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CHARACTERIZATION OF GENETIC RESOURCES AND IDENTIFICATION OF SUITABLE BRINJAL (*SOLANUM MELONGENA* L.) GENOTYPES IN MALWA PLATEAU REGION OF MADHYA PRADESH

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ABSTRACT

A field experiment was conducted to assessment of yield potential brinjal genotypes for commercial production in western part of Madhya Pradesh. Among the diverse 15 genotypes, Pusa Purple Cluster was recorded significantly higher potential in most of traits *viz.,* highest plant height at 90 DAT(92.5cm), number of branches plant^{-1}at 90 DAT (19.9cm), leaves plant^{-1}at 90 DAT(115.3), leaf length at 90 DAT(13.4cm), fresh weight plant^{-1}(997.8g),dry weight plant^{-1}(239.9 g), LAI(3.70), highest (6.65mg/cm/day) NAR was found in Shilpa F_1 hybrid, (6.59mg/cm^2/day), (0.25g/m^2/day) CGR was found in genotype Pusa Purple Cluster. Pusa Purple Cluster was observed significantly superior which recorded number of fruits plant^{-1}(24.6)followed by Green Express-666 (19.5),Genotype Kanahiya was maximum in fruit weight(166.3 g) followed by Vijay SGS-548(153.4 g), Genotype Pusa Purple Cluster was superior and gave maximum (36.2 t ha^{-1}) (1.856 kg plant^{-1}) Green Express-666 (F_1) (34.5t ha^{-1}), (1.75 kg plant^{-1}) fruit yield ha^{-1} and yield plant^{-1} respectively, maximum fruit yield of (36.25 t ha^{-1}) was obtained in brinjal variety Pusa Purple Cluster with net return of Rs. 319584 ha^{-1} and cost benefit ratio 1: 8.45 followed by Green Express-666 (F_1).

INTRODUCTION

Eggplant (*Solanum melongena* L.) commonly known as brinjal, belongs to family Solanaceae, is a popular vegetable crop grown in the tropics and sub-tropics. Brinjal is highly productive and fruits are fairly good source of Ca, P, Fe, and vitamins particularly 'B' group. In Madhya Pradesh the annual production is 585.79 thousand metric tonnes in an area of 33.82 thousand hectare with productivity of 17.32 tha^{-1}(Anon-2013).Ranajan and Chakrbarti (2003) reported in storage study that the maximum shelf life of 6 days was observed in Pusa Purple Long and Pusa Ankur. Suneetha *et al.* (2006) reported that the genetic stability of aubergine cultivars, significant mean squares due to genotypes and seasons were recorded for fruit yield, yield components, and quality and physiological characters. Jamil *et al.* (2006) reported that the cultivar and sowing date affected significantly the leaf area index (LAI), crop growth rate, relative growth rate (RGR) and net assimilation rate (NAR). Maximum plant height have been reported by Ashwani and Khandelwal (2003), Maharana *et al.* (2006), Kamani and Monpara (2007), Sao and Mehta (2009), Patel *et al.* (2011). Maximum branches plant^{-1}findings of Tripathi *et al.* (2009) and Patel *et al.* (2011). Maximum leaves plant^{-1} was recorded by Karak *et al.* (2012).Highest fresh weight plant^{-1}by Tripathi *et al.* (2009).Highest dry weight plant^{-1} results are in agreement by Ranajan and Chakrbarti (2003a) and Maharana *et al.* (2006).Significantly early days to first and 50 % flowering were recordedChattopadhyay *et al.* (2011), Kumar *et al.* (2011b), Kafytullah Indiresh and Santhosha (2011a), Kumar and Arumugam (2013), Kumar *et al.*(2013a). Maximum fruits plant^{-1}by Chattopadhyay *et al.* (2011), Kumar *et al.* (2011b), Chourasia and Sangeeta (2012), Kumar *et al.* (2013), and Balai *et al.* (2014).

Although there are so many varieties of brinjal available in local market but their performance has not been tested under Malwa plateau region of M.P., so for there is a great confusion regarding the selection of right variety of our condition due to poor knowledge on this aspect. Therefore there is basic need for identified high yield potential brinjal genotypes under specific agro-ecological condition of Western Madhya Pradesh.

