However, most of the genotypes had no curvature on fruit and majority of the genotypes produced single fruit per cluster.

Keywords : Flowering, fruiting, *Solanum melongena*, Solanaceae, West Bengal.

Brinjal (*Solanum melongena* L.) belongs to the family Solanaceae and is a native of India (Vavilov, 1931). It is one of the popular vegetable grown in India and other parts of the world. Globally India is the second largest producer of brinjal next to China. In 2016-17, 12399.9 thousand MT brinjal was produced from an area of 668.7 thousand ha with a productivity of 18.5 MT ha⁻¹ (Department of Agriculture, Cooperation & Farmers Welfare, 2017). Brinjal plant is erect, semi-erect or prostrate, herbaceous and branched. Flowers are pentamerous, hermaphrodite and mostly solitary. The fruits are fleshy berry, pendent and borne singly or in clusters. It is a self-pollinated plant but cross pollination also occur due to the presence of heterostyly. So it is regarded as an often-cross pollinated crop (Thamburaj and Singh, 2001; Bose *et al.*, 2002). Characterization of accessions is done by recording and compilation of data of important morphological crop characters. It assures the maximum utilization of germplasm collection to the final users and also helps in distinguishing accessions within a species. It provides a better insight on the composition of the collection with its genetic diversity by allowing grouping of accessions, development of core collections, and identification of valuable germplasm for breeding programmes. Different morphological studies are very much important for characterization and classification of germplasm (Agdagwa and Nadukwa, 2004; Sudre *et al.*, 2010). Characterization of genotypes is helpful for identification of superior genotypes which can be further utilized in breeding program. Keeping the above information in mind the present study was conducted to access the brinjal genotypes using descriptors of IBPGR.

The present investigation was carried out at Horticultural Farm of Institute of Agriculture, Sriniketan during *kharif* season of 2018-19. The study consists of 35 genotypes of brinjal grown in Randomized Block Design with 3 replications. Thirty days old seedlings were transplanted at a spacing of 75 x 75cm in main field. Five plants were randomly tagged from each treatment and replication for observation recording. Different morphological observation like plant growth habit, leaf blade length, leaf blade width, leaf blade lobing, leaf blade colour, leaf blade tip angle, leaf prickles, petiole length, petiole colour, corolla colour, flowers per inflorescence⁻¹, fruit calyx length, fruit calyx prickles, fruit pedicel length, fruit pedicel thickness, fruit pedicel prickles, fruit colour at commercial ripeness, fruit curvature, fruit apex shape and fruits cluster⁻¹ has been recorded. The plant growth habit and other vegetative characters were observed on fully grown plant and the flower characters were observed while flowering started. Fruit characters were recorded at marketable stage. The morphological characterization data were recorded using descriptors of the International Board for Plant Genetic Resources (presently Biodiversity International (<https://www.biodiversityinternational.org/e-library/publications/detail/descriptors-for-eggplant-descripteurs-pour-laubergine/>)).

Morphological characterization is considered as the first step for description and classification of genetic resources. A considerable variation was noted among 35 brinjal genotypes for different characters. The results obtained from the experiment have been described here.

