

## Development of brinjal variety Gujarat Junagadh Long Brinjal-4 in Gujarat state

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### ABSTRACT

A genotype Gujarat Junagadh Long Brinjal-4 (GJLB-4) was identified superior and was evaluated under state and coordinated trials during 2008-09 to 2013-14 at various locations along with check varieties viz Gujarat Oblong Brinjal-1 (GOB-1) and Gujarat Brinjal Long-1 (GBL-1). On the basis of mean fruit yield data GJLB-4 (JBL-08-8) recorded higher fruit yield of 396.30 q/ha which was 30.81 and 25.83 per cent higher over check varieties GOB-1 (281.52 q/ha) and GBL-1 (281.09 q/ha) respectively. The fruits of this variety were medium in size with long shape, attractive light purple color with good shining and pulp was white with less seeds. Plants were medium in size and semi-spreading type. Fruit contained 1.51 per cent protein, 3.36 per cent total sugars, 1.19 per cent acidity and total 38.85 mg/100 g phenols which were more as compared to check varieties while polyphenol oxidase was lesser (1.30 od/min/g). Whitefly population was also less (4.70 per leaf) in GJLB-4 as compared to check varieties GOB-1 (5.20 per leaf) and GBL-1 (5.06 per leaf) and fruit borer damage (11.05%) was also lesser as compared to GOB-1.

**Keyword:** Brinjal; fruit yield; GJLB-4 (JBL-08-8); pests

### INTRODUCTION

Brinjal (*Solanum melongena* L) also known as eggplant is one of the important vegetable crops of India and is grown throughout the year. It is widely cultivated in both temperate and tropical regions of the globe mainly for its immature fruits as vegetable but in the temperate regions it is cultivated mainly during warm season. India is regarded as the primary center of origin/diversity of brinjal. For the development of new variety in brinjal attempts were made to collect and improve the local cultivars grown in Gujarat state. Kashi Vishesh, Kashi Amrit, Kashi Anupam and Kashi Hement were developed at IIVR-Varanasi and have been becoming popular at farmers' fields (Anon 2006). The present paper reports about one such varietal development.

### MATERIAL and METHODS

Brinjal variety GJLB-4 was developed by hybridization between GBL-1 x Junagadh Oblong

followed by pedigree method of selection. Cross was made during 2000. The segregating generations were maintained from F<sub>2</sub> to F<sub>7</sub>. This genotype was tested as an entry in preliminary evaluation trial (PET) during 2008-09, promoted to large scale varietal trial (LSVT) and tested at multi-locations viz Junagadh, Anand, Jagudan and Navsari centers in Gujarat state. Because of its good performance in state trials the entry GJLB-4 was tested under All India Coordinated Vegetable Research Project from 2012-13 to 2014-15 at different locations in India.

### RESULTS and DISCUSSION

The results of fruit yield of GJLB-4 along with two state check varieties GBL-1 and GOB-1 in state trials are presented in Table 1. On the basis of fruit yield data from the state level trials at Junagadh, Anand, Jagudan and Navsari centers GJLB-4 proved its superiority by resulting in higher fruit yield at all the centers. The mean fruit yield of GJLB-4 was 396.30 q/ha as compared to two state

Table 1. Center-wise yield performance of GJLB-4 at different locations under state trials from 2008-09 to 2013-14

Year	Fruit yield (q/ha) of varieties			SEm $\pm$	CD <sub>0.05</sub>	CV (%)
	GJLB-4	GOB-1 (SC)	GBL-1 (SC)			
<b>Junagadh</b>						
2008-09 (PET)	310.80	235.40	242.30	18.32	53.27	12.32
2009-10 (SSVT)	250.05	191.49	196.35	12.78	38.78	10.15
2010-11 (LSVT)	454.96	337.83	287.17	26.08	74.69	13.65
2011-12 (LSVT)	408.18	288.58	280.35	19.27	55.45	11.46
2012-13 (LSVT)	450.69	333.85	277.26	27.77	79.89	13.99
2013-14 (LSVT)	420.09	263.37	34.33	19.98	57.49	11.79
Mean	382.46	275.09	219.63	-	-	-
<b>Anand</b>						
2010-11 (LSVT)	432.58	412.91	391.11	31.75	90.90	11.51
2011-12 (LSVT)	457.43	371.53	355.20	31.71	94.23	12.78
2012-13 (LSVT)	437.11	344.65	360.72	21.79	62.61	10.24
2013-14 (LSVT)	568.28	500.64	454.22	45.02	130.01	15.93
Mean	473.85	407.43	390.31	-	-	-
<b>Jagudan</b>						
2010-11 (LSVT)	184.21	139.01	132.40	13.88	39.84	13.11
2011-12 (LSVT)	103.08	83.95	148.50	8.89	25.56	13.77
2012-13 (LSVT)	320.57	220.99	326.55	19.17	55.07	13.54
2013-14 (LSVT)	319.33	217.53	285.44	19.15	55.03	12.71
Mean	231.80	165.37	223.22	-	-	-
<b>Navsari</b>						
2011-12 (LSVT)	479.64	258.94	361.62	37.98	109.40	18.35
2012-13 (LSVT)	302.14	298.78	331.46	21.58	62.02	12.65
2013-14 (LSVT)	438.27	286.48	313.58	20.62	61.27	10.86
Mean	345.74	281.40	335.55	-	-	-
Overall mean	396.30	281.52	281.09	-	-	-
Per cent increase over check	-	30.81	25.83	-	-	-