MATERIALS AND METHODS

The present experiment was conducted at Vegetable Research Farm, Department of Horticulture, College of Agriculture, Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Indore during *Kharif* 2013-14 in Randomized Block Design with three

replications. The experimental materials for this study comprised 15 genotypes *viz.,* Pusa Purple Cluster, Kokila SGS-5219, Krishna SGS-519, Green Gold, Kanahiya, Krishna, Suruchi selection-10, Green Express-666 (F_1), Shilpa (F_1), Vijay SGS-548, Brinjal Round-112, Pusa purple long, Swarna, Jawahar Brinjal -64 and Muktakashi. Indore is situated in Malwa plateau region in the Western part of Madhya Pradesh having latitude 22.43ºN and longitude of 75.66ºE. It has subtropical climate having a temperature range of 21ºC to 45ºC and 6ºC to 31ºC in summer and winter seasons, respectively. The physico-chemical analysis of soil showed that the soil of experimental site was predominantly clayey in texture. The organic carbon content (0.26%) and available nitrogen (210.0 kg ha^{-1}) were low. The available phosphorus (12.6 kg ha^{-1}) and potash (425 kg ha^{-1}) were medium and high respectively. The soil pH was (7.8) slightly alkaline. Electrical conductivity (0.32 dS m^{-1}) of soil was found normal. The row to row spacing was 60 cm and plant to plant spacing was 30 cm.

The observations were recorded on 10 randomly selected plants from each genotype for morphological parameters *viz.,* plant height (cm), number of branches $plant^{-1}$, number of leaves $plant^{-1}$, leaf length (cm), fresh weight $plant^{-1}$ (g), dry weight $plant^{-1}$(g), growth analytical parameters, leaf area $plant^{-1}$ (cm^2), leaf area index (LAI), NAR (net assimilation rate),crop growth rate, phenological parameters *viz.,* days to flower bud initiation, days to first flowering , days to 50% flowering , number of flowers $plant^{-1}$,yield parameters *viz.,* number of fruits $plant^{-1}$,fruit diameter (cm),fruit length (cm) ,fruit weight (g), fruit yield $plant^{-1}$ (kg), fruit yield $hectare^{-1}$ (ha^{-1}), crop duration, quality parameters *viz.,* fruit colour (dark purple, purple, light green, green, black, whitish purple, whitish green), fruit shape(long, oval, round), fruit size (big, medium, small), storage capacity.

LAI is the leaf area (A) over a certain ground area (P) and is calculated by the formula given by (Watson, 1952), NAR was also worked out as per the formula given by (Watson, 1952). CGR are the rate of dry matter production (Blackman and Black, 1968), Computation of economics of treatments by Yang *et al.* (1989). Mean values were subjected to analysis of variance to test the significance for each character as per methodology advocated by Panse and Sukhatme (1985).

RESULTS AND DISCUSSION

Morphological parameters

The morphological parameters were studies in brinjal and presented in (Table1).At 30, 60 and 90 DAT, Pusa Purple Cluster was significantly maximum plant height followed by Green Express-666 (F_1) and Jawahar Brinjal-64. Similar results have been reported by Ashwani and Khandelwal (2003), Maharana *et al.* (2006), Kamani and Monpara (2007), Sao and Mehta (2009), Patel *et al.* (2011). At 30, 60 and 90 days after transplanting, genotype Pusa Purple Cluster was recorded in significantly maximum branches $plant^{-1}$followed by Green Express-666, Jawahar Brinjal-64 and Brinjal Round-112 as compared to other genotypes. However, it was observed lowest in genotype Muktakashi. These findings are in agreement with the findings of Tripathi *et al.* (2009) and Patel *et al.* (2011).In case of 30, 60 and 90 days after transplanting, the significantly