Short communication

Email : joydip.mondal@visva-bharati.ac.in

Vegetative characters

Brinjal plant is herbaceous and it is mainly upright in nature. It has branched tap root system. Different vegetative characters of the brinjal genotypes were studied and discussed below (Table 1). Based on plant growth habit the 35 genotypes were divided into three group *viz.*, upright, intermediate and prostrate. Twenty six genotypes showed upright growth habit; whereas eight genotypes had intermediate growth habit. However, only one genotype had prostrate growth habit. Shekar *et al.* (2013) grouped the brinjal plants into upright and intermediate. They stated that the plant growth habit used for identification of variety in brinjal. Islam *et al.* (2018) saw 48% intermediate, 45% upright and 7% prostrate growth habit at vegetative stage among the studied genotypes. As per leaf blade length brinjal genotypes were divided into two group *viz.*, intermediate and short. Thirty genotypes had intermediate leaf blade length while five genotypes showed short leaf blade length. Similarly, on the basis of leaf blade width, the genotypes were divided into three types *viz.*, wide, intermediate and narrow. Twenty eight genotypes had intermediate leaf blade width whereas five genotypes showed wide leaf blade width. On the other hand, narrow leaf blade width showed only in two genotypes. Kumar *et al.* (2008) found significant variation in leaf blade length and width in brinjal. The brinjal genotypes were distributed into three type *viz.*, strong, intermediate and weak, based on leaf blade lobing. Strong leaf blade lobing showed in 24 genotypes while nine genotypes had intermediate leaf blade lobing. Weak leaf blade lobbing showed only in two genotypes. Islam *et al.* (2018) reported 60% weak, 37% intermediate and 3% strong leaf blade lobbing in brinjal. As per leaf blade colour five genotypes had light green, six genotypes had green, 17 genotypes had dark green, two genotypes had violet and other five genotypes had greenish violet colour. Twenty four genotypes had acute leaf blade tip angle followed by intermediate leaf blade tip angle, which include nine genotypes; while one genotype each had obtuse and very acute leaf blade tip angle. Islam *et al.* (2018) observed 62% acute, 33% very acute and 5% intermediate leaf blade tip angle in brinjal. Dash *et al.* (2019) noticed acute leaf blade tip angle in many brinjal genotypes. On the basis of leaf prickle, genotypes of brinjal were placed into four groups. Thirty two had no prickles on leaf; whereas one genotype each had few, intermediate and many prickles on leaf. Islam *et al.* (2018) reported that leaf prickles were absent in 25% genotypes whereas the remaining genotypes produced 40% very few, 25% few and 5% both intermediate and many prickles. Dash *et al.* (2019) noted prickles in stem, petiole, calyx including peduncle and leaf including veins in brinjal. It was found that 25 genotypes had intermediate, six genotypes had long and four genotypes had short petiole length. Significant variation in petiole length in brinjal has reported by

Kumar *et al.* (2008). Wide colour variation (green, greenish violet, violet, dark violet, dark brown) were noted among the studied genotypes for petiole colour. Seven genotypes had green, 13 genotypes had greenish violet, three genotypes had violet, eight genotypes had dark violet and other four genotypes had dark brown petiole colour.

Flowering characters

The inflorescence of brinjal is solitary, axillary, umbellate cyme or helicoid cyme. The flower is bracteate or ebracteate, pedicellate, complete, actinomorphic, pentamerous and hypogynous. Dash *et al.* (2019) reported three flowering patterns (solitary, cyme and mixed) in brinjal. Brinjal flowers are divided into four types based on the length of style. These are long styled, medium styled, short styled and pseudo-short styled (Thamburaj and Singh, 2001). The flowering characters of the studied genotypes have been given in table 2. It was noted that four genotypes had pale violet, 15 genotypes had light violet and 16 genotypes had bluish violet corolla colour. Islam *et al.* (2018) found 53% light violet, 37% bluish violet and 10% pale violet flowers among all brinjal genotypes. On the other hand, studying 110 brinjal genotypes Dash *et al.* (2019) noted purple colour flowers in 61 genotypes, purple white colour flowers in 30 genotypes and white colour flowers in 19 genotypes. Similarly, twenty one genotypes showed solitary flowering habit, one genotype had 1 to 2 flowers, seven genotypes had 2 to 3 flowers, three genotypes had 3 to 4 flowers, two genotypes had 4 to 5 flowers and one genotype had 5 to 6 flowers inflorescence¹.

Fruiting characters

The fruit type of brinjal is berry. In West Bengal, long / oblong fruits having purple / black and light green surface colour are mostly preferred. Different fruiting characters of the studied brinjal genotypes have been given in table 3. The brinjal genotypes were divided into two groups, very short fruit calyx length (18 genotypes) and short fruit calyx length (17 genotypes). Kumar *et al.* (2008) found significant variation in fruit calyx length in brinjal. On the basis of fruit calyx prickles, brinjal genotypes were classified into five group *viz.*, none, very few, few, intermediate and many. Fifteen genotypes showed no prickles on fruit calyx, four genotypes had very few calyx prickles, five genotypes had few fruit calyx prickles, nine genotypes had intermediate prickles on fruit calyx and rest two genotypes had many prickles on fruit calyx. Among the genotypes, the long fruit pedicel length was registered in 24 genotypes while nine genotypes had very long fruit pedicel length. Intermediate fruit pedicel length was found only in two genotypes. Kumar *et al.* (2008) reported significant variation in fruit pedicel length in brinjal. Twenty brinjal genotypes showed thick fruit pedicel, 11 showed very thick fruit pedicel and 4 showed intermediate fruit pedicel