Table 2. Description of the variety GJLB-4 along with check

Character	GJLB-4	GOB-1 (SC)	GBL-1 (SC)
Plant height (cm)	62.22	56.08	52.69
Plant spread (cm)	73.15	69.99	67.35
Number of branches/plant	3.31	3.64	3.50
Fruit length (cm)	13.81	11.27	13.22
Fruit girth (cm)	16.75	17.79	14.52
Fruit weight (g)	102.10	87.90	85.70
Number of fruits/plant	21	18	20
Fruit yield/plant (kg)	2.14	1.63	1.70
Days to first picking after transplanting	67	69	73
Days to last picking after transplanting	159	159	157
Fruit colour	Light purple	Dark purple	Light purple
Fruit shape	Long	Oblong	Long
Fruit size	Medium	Medium	Medium
Plant habit	Semi-spreading	Erect	Erect

check varieties GBL-1 (281.09 q/ha) and GOB-1 (281.52 q/ha).

The fruits of this genotype were medium in size, long in shape, attractive light purple in colour and having good shining. Average fruit length, girth and weight were 13.81 cm, 16.75 cm and 102.10 g respectively (Table 2). The qualitative parameters

of GJLB-4 were comparatively higher than GBL-1 and GOB-1. The fruits of this genotype had higher total sugars (3.36%) and protein (1.51%) compared to 3.21 and 1.41 per cent in GBL-1 and 3.24 and 1.37 per cent in GOB-1 respectively (Table 3). However polyphenol oxidase of GJLB-4 (1.30 od/min/g) was lower than check varieties GBL-1 (1.45 od/min/g) and GOB-1 (1.44 od/min/g). These results are

Table 3. Quality parameters of GJLB-4

Quality character	GJLB-4	GOB-1 (SC)	GBL-1 (SC)
Moisture (%)	89.77	90.96	89.82
Colour of peel (od/g)	3.35	2.92	2.88
Polyphenol oxidase (od/min/g)	1.30	1.44	1.45
Glycoalkaloid (od/g)	0.34	0.38	0.36
TSS (%)	8.50	8.33	9.33
Protein (%)	1.51	1.37	1.41
Acidity (%)	1.19	1.02	1.02
Total phenol (mg/100 g)	38.85	38.00	37.92
Total sugar (%)	3.36	3.24	3.21
Dry weight (%)	11.37	9.60	11.54

in agreement with the findings of Rathod et al (2017).

The variety showed lower incidence of white fly (4.70 per leaf) as compared to check varieties GBL-1 (5.06 per leaf) and GOB-1 (5.20 per leaf). The incidence of fruit borer was 11.05 per cent as compared to check varieties GOB-1 (12.43 %) and GBL-1 (10.92%) (Table 4). The results are supported by the work of Rathod et al (2017).

Table 4. Reaction of GJLB-4 to major pests

Pest	Year	GJLB-4	GOB-1 (SC)	GBL-1 (SC)
Number of whiteflies /leaf (Junagadh)	2009-10	4.00	5.22	5.33
	2010-11	5.53	5.53	6.13
	2011-12	4.44	7.53	5.00
	2012-13	4.78	6.33	5.22
	Mean	4.68	6.15	5.42
Number of whiteflies /leaf (Anand)	2009-10	4.67	3.38	5.10
	2010-11	4.72	4.79	4.63
	2011-12	6.18	4.40	4.40
	2012-13	3.28	4.44	4.67
	Mean	4.71	4.25	4.70
	Overall mean	4.70	5.20	5.06
Fruit borer damage (%) (Junagadh)	2009-10	5.33	8.22	7.75
	2010-11	4.66	8.53	10.00
	2011-12	5.66	8.22	8.11
	2012-13	5.75	8.00	8.00
	Mean	5.35	8.21	8.46
Fruit borer damage (%) (Anand)	2009-10	22.86	5.49	9.19
	2010-11	19.45	27.70	16.86
	2011-12	12.87	18.07	12.49
	2012-13	11.84	15.32	13.34
	Mean	16.75	16.64	12.97
	Overall mean	11.05	12.43	10.92

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