Table1: Morphological parameters of different genotypes of brinjal

		PH			NBPP			NLPP			LL			FWTPP			DWTP		
		30	60	90	30	60	90	30	60	90	30	60	90	30	60	90	30	60	90
X_1	Pusa Purple Cluster	28.33	50.50	92.53	5.11	8.56	19.99	9.30	32.40	115.3	8.88	13.01	13.47	107.9	168.47	997.83	22.15	33.90	239.92
X_2	Kokila SGS-5219	16.97	45.23	81.93	3.22	6.89	16.25	7.20	28.85	85.00	8.21	11.67	12.07	84.36	145.22	885.29	17.32	29.22	210.75
X_3	Krishna SGS-519	10.49	44.83	80.93	3.03	6.89	15.90	6.85	28.25	82.00	8.20	11.31	12.00	83.80	144.13	862.74	17.20	29.00	205.38
X_4	Green Gold	17.10	47.03	86.97	3.45	7.67	17.10	7.80	30.20	93.33	8.46	12.14	12.70	92.99	152.38	932.23	19.09	30.65	221.94
X_5	Kanahiya	15.89	44.53	78.10	2.68	6.56	14.45	5.70	26.65	71.00	7.50	11.05	11.69	72.56	131.39	800.62	14.88	26.43	190.58
X_6	Krishna	15.47	44.70	78.20	2.78	6.67	14.95	6.00	27.16	73.33	7.53	11.11	11.83	72.73	132.72	840.15	14.92	26.70	200.02
X_7	Suruchi selection-10	13.74	43.00	77.27	2.67	6.44	13.80	5.30	26.10	69.00	7.47	10.72	11.53	70.84	128.30	792.61	14.53	25.82	188.67
X_8	Green Express-666	18.43	50.40	90.03	4.00	8.55	19.30	8.95	31.90	108.3	8.85	12.65	13.47	104.4	162.49	986.37	21.43	32.70	234.79
X_9	Shilpa F_1 hybrid	16.30	44.73	80.10	2.79	6.79	15.35	6.40	27.75	77.67	7.64	11.21	11.94	80.33	141.32	851.05	16.49	28.43	202.60
X_{10}	Vijay SGS-548	17.10	47.00	84.37	3.22	7.33	16.85	7.60	29.35	90.00	8.32	11.83	12.60	88.78	150.09	907.96	18.22	30.20	216.15
X_{11}	Brinjal Round-112	17.47	48.43	87.67	3.53	7.88	17.95	8.20	30.52	99.00	8.55	12.43	12.71	95.02	156.20	940.17	19.50	31.43	223.82
X_{12}	Pusa purple long	13.23	40.20	71.37	2.66	5.66	13.20	4.90	25.55	66.67	7.45	10.69	11.51	60.61	120.88	719.78	12.43	24.32	171.34
X_{13}	Swama	13.30	38.67	70.70	2.03	4.89	12.15	4.50	24.20	61.33	7.31	10.64	10.95	60.23	120.30	707.12	12.35	24.20	168.32
X_{14}	Jawahar Brinjal-64	18.10	49.90	88.07	3.77	8.44	18.50	8.50	31.10	102.6	8.55	12.49	13.15	101.4	161.26	952.2	20.83	32.45	226.70
X_{15}	Muktakashi	9.19	31.63	66.83	1.99	4.10	11.30	4.10	23.70	59.67	7.01	10.59	10.39	47.77	107.98	696.23	9.80	21.70	165.73
	SEm±	0.50	0.54	0.64	0.24	0.21	0.06	0.05	0.28	0.41	0.27	0.25	0.23	0.52	1.08	2.40	0.08	0.23	0.47
	C.D.(P=0.05)	1.47	1.56	1.85	0.70	0.63	0.18	0.17	0.81	1.20	0.79	0.72	0.67	1.51	3.14	6.95	0.25	0.67	1.37

PH = plant height, NBPP = number of branches $plant^{-1}$, NLPP = number of leaves $plant^{-1}$, LL = leaf length, FWTPP = fresh weight of $plant^{-1}$, DWTP = dry weight of $plant^{-1}$.

Table 2: Growth analytical and Phenological parameters of different genotypes of brinjal