Table 1: Characterization of brinjal genotypes based on vegetative characters

Characteristics	State of expression	Example genotypes
Plant growth habit	Upright	Special Bhangar Brinjal, Brinjal Amrapali, Naveen SGS-2, Muktakeshi-2, Brinjal Blue Star, Muktakeshi-1, Muktakeshi-4, Pusa Purple Round, Pusa Anupam, Pusa Purple Cluster, Local-7, Local-2, Local-1, Local-3, Local-5, Local-4, Local-6, Green 20/20, Makra, Dark Purple, Long Purple, Long White, Mini, Bhangar, Rajgao, Muktakeshi-5
	Intermediate	Pant Samrat, Pusa Ankur, Pusa Bhairav, Pusa Upkar, Pusa Purple Long, Teispur Long, Kalo Sayla, BR-112
	Prostrate	Utkal Anushree
Leaf blade length	Intermediate	Special Bhangar Brinjal, Brinjal Amrapali, Naveen SGS-2, Muktakeshi-2, Pant Samrat, Brinjal Blue Star, Muktakeshi-1, Muktakeshi-4, Pusa Purple Round, Pusa Ankur, Pusa Bhairav, Pusa Purple Long, Local-7, Local-2, Local-1, Local-3, Local-5, Local-6, Teispur Long, Green 20/20, Makra, Dark Purple, Long Purple, Long White, Mini, Bhangar, Kalo Sayla, Rajgao, BR-112, Muktakeshi-5
	Short	Pusa Anupam, Pusa Upkar, Pusa Purple Cluster, Utkal Anushree, Local-4
Leaf blade width	Wide	Muktakeshi-2, Brinjal Blue Star, Muktakeshi-1, Mini, Kalo Sayla
	Intermediate	Special Bhangar Brinjal, Brinjal Amrapali, Naveen SGS-2, Pant Samrat, Muktakeshi-4, Pusa Purple Round, Pusa Ankur, Pusa Bhairav, Pusa Purple Long, Pusa Purple Cluster, Utkal Anushree, Local-7, Local-2, Local-1, Local-3, Local-5, Local-4, Local-6, Teispur Long, Green 20/20, Makra, Dark Purple, Long Purple, Long White, Bhangar, Rajgao, BR-112, Muktakeshi-5
	Narrow	Pusa Anupam, Pusa Upkar
Leaf blade lobing	Strong	Special Bhangar Brinjal, Brinjal Amrapali, Muktakeshi-2, Brinjal Blue Star, Muktakeshi-1, Muktakeshi-4, Pusa Purple Round, Pusa Bhairav, Pusa Upkar, Pusa Purple Long, Pusa Purple Cluster, Utkal Anushree, Local-1, Local-3, Local-4, Local-6, Green 20/20, Makra, Dark Purple, Mini, Bhangar, Kalo Sayla, Rajgao, Muktakeshi-5
	Intermediate	Naveen SGS-2, Pant Samrat, Pusa Ankur, Local-7, Local-2, Local-5, Teispur Long, Long White, BR-112
	Weak	Pusa Anupam, Long Purple
Leaf blade colour	Light green	Special Bhangar Brinjal, Naveen SGS-2, Pant Samrat, Pusa Ankur, BR-112
	Green	Brinjal Amrapali, Muktakeshi-2, Pusa Anupam, Local-2, Local-3, Local-6
	Dark green	Brinjal Blue Star, Muktakeshi-1, Muktakeshi-4, Pusa Purple Round, Pusa Bhairav, Pusa Upkar, Pusa Purple Long, Utkal Anushree, Local-5, Teispur Long, Green 20/20, Makra, Dark Purple, Long Purple, Long White, Bhangar, Rajgao
	Violet	Pusa Purple Cluster, Kalo Sayla
Leaf blade tip angle	Greenish violet	Local-7, Local-1, Local-4, Mini, Muktakeshi-5
	Very acute	Pusa Anupam
	Acute	Special Bhangar Brinjal, Brinjal Amrapali, Naveen SGS-2, Pant Samrat, Brinjal Blue Star, Muktakeshi-1, Muktakeshi-4, Pusa Purple Round, Pusa Ankur, Pusa Bhairav, Pusa Purple Long, Local-7, Local-3, Local-5, Local-4, Teispur Long, Makra, Long Purple, Long White, Mini, Rajgao, BR-112, Muktakeshi-5
Leaf prickle	Intermediate	Muktakeshi-2, Pusa Purple Cluster, Utkal Anushree, Local-2, Local-1, Local-6, Green 20/20, Dark Purple, Bhangar
	Obtuse	Kalo Sayla
	None	Special Bhangar Brinjal, Brinjal Amrapali, Naveen SGS-2, Muktakeshi-2, Pant Samrat, Brinjal Blue Star, Muktakeshi-1, Muktakeshi-4, Pusa Purple Round, Pusa Ankur, Pusa Anupam, Pusa Bhairav, Pusa Upkar, Pusa Purple Long, Pusa Purple Cluster, Utkal Anushree, Local-7, Local-1, Local-3, Local-5, Local-4, Teispur Long, Green 20/20, Makra, Dark Purple, Long White, Mini, Bhangar, Kalo Sayla, Rajgao, BR-112, Muktakeshi-5

