

## XVII-Workshop

**Venue :** Mahatma Phule Krishi Vidyapeeth, Rahuri, Pune Campus

**Date :** 8<sup>th</sup> - 11<sup>th</sup> June, 1998

### Collection, Evaluation and Conservation of Germplasm

#### List of Promising germplasm

	Crops	Centre	Promising lines		
1.	Amaranths	Coimbatore	Co-5 Amaranathus		
2.	Chilli	Coimbatore	CA-138 (243.5 q/pl.)		
		Lam	RHRC 16-5 (against thrips) LCA-257, HC-28 (against mites) LCA-332, LCA-348 (against pod borer)		
		Kalyani	Suryamukhi, Bar-1		
		Dharwad	Surya Pepper, TC-2		
		NBPGR	EC-362918, 362922, 362938 IC-147681, 119193, 119257 NIC- 22076, 19150		
3.		Brinjal	IARI	B-15, B-14, B-24, B-23	
			NBPGR	EC-384618, IC-201,m 131, EC-316228 (Pencil type) IC-127023, 90762, EC-305042 IC-90087-1, 901103 (long fruits) IC-201131, 201132 (good cluster bearing) IC-99675, 99715 (purple oval)	
	Bhubaneshwar		BBSR-42, BBSR-8, BBSR-15, BBSR-35		
4.	Carrot		Hisar	HCER-1, HC-2 (red type), HCP-106-2 (purple colour), HCB-22-1	
5	Cauliflower		PDVR	Kunwari-10, Kunwari-6, Katki-21, Katki-19, Katki-20 91-1, 91-2, 93-2	
		Sabour			Aghani-10, Aghani-18, Pusi-8, Pusi-9
		Mid season			81-5, 84-3, 91-1
		Late season			KJ-38
6.	Cucumber	Solan	Chamba-11		
7.	Okra	NBPGR	IC-128076, 85588, 90049		
		Thrissur	EC-3293352, 305617		
8.	Onion	Rahuri	RHR-7(190.83 q/ha), RHR-24 RHR-27 (Red type) Phule Safed (147.49 a/ha), RHR-87074 (164 a/ha), IC-48970, 49122 (high TSS content)		
		NBPGR			
9.	Parval	PDVR	VRPG-107(12.56 kg/pl.), VRPG -110(11.5 kg/pl.) FP-260 (field resistant to wilt disease)		
		Faizabad	Kajli Damodar (150.32 q/ha)		
		Kalyani	Teliamura Local (145 q/ha)		
10.	Tomato	Ludhiana	CxP142 (90-92 g/fruit) Alta (60-70 g/fruit)		
		PDVR	Ageta, DV RT-1, DT-10, BT-12, PH-2, BT-17, BC-24 (yield>2.12 kg/pl.)		
		NBPGR	EC-369010, 368955, 36805 (high yield) EC-315480, 388681, (HT lines)		

	Crops	Centre	Promising lines
11.	Bottle gourd	Faizabad	NDBG-132, NDBG-140
		NBPGR	EC-305378, IC-201150, 201166, 92304
12.	Bitter gourd	NBPGR	TCR-404, IC-202195, TCR-40 (extra long)
		(Thrissur)	EC-399908 (prolific bearing)
13.	Tinda	Hisar	HT-10, HT-125
14.	Ivy gourd	PDVR	U-35/DA/DR-05, -16,-20
		NBPGR	IC-302134, 202187(16.9 kg/pl.) round the year
15.	Sponge gourd	NBPGR	EC-305586, IC-201217, 201229
			IC-92721, 92751 (heavy fruiting)
16.	Palak	NBPGR	EC-284349 (more no. of cuttings)

## Vegetable Production

Application of *Azospirillum* as seed treatment seedling dipping and soil application alongwith 100 per cent recommended dose of nitrogen are recommended for maximum bulb yield (205.79 q/ha) and C:B ratio 1:2.35 in Kharif onion var. N-53 under Hyderabad conditions.

- Maximum yield (274 q/ha) of cabbage var. Pride of India was obtained with the application of *Azospirillum* (Seedling dipping @ 1.0 kg/10 Litre water + soil application @ 5 kg/ha) supplemented with 75 per cent recommended dose of nitrogen i.e. 180 kg N/ha. Hence, it is recommended for Kay More plateau and Satpura hills of M.P.
- For maximum yield (118.4g/ha) and C:B ratio 1:1.33 of onion variety N-53, application of 150 kg N/ha alongwith 15x 10 cm spacing is recommended for Hyderabad conditions during Kharif season.
- The maximum yield (294 q/ha) and C:B ratio 1:2.26 was obtained with the application of 180 kg/ha nitrogen at 50x30 cm spacing in cabbage var. Golden Acre. Hence, it is recommended for Hyderabad conditions.
- Maximum Yield (245 q/ha) and C:B ratio (1:3.59) were recorded with the application of 120 kg N/ha in brinjal var. B.B.1 planted at spacing of 75x 50cm. Hence, it is recommended for Bhubaneshwar conditions.
- Application of nitrogen @ 120 kg/ha and planting distance of 45x30 cm resulted in maximum seed yield (8.20 q/ha) and C:B ratio (1:3.72). It is recommended for onion variety Kalyanpur Red Round under Kanpur conditions.
- For seed production of radish var. Kalyanpur No.1, application of 80 kg Nitrogen/ha and planting distance of 60x45 cm is recommended to get higher seed yield (11.68 q/ha) and C:B ratio of 1:5.98 under Kanpur conditions.
- The cropping sequence of cowpea-tomato-cucumber resulted in maximum net return of Rs. 32758 per hectare followed by Tomato Pea-okra (Rs. 24940 per hectare), hence these cropping sequence are recommended for Kaymore plateau and Satpura hills of Madhya Pradesh.

## Varietal Trials

The Committee has recommended the following entries for release after thoroughly scrutinizing the data provided by PDVR.

S.N.	Crops	Name of entries	Sources	Recommended zones
1.	Brinjal (long)	KS-331	Kalyanpur	IV,V
		JB15	Jabalpur	I
2.	Brinjal (round)	CHBR-1	CHES(Ranchi)	IV
3.	Brinjal (small round)	DBSR-91	IARI	VII
		JB-64-1-2	Jabalpur	VII
4.	Brinjal (green)	Green Long	Sabour	IV
5.	Tomato (Indeterminate)	KS-17	Kalyanpur	IV
6.	Garlic	G-282	NHRDF	IV, VI, VII
7.	Bitter gourd	RHRBG-4-1	Rahuri	IV, VII
8.	Bottle gourd	KBG-16	Kalyanpur	IV
9.	Cowpea	IIHR-16	IIHR	IV, VII
10.	Peas (mid seasons)	NDVP-10	Faizabad	IV
		VL-8	Almora	I



KS-331



JB-15



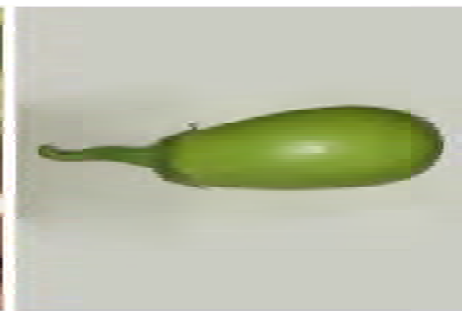
CHBR-1 (Swarna Mani)



DBSR-91



JB-64-1-2



Green Long