		(Growth Analytical parameters)								(Phenological parameters)			
		LAPP			LAI		NAR		CGR	DFBI	DFF	DFPF	NFPP
		30	60	90	30	60	90	30-60	60-90	30-60			
X_1	Pusa Purple Cluster	697.48	2431.12	10010.07	0.258	0.901	3.707	0.766	3.610	0.01450	0.2543	33.07	36.07	43.87	36.17
X_2	Kokila SGS-5219	467.21	1921.93	5847.23	0.173	0.712	2.166	0.883	6.444	0.01467	0.2241	38.83	41.73	49.50	27.50
X_3	Krishna SGS-519	434.59	1826.37	5607.82	0.161	0.677	2.077	0.960	5.750	0.01457	0.2178	42.53	45.20	53.30	25.41
X_4	Green Gold	535.84	2112.63	6706.94	0.199	0.783	2.484	0.801	5.168	0.01430	0.2361	35.87	38.53	45.97	30.85
X_5	Kanahiya	340.17	1625.46	4809.83	0.126	0.602	1.781	0.945	6.285	0.01427	0.2027	49.97	52.27	59.77	21.54
X_6	Krishna	370.87	1699.31	4993.59	0.137	0.630	1.850	0.931	6.380	0.01457	0.2140	45.30	48.07	55.87	22.54
X_7	Suruchi selection-10	308.53	1572.76	4637.12	0.114	0.582	1.717	0.938	6.245	0.01397	0.2011	50.07	52.50	59.87	21.17
X_8	Green Express-666	659.95	2393.71	8251.26	0.244	0.887	3.056	0.748	4.450	0.01390	0.2495	34.63	37.40	44.97	32.18
X_9	Shilpa F_1 hybrid	395.13	1718.19	5280.92	0.146	0.636	1.956	1.071	6.656	0.01473	0.2150	43.97	46.50	54.07	24.53
X_{10}	Vijay SGS-548	520.38	1994.47	6386.31	0.193	0.739	2.365	0.969	5.194	0.01480	0.2296	36.53	39.17	46.63	28.95
X_{11}	Brinjal Round-112	568.32	2110.86	7132.82	0.211	0.782	2.642	0.871	4.823	0.01473	0.2375	34.40	37.63	45.20	31.17
X_{12}	Pusa purple long	280.58	1474.74	4414.09	0.104	0.546	1.635	1.036	5.978	0.01467	0.1815	52.60	54.77	62.53	20.54
X_{13}	Swarna	249.06	1354.01	4002.26	0.092	0.501	1.482	1.125	6.234	0.01463	0.1779	52.00	55.40	63.07	19.64
X_{14}	Jawahar Brinjal -64	618.53	2294.12	7736.71	0.229	0.849	2.866	0.791	4.478	0.0143	0.239	34.87	37.53	45.07	32.05
X_{15}	Muktakashi	182.83	1303.58	3814.76	0.068	0.483	1.413	1.079	6.590	0.01467	0.1778	53.63	56.43	64.43	16.54
	SEm ±	28.94	240.10	559.71	0.01	0.08	0.20	0.12	0.80	0.0003	0.0007	1.45	1.40	1.33	3.37
	C.D.(P = 0.05)	83.84	695.43	1621.10	0.03	0.25	0.60	N.S.	N.S.	N.S.	0.0021	4.20	4.08	3.87	9.77

LAPP = leaf area plant^{-1}, LAI = leaf area index, NAR = net assimilation rate, CGR = crop growth rate, DFBI = days to flower bud initiation, DFF = days to first flowering, DFPF = days to 50% flowering, NFPP = number of flower plant^{-1}.

maximum leaves plant^{-1} was recorded in genotype Pusa Purple Cluster followed by Green Express-666 (F_1), Jawahar Brinjal -64 and Brinjal Round-112 as compared to other genotypes. These findings are in agreement with the findings of Karak *et al.* (2012).

Highest fresh weight plant^{-1} were recorded in genotype Pusa Purple Cluster followed by Green Express-666, similar results are in agreement with Tripathi *et al.* (2009).Highest dry weight plant^{-1} were recorded in genotype Pusa Purple Cluster followed by Green Express-666 (F_1) and Jawahar Brinjal -64 exhibited dry weight plant^{-1} at 30, 60 and 90 days after transplanting, similar results are in agreement by Ranajan and Chakrbarti (2003a) and Maharana *et al.* (2006).

Growth parameters

Among growth parameters presented in (Table 2), in case of 30, 60 and 90 DAT, Pusa Purple Cluster, Green Express-666 and Jawahar Brinjal-64 was recorded significantly maximum leaf area plant^{-1} at 30 and 60 DAT, similar result reported by Meena *et al.* (2011) and Rai, *et al.* (2014) in cluster bean. At 30, 60 and 90 DAT, genotype Pusa Purple Cluster was recorded significantly maximum leaf area index followed by Green Express-666 (F_1), Jawahar Brinjal -64, Brinjal Round-112, Green Gold, Vijay SGS-548, Kokila SGS-5219 and Krishna SGS-519 and first three genotypes at par with each other at 30 DAT and these all at 60 DAT. Similar results have been reported by Shrivastava *et al.* (1999) and Meena *et al.* (2011). The maximum CGR was observed under the genotype Vijay SGS-548 and followed by Shilpa F_1 hybrid, Brinjal Round-112, Kokila SGS-5219, Pusa Purple Long, Muktakashi, Swarna, Krishna SGS-519, Krishna and Pusa Purple Cluster (jumki).At 90 DAT, the significantly lowest CGR were observed in the genotypes Muktakashi and Swarna,. However, the highest CGR was found in genotype Pusa Purple Cluster followed by Green Express-666, Jawahar Brinjal-64 and Brinjal Round-112. These findings are in agreement with the results reported by Meena *et al.* (2011).