Contd.

Characteristics	State of expression	Example genotypes
Petiole length	Few	Local-2
	Intermediate	Long Purple
	Many	Local-6
	Long	Brinjal Amrapali, Muktakeshi-2, Teispur Long, Dark Purple, Long White, Muktakeshi-5
Petiole colour	Intermediate	Special Bhangar Brinjal, Naveen SGS-2, Brinjal Blue Star, Muktakeshi-1, Muktakeshi-4, Pusa Purple Round, Pusa Ankur, Pusa Bhairav, Pusa Upkar, Pusa Purple Long, Pusa Purple Cluster, Utkal Anushree, Local-7, Local-2, Local-1, Local-3, Local-5, Local-4, Local-6, Green 20/20, Makra, Long Purple, Mini, Bhangar, Kalo Sayla
	Short	Pant Samrat, Pusa Anupam, Rajgao, BR-112
	Green	Pusa Purple Long, Utkal Anushree, Local-3, Local-6, Green 20/20, Makra, Long Purple
	Greenish violet	Special Bhangar Brinjal, Brinjal Amrapali, Naveen SGS-2, Pant Samrat, Muktakeshi-1, Pusa Ankur, Pusa Anupam, Local-7, Local-2, Long White, Mini, Kalo Sayla, BR-112
	Violet	Muktakeshi-2, Brinjal Blue Star, Bhangar
	Dark violet	Muktakeshi-4, Pusa Purple Round, Pusa Bhairav, Pusa Upkar, Local-1, Local-4, Teispur Long, Rajgao
	Dark brown	Pusa Purple Cluster, Local-5, Dark Purple, Muktakeshi-5

Table 2: Characterization of brinjal genotypes based on flower characters

Characteristics	State of expression	Example genotypes
Corolla colour	Pale violet	Muktakeshi-2, Pant Samrat, Pusa Purple Cluster, Bhangar
	Light violet	Special Bhangar Brinjal, Naveen SGS-2, Muktakeshi-1, Pusa Purple Round, Pusa Ankur, Pusa Upkar, Pusa Purple Long, Utkal Anushree, Local-2, Local-5, Local-4, Green 20/20, Long White, Mini, Kalo Sayla
	Bluish violet	Brinjal Amrapali, Brinjal Blue Star, Muktakeshi-4, Pusa Anupam, Pusa Bhairav, Local-7, Local-1, Local-3, Local-6, Teispur Long, Makra, Dark Purple, Long Purple, Rajgao, BR-112, Muktakeshi-5
Flowers inflorescence ⁻¹	1	Special Bhangar Brinjal, Naveen SGS-2, Muktakeshi-2, Muktakeshi-1, Muktakeshi-4, Pusa Purple Round, Pusa Bhairav, Local-1, Local-3, Local-5, Local-4, Local-6, Makra, Dark Purple, Long Purple, Mini, Bhangar, Kalo Sayla, Rajgao, BR-112, Muktakeshi-5
	1-2	Pusa Ankur
	2-3	Brinjal Amrapali, Brinjal Blue Star, Pusa Upkar, Pusa Purple Long, Local-7, Teispur Long, Green 20/20
	3-4	Pusa Anupam, , Local-2, Long White
	4-5	Pant Samrat, Utkal Anushree
	5-6	Pusa Purple Cluster