Phonological parameters

Among phonological parameters (Table2).Significantly the early days to flower bud were recorded in genotypes Pusa Purple Cluster, Brinjal Round-112, Green Express-666 (F_1), Jawahar Brinjal -64, Green Gold and Vijay SGS-548, respectively and which were at par with each other. Similar results have been reported by Patel *et al.* (2011), Kumar *et al.* (2011b), Kumar and Arumugam (2013), Kumar *et al.*(2013a).Significantly early days to first and 50 % flowering were recorded in genotypes Pusa Purple Cluster, Green Express-666, Jawahar Brinjal-64, Brinjal Round-112, Green Gold and Vijay SGS-548 and which were at par with each other.The findings are in agreement with findings of Chattopadhyay *et al.* (2011), Kumar *et al.* (2011b), Kafytullah Indiresh and Santhosha (2011a), Kumar and Arumugam (2013), Kumar *et al.* (2013a).Genotype Pusa Purple Cluster was observed significantly superior and recorded maximum flowers plant^{-1} followed by Green Express-666 (F_1), Jawahar Brinjal -64, Brinjal Round-112, Green Gold, Vijay SGS-548 and Kokila SGS-5219 and which were at par with each other. Similar results have been reported by Sharma and Swaroop (2000).

Table 3: Yield, Storage Capacity and Quality parameters of different genotypes of brinjal

		Yield parameters							quality parameters			
		NFPP	FD	FL	FWT	FYPP	FY	CD	SC	FC	FS	FS
X_1	Pusa Purple Cluster	24.64	8.25	18.03	135.50	1.856	36.25	135.73	11.34	Black	Long	Big
X_2	Kokila SGS-5219	14.88	9.53	10.07	70.05	1.420	30.15	127.17	10.64	Dark purple	Round	Medium
X_3	Krishna SGS-519	14.88	5.35	13.85	88.77	1.305	29.47	125.40	8.71	Black	Oval	Big
X_4	Green Gold	17.50	8.70	9.07	48.98	1.481	31.82	130.20	10.62	Light green	Oval	Medium
X_5	Kanahiya	13.89	12.51	15.49	166.30	1.060	27.92	124.63	9.43	Dark purple	Round	Big
X_6	Krishna	14.21	6.04	16.63	95.67	1.166	28.27	120.53	9.62	Black	Long	Big
X_7	Suruchi selection-10	13.77	5.51	12.95	85.82	1.039	27.61	124.63	9.32	Whitish purple	Oval	Small
X_8	Green Express-666	19.53	7.11	19.99	113.43	1.758	34.59	133.53	11.07	Light green	Long	Big
X_9	Shilpa F_1 hybrid	14.66	6.33	17.18	113.28	1.211	28.85	120.97	9.21	Black	Long	Big
X_{10}	Vijay SGS-548	14.98	10.64	14.20	153.42	1.426	30.65	129.20	10.25	Whitish green	Oval	Big
X_{11}	Brinjal Round-112	17.51	9.64	9.84	54.37	1.569	32.70	131.97	8.84	Dark purple	Round	Medium
X_{12}	Pusa purple long	11.87	5.17	12.23	81.67	0.929	27.23	114.97	8.65	Purple	Long	Medium
X_{13}	Swarna	11.66	5.39	11.22	76.48	0.881	27.06	113.97	8.07	Black	Oval	Small
X_{14}	Jawahar Brinjal -64	17.76	5.77	11.94	79.78	1.606	33.26	133.00	10.21	Purple	Oval	Small
X_{15}	Muktakashi	10.21	5.15	10.90	65.48	0.811	26.68	113.83	7.47	Black	Oval	Small
	SEm $\pm$	0.68	0.31	0.76	3.71	0.16	0.03	1.27	0.42	-	-	-
	C.D.(P = 0.05)	1.98	0.91	2.22	10.76	0.46	0.09	3.68	1.22	-	-	-

NFPP = number of fruit plant^{-1}, FD = fruit diameter, FL = fruit length, FWT = fruit weight, FYPP = fruit yield plant^{-1}, FY = fruit yield, CD = crop duration; FC = fruit colour, FS = frupe, FS = fruit size, SC = storage capacity

Table 4: Economics of different genotypes of brinjal

	Genotypes	Fruit yield(t ha^{-1})	Gross income(Rs. ha^{-1})	Expenditure(Rs.ha^{-1})	Net income (Rs. ha^{-1})	C:B ratio
X_1	Pusa Purple Cluster	36.25	362500	42916	319584	1: 8.45
X_2	Kokila SGS-5219	30.15	301500	42916	258584	1: 7.03
X_3	Krishna SGS-519	29.47	294700	42916	251784	1: 6.87
X_4	Green Gold	31.82	318200	42916	275284	1: 7.41
X_5	Kanahiya	27.92	279200	42916	236284	1: 6.51
X_6	Krishna	28.27	282700	42916	239784	1: 6.59
X_7	Suruchi selection-10	27.61	276100	42916	233184	1: 6.43
X_8	Green Express-666	34.59	345900	42916	302984	1: 8.06
X_9	Shilpa F_1 hybrid	28.85	288500	42916	245584	1: 6.72
X_{10}	Vijay SGS-548	30.65	306500	42916	263584	1: 7.14
X_{11}	Brinjal Round-112	32.70	327000	42916	284084	1: 7.62
X_{12}	Pusa purple long	27.23	272300	42916	229384	1: 6.34
X_{13}	Swarna	27.06	270600	42916	227684	1: 6.31
X_{14}	Jawahar Brinjal -64	33.26	332600	42916	289684	1: 7.75
X_{15}	Muktakashi	26.68	266800	42916	223884	1: 6.22

Yield parameters

Among yield parameters (Table 3) Genotype Pusa Purple Cluster was observed significantly superior and recorded maximum fruits plant^{-1} followed by Green Express-666 (F_1), Jawahar Brinjal -64. Similar results have been reported by Chattopadhyay *et al.* (2011), Kumar *et al.* (2011b), Chourasia and Sangeeta (2012), Kumar *et al.* (2013), and Balai *et al.* (2014) in okra. Genotype Kanahiya was observed significantly superior and was recorded maximum fruit diameter followed by Vijay SGS-548, Brinjal Round-112 and Kokila SGS-5219. The findings are in agreement with the findings of Chattopadhyay *et al.* (2011) and Karak *et al.* (2012).Green Express-666 (F_1) and Pusa Purple Clusterwere observed maximum fruit length and which were at par with each other. Similar results have been reported by Chattopadhyay *et al.* (2011), Kumar *et al.* (2011), Kumar *et al.* (2011b), Kafytullah Indiresh and Santhosha (2011a), Chourasia and Sangeeta (2012), Karak *et al.* (2012) and Kumar *et al.*, 2013). Kanahiya was observed significantly superior and was recorded maximum fruit weight followed by Vijay SGS-548, Pusa Purple Cluster, Green Express-666 (F_1) and Shilpa F_1. The findings are in agreement with the findings of Kumar *et al.* (2011), Chourasia and Sangeeta (2012), Karak *et al.* (2012) and Kumar *et al.* (2013a).

Genotype Pusa Purple Cluster was recorded significantly superior and gave maximum fruit yield plant^{-1} which was followed by Green Express-666 (F^1), Jawahar Brinjal -64, Brinjal Round-112, Green Gold, Vijay SGS-548 and Kokila SGS-5219 and which were at par with each other.Finding corroborates with their results obtained by Ghosh *et al.*(2011), Ansari *et al.*(2011), Chattopadhyay *et al.*(2011), Kumar *et al.*(2011), Kumar *et al.*(2011b), Kafytullah Indiresh and Santhosha (2011a), Kumar *et al.*(2012), Kumar and Arumugam (2013), Kumar *et al.*(2013),Kumar *et al.*(2013a)and Sheela *et al.*(2014).Pusa Purple Cluster was recorded significantly superior and gave maximum (36.25 tha-1) fruit yield hec^{-1} which was followed by Green Express-666 (F_1) (34.59 tha^{-1}), Jawahar Brinjal -64 (33.26 tha^{-1}). Finding corroborates with their results obtained by Ghosh *et al.* (2011), Singh *et al.* (2011) Singh *et al.*(2011a)andSheela *et al.*(2014).