Table 3: Characterization of brinjal genotypes based on fruit characters

Characteristics	State of expression	Example genotypes
Fruit calyx length	Very short	Special Bhangar Brinjal, Brinjal Amrapali, Naveen SGS-2, Pant Samrat, Brinjal Blue Star, Pusa Anupam, Pusa Bhairav, Pusa Purple Long, Pusa Purple Cluster, Utkal Anushree, Local-7, Local-3, Local-5, Teispur Long, Green 20/20, Makra, Long White, Bhangar
	Short	Muktakeshi-2, Muktakeshi-1, Muktakeshi-4, Pusa Purple Round, Pusa Ankur, Pusa Upkar, Local-2, Local-1, Local-4, Local-6, Dark Purple, Long Purple, Mini, Kalo Sayla, Rajgao, BR-112, Muktakeshi-5
Fruit calyx prickles	None	Brinjal Amrapali, Naveen SGS-2, Pant Samrat, Brinjal Blue Star, Muktakeshi-4, Pusa Ankur, Pusa Anupam, Pusa Bhairav, Pusa Purple Long, Pusa Purple Cluster, Utkal Anushree, Local-7, Teispur Long, Long White, BR-112

Characteristics	State of expression	Example genotypes
Fruit pedicel length	Very few	Special Bhangar Brinjal, Muktakeshi-1, Pusa Purple Round, Pusa Upkar
	Few	Local-2, Local-1, Local-3, Green 20/20, Dark Purple
	Intermediate	Muktakeshi-2, Local-5, Local-4, Makra, Long Purple, Mini, Bhangar, Kalo Sayla, Muktakeshi-5
	Many	Local-6, Rajgao
	Intermediate	Pusa Anupam, Pusa Upkar
Fruit pedicel thickness	Long	Brinjal Amrapali, Pant Samrat, Brinjal Blue Star, Muktakeshi-1, Muktakeshi-4, Pusa Purple Round, Pusa Ankur, Pusa Bhairav, Pusa Purple Long, Pusa Purple Cluster, Utkal Anushree, Local-2, Local-1, Local-3, Local-5, Local-4, Local-6, Teispur Long, Green 20/20, Makra, Dark Purple, Kalo Sayla, Rajgao, BR-112
	Very long	Special Bhangar Brinjal, Naveen SGS-2, Muktakeshi-2, Local-7, Long Purple, Long White, Mini, Bhangar, Muktakeshi-5
	Thick	Intermediate Pant Samrat, Pusa Anupam, Pusa Purple Cluster, Utkal Anushree Special Bhangar Brinjal, Brinjal Amrapali, Naveen SGS-2, Brinjal Blue Star, Muktakeshi-4, Pusa Ankur, Pusa Bhairav, Pusa Upkar, Pusa Purple Long, Local-7, Local-2, Local-3, Teispur Long, Makra, Long Purple, Long White, Mini, Bhangar, Rajgao, Muktakeshi-5
Fruit pedicel prickles	Very thick	Muktakeshi-2, Muktakeshi-1, Pusa Purple Round, Local-1, Local-5, Local-4, Local-6, Green 20/20, Dark Purple, Kalo Sayla, BR-112
	None	Brinjal Amrapali, Naveen SGS-2, Pant Samrat, Brinjal Blue Star, Muktakeshi-4, Pusa Ankur, Pusa Anupam, Pusa Bhairav, Pusa Upkar, Pusa Purple Long, Pusa Purple Cluster, Utkal Anushree, Local-7, Teispur Long, Long White, BR-112
Fruit colour at commercial ripeness	Very few	Muktakeshi-2, Muktakeshi-1, Pusa Purple Round, Local-2, Local-1, Green 20/20
	Few	Special Bhangar Brinjal, Local-3, Dark Purple, Mini, Muktakeshi-5
	Intermediate	Local-5, Local-4, Makra, Long Purple, Bhangar, Kalo Sayla, Rajgao
	Many	Local-6
	Green	Purple Brinjal Amrapali, Muktakeshi-2, Pant Samrat, Brinjal Blue Star, Muktakeshi-1, Muktakeshi-4, Pusa Purple Round, Pusa Ankur, Pusa Anupam, Pusa Bhairav, Pusa Upkar, Pusa Purple Long, Pusa Purple Cluster, Local-2, Local-5, Local-4, Dark Purple, Long Purple, Kalo Sayla, Rajgao, BR-112, Muktakeshi-5
Fruit curvature	Greenish with white surface	Naveen SGS-2, Utkal Anushree, Local-7, Local-6, Teispur Long, Green 20/20, Makra, Long White