Qualityparameters

Among quality parameters, the fruit colour, fruit shape, size of fruits and storage capacity were studies in brinjal (Table 3).Colour of fruits was observed to be dark purple, purple, light green, green, black, whitish purple and whitish green. Genotypes Pusa Purple Cluster, Krishna SGS-519, Krishna, Shilpa F_1 hybrid, Swarna and Muktakashi exhibited black fruits. Genotypes Kokila SGS-5219, Kanahiya, Brinjal Round-112, was noted dark purple fruits. Light green fruits were observed in genotypes Green Gold and Green Express-666 (F_1). Whereas, Suruchi selection-10 gave whitish purple and Vijay SGS-548 was observed whitish green fruits. Pusa purple long and Jawahar Brinjal -64 exhibited purple fruits. These finding are in agreement with the findings reported by Gangopadhyay *et al.* (2010).

Variation was observed among the genotypes for shape of fruits i.e. long, oval and round. Shape of fruits was observed to be oval in the genotypes Krishna SGS-519, Green Gold, Suruchi selection-10, Vijay SGS-548, Swarna, Jawahar Brinjal -64 and Muktakashi. Whereas, Kokila SGS-5219, Kanahiya and Brinjal Round-112 exhibited round fruits. The remaining genotypes produced long fruit. These finding are in agreement with the findings reported by Gangopadhyay *et al.* (2010) and Kumar *et al.* (2013a).Variation was observed among the genotypes for size of fruits i.e. big, medium and small. Size of fruits was observed to be medium in the genotypes Kokila SGS-5219, Green Gold, Brinjal Round-112 and Pusa purple long. Small fruits were observed in genotypes Suruchi selection-10, Swarna, Jawahar Brinjal -64 and Muktakashi. Rest of the genotypes was found big size fruits. These finding are in agreement with the findings reported by Gangopadhyay *et al.* (2010), Karak *et al.* (2012) and Kumar *et al.*(2013a).

Genotypes Pusa Purple Cluster, Green Express-666 (F_1), Kokila SGS-5219, Green Gold, Vijay SGS-548 and Jawahar Brinjal - 64 were recorded maximum 11.34, 11.07, 10.64, 10.62, 10.25 and 10.21 days storage capacity, respectively and which were at par with each other. While, the lowest 7.47 days storage capacity was noted in genotype Muktakashi. These finding are in agreement with the findings reported by Ranajan and Chakrbarti (2003).

Economics

Higher money value and less cost of cultivation are desirable traits for getting higher returns. Hence economics of the treatments was work out and present (Table 4). It is revealed from the data obtained that a significantly maximum fruit yield of 36.25 tha^{-1} was obtained in brinjal variety Pusa Purple Cluster with net return of Rs 319584$ha^{-1}$and cost benefit ratio 1: 8.45 followed by Green Express-666 (F_1) were recorded 34.59 tha^{-1}fruit yield along with net return of Rs 302984$ha^{-1}$and cost benefit ratio 1: 8.06. Whereas, the lowest fruit yield 26.68 $tha^{-1}$was recorded in Muktakashi with net return of Rs 223884$ha^{-1}$and cost benefit ratio 1: 6.22. These finding are in agreement with the findings reported by Shinde *et al.* (2010), Brahmaet *et al.* (2010), Harish and Patil (2012) and Pandey *et al.*(2012).

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REFERENCES

Ansari, S. F., Mehta, N., Ansari, S. and Gavel, J. P. 2011. Variability studies in Brinjal (*Solanum melongena* L.) in Chhattisgarh plains. *Elect. J. Pl. Breeding*. **2(2):** 275-281.

Ashwani, R. C. and Khandelwal, R. C. 2003. Hybrid vigour in brinjal (*Solanum melongena* L.). *Ann.of Agril.Res*. **24(4):** 833-837.

Balai, T. C., Maurya, I. B., Verma, S. and Kumar, N. 2014. Correlation and path analysis in genotypes of okra [*Abelmoschus esculentus* (L.) moench]. *The Bioscan*. **9(2):** 799-802.

Blackman, G. E. and Black, J. N. 1968. Physiological and ecological studies in analysis of plant environment. *Ann. Bot*. **23(89):** 51-63.

Chattopadhyay, A., Dutta, S. and Hazra, P. 2011. Characterization of genetic resources and identification of selection indices of brinjal (*Solanum melongena* L.) grown in Eastern India. *Vegetable Crops Research Bulletin*. **74:** 39-49.