	None	Special Bhangar Brinjal, Local-1, Local-3, Mini, Bhangar Brinjal Amrapali, Naveen SGS-2, Muktakeshi-2, Brinjal Blue Star, Muktakeshi-1, Muktakeshi-4, Pusa Purple Round, Pusa Ankur, Pusa Anupam, Pusa Bhairav, Pusa Upkar, Pusa Purple Cluster, Utkal Anushree, Local-2, Local-1, Local-3, Local-4, Local-6, Teispur Long, Green 20/20, Makra, Dark Purple, Long Purple, Bhangar, Kalo Sayla, Rajgao, BR-112, Muktakeshi-5
	Slightly curved	Special Bhangar Brinjal, Pant Samrat, Local-5, Mini
Fruit apex shape	Curved	Pusa Purple Long, Local-7, Long White
	Protruded	Brinjal Blue Star, Muktakeshi-1, Muktakeshi-4, Pusa Purple Round, Pusa Ankur, Pusa Bhairav, Local-2, Local-3, Green 20/20, Dark Purple, Long Purple, Kalo Sayla, Rajgao, BR-112, Muktakeshi-5
	Rounded	Special Bhangar Brinjal, Utkal Anushree, Local-1, Local-5, Local-4, Makra, Mini, Bhangar
	Depressed	Brinjal Amrapali, Naveen SGS-2, Muktakeshi-2, Pant Samrat, Pusa Anupam, Pusa Upkar, Pusa Purple Long, Pusa Purple Cluster, Local-7, Local-6, Teispur Long, Long White
Fruits cluster ¹	1	Special Bhangar Brinjal, Brinjal Amrapali, Naveen SGS-2, Muktakeshi-2, Muktakeshi-1, Muktakeshi-4, Pusa Purple Round, Pusa Ankur, Pusa Bhairav, Pusa Upkar, Pusa Purple Long, Local-7, Local-2, Local-1, Local-3, Local-5, Local-4, Local-6, Green 20/20, Makra, Dark Purple, Long Purple, Mini, Bhangar, Kalo Sayla, Rajgao, BR-112, Muktakeshi-5
	1-2	Brinjal Amrapali, Pant Samrat, Teispur Long, Long White
	2-3	Pusa Anupam
	4-5	Utkal Anushree
	5-6	Pusa Purple Cluster

thickness. Similarly, sixteen brinjal genotypes had no prickles on fruit pedicel, six genotypes had very few prickles, five genotypes had few prickles, seven genotypes had intermediate prickles and only one genotype had many prickles on fruit pedicel. The brinjal genotypes showed wide fruit surface colour variation (purple, green and greenish with white) at commercial ripeness. Twenty two genotypes had purple colour, eight genotypes had green colour and five genotypes had greenish with white colour. The variations in fruits colour was also reported by Tumbe *et al.* (1992); Singh *et al.* (1999) and Shinde *et al.* (2012) and Solaimen *et al.* (2014). Dash *et al.* (2019) divided the brinjal fruits into six colour group *i.e.* green (37.27%), purple (25.45%), milky white (13.62%) purple black (12.72%), light purple or liliac grey (9.09%) and scarlet red (1.08%). It was noticed that twenty eight genotypes had no curvature on fruit, four genotypes showed slightly curved fruit and three genotypes had curved fruit. Solaimen *et al.* (2014) and Islam *et al.* (2018) reported sickle shaped, snaked shaped, curved and U shaped brinjal fruits along with fruits with no curvature. Brinjal genotypes were distributed into three types, protruded (15 genotypes), rounded (eight genotypes) and depressed (12 genotypes) on the basis of fruit apex shape. Islam *et al.* (2018) reported that 38, 34 and 28% of brinjal genotypes had depressed, rounded and protruded types of fruit apex shape respectively. Twenty eight genotypes produced single fruits, four genotypes produced 1 to 2 fruits, one genotype produced 2 to 3 fruits, one genotype produced 4 to 5 fruits and one genotype produced 5 to 6 fruits cluster¹. Solaimen *et al.* (2014) observed that many genotypes had solitary fruit bearing habit (28) and few had cluster bearing habit (7).