Chourasia, H. K. and Sangeeta, S. 2012. Genetic variability in quantitative characters of brinjal (*Solanum melongena* L.). *J. Interacademicia*. **16(2):** 196-202.

Gangopadhyay, K. K. Mahajan, R. K., Yadav, S. K., Meena, B. L. Chitra Pandey Bisht, I. S. Mishra, S. K. Sivaraj, N. Rajeev Gambhir Sharma, S. K. Dhillon, B. S. 2010. Development of a core set in Brinjal (*Solanum melongena* L.). *Crop Sci*. **50(3):** 755-762.

Jamil, M. K., Hossain, M. M., Mozumder, S. N., Khalequzzaman, K. M. and Quamruzzaman, A. K. M. 2006. Growth analysis and yield of garden pea as influenced by variety and sowing date. *Int. J. Sustainable Agril.Tech*. **2(1):** 32-41.

Kafytullah Indiresh, K. M. and Santhosha, H. M. 2011a. Evaluation of brinjal (*Solanum melongena* L.) germplasm for various yield and quality traits. *Environment and Ecology*. **29(3B):** 1679-1681.

Karak, C., Ray, U., Akhtar, S.,Naik, A. and Hazra, P. 2012. Genetic variation and character association in fruit yield components and quality characters in brinjal (*Solanummelongena* L.).*J. Crop and Weed*. **8(1):** 86-89.

Kumar, S. R. and Arumugam, T. 2013. Phenotypic evaluation of indigenous Brinjal types suitable for rainfed conditions of South India (Tamil Nadu). *African J. Biotechnology*. **12(27):** 4338-4342.

Kumar, Sanjeev., Sirohi, H. S. and Singh, Y. V. 2012b. Studies on genetic variability components in brinjal (*Solanum melongena* L.). *Pant. J. Research*. **9(2):** 241-248.

Maharana, J. R., Mahapatra, P. and Dass, A. 2006. Growth and yield performance of brinjal hybrids in south and southeast coastal zone of Orissa. *Orissa J.Horti*. **34(2):** 57-61.

Meena, M. K., Nawalagatti, C. M. and Chetti, M. B. 2011. Influence of hydrophilic polymer on different crop growth parameters and yield in tomato. *Asian J. Bio-Science*. **6(1):** 121-127.

Panse, V. C. and P. V. Sukhatme 1985. Statistical methods for agricultural workers. *ICAR Publications,* New Delhi. pp 155.

Patel, B. N., Solanki, M. P., Patel, S. R. and Desai, J. R. 2011. Effect of bio-fertilizers growth, physiological parameters, yield and quality of brinjal cv. Surati Ravaiya. *Indian J. Horti*. **68(3):** 370-374.

Rai, P. S. and Dharmatti, P. R. 2014. Correlation and path analysis for cluster bean vegetable pod yield. *The Bioscan*. **9(2):** 811-814.

Ranajan, J. K. and Chakrbarti, A. K. 2003. Storage response of different cultivars of brinjal (*Solanum melongena* L.) under ambient conditions. *Annals Agril. Res*. **24(1):** 59-63.

Sao, Abhinav and Mehta, N. 2009. Genetic studies for fruit yield and its components in brinjal (*Solanum melongena*L.). *Flora and Fauna*

(Jhansi). **15(2):** 255-258.

Sharma, T. V. R. S. and Swaroop, K. 2000. Genetic variability and character association in brinjal (*Solanum melongena* L.). *Indian J. Horti.* **57(1):** 59-65.

Sheela, N., Malaghan, L., Madalageri,M.B. and Kotikal,Y.K. 2014. Correlation and path analysis in cluster bean [Cyamopsis tetragonoloba (L.) taub.] for vegetable pod yield and its component characters. *The Bioscan (supplement on genetics and plant breeding).* **9(4):** 1609-1612.

Tripathi, M. K., Singh, A. K., Singh, B. K. and Rat, V. K. 2009. Genetic variability, heritability and genetic advance among different quantitative characters of brinjal (*Solanum melongena* L.). *Haryana J. Horti. Sci.* **38(3/4):** 334-335.

Watson 1952. The physiological basis of variation in yield, LAI and NAR varued between and within species. *Adv. Agron.* **4:** 101-145.

Yang, W. M., Chung, S. J. and Yang, S. Y. 1989. Abstracts of Communications Papers. *Korean Soc. Hort. Sci.* **7:** 54-55.