In the present experiment 35 genotypes of brinjal were differently grouped for 20 characters. It showed that considerable variation was present among the studied genotypes. Characterization plays a vital role to maintain the genetic purity of a genotype. The genotypes with good horticultural characteristics can be utilized in crop breeding programme for development of superior genotypes. The present study would be highly useful to the brinjal researchers of Red and Laterite Zone of West Bengal.

REFERENCES

- Agdagwa, I.O. and Nadukwa, B.C. 2004. The value of morpho-anatomy features in the systematics of *Cucurbita* L. (Cucurbitaceae) species in Nigeria. *African J. Biotech.*, **3**: 541-46.
- Bose, T.K., Kabir, J., Maity, T.K., Parthasarathy, V.A. and Som, M.G. 2002. *Vegetable Crops*. Naya Prokash, Calcutta, **1**: pp 269.
- Dash, S.P., Singh, J. and Sharma, D. 2019. Morphological characterization of brinjal (*Solanum melongena* L.) germplasm. *J. Pharmacogn. Phytochem.*, **8**(2): 1574-78.
- Department of Agriculture, Cooperation & Farmers Welfare. 2017. Horticulture Statistics at a Glance. Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture and Farmers Welfare, Government of India, pp: 149 &196.
- <https://www.biodiversityinternational.org/e-library/publications/detail/descriptors-for-eggplant-descripteurs-pour-laubergine/>.
- Islam, M.T., Chhanda, R.A., Pervin, N., Hossain, M.A. and Chowdhury, R.U. 2018. Characterisation and genetic diversity of brinjal germplasm. *Bangladesh J. Agril. Res.*, **43**(3): 499-512.
- Kumar, G., Meena, B.L., Kar, R., Tiwari, S.K., Gangopadhyay, K.K., Bisht, I.S. and Mahajan, R.K. 2008. Morphological diversity in brinjal (*Solanum melongena* L.) germplasm accessions. *Plant Genet. Resour.: Characterization and Util.*, **6**: 232-36.
- Shekar, C.K., Ashok, P. and Sasikala, K. 2013. Characterization, character association and path coefficient analyses in eggplant. *Inter. J. Veg. Sci.* **19**: 45-47.
- Shinde, K.G., Bhalekar, M.N. and Patil, B.T. 2012. Characterization of brinjal (*Solanum melongena* L.) germplasm. *Veg. Sci.*, **39**: 186-88.
- Singh, N., Singh, G. and Kalda, T.S. 1999. Genetic diversity in brinjal. *IPGRI Newsletter Asia, the Pacific & Oceania*, **29**: 22.
- Solaiman, A.H.M., Nishizawa, T., Khatun, M. and Ahmad, S. 2014. Morphological characterization and genetic diversity studies of promising brinjal genotypes for hybridization program in Bangladesh. *J. Adv. Agric.*, **3**(3): 218-28.
- Sudre, C.P., Goncalves, L.S.A., Rodrigues R., Amaral A.T. Jr, Riva-Souza, E.M., Dos, S. and Bento, C. 2010. Genetic variability in domesticated *Capsicum* spp. As assessed by morphological and agronomic data in mixed statistical analysis. *Genet. Mole. Res.*, **9**: 283-94.
- Thamburaj, S. and Singh, N. 2001. *Vegetables, Tubercrops and Spices*. Directorate of Knowledge Management in Agriculture, Indian Council of Agricultural Research, New Delhi, pp: 30-32.
- Tumbe, T.B., Reme, D.A. and Kale, P.N. 1992. Genetic diversity in brinjal (*Solanum melongena* L.). *Maharashtra J. Hort.*, **6**: 61-65.
- Vavilov, N.I. 1931. The role of central Asia in the origin of cultivated plants. *Bull. Appl. Bot. Genet. Plant Breed.*, **26**(3): 43-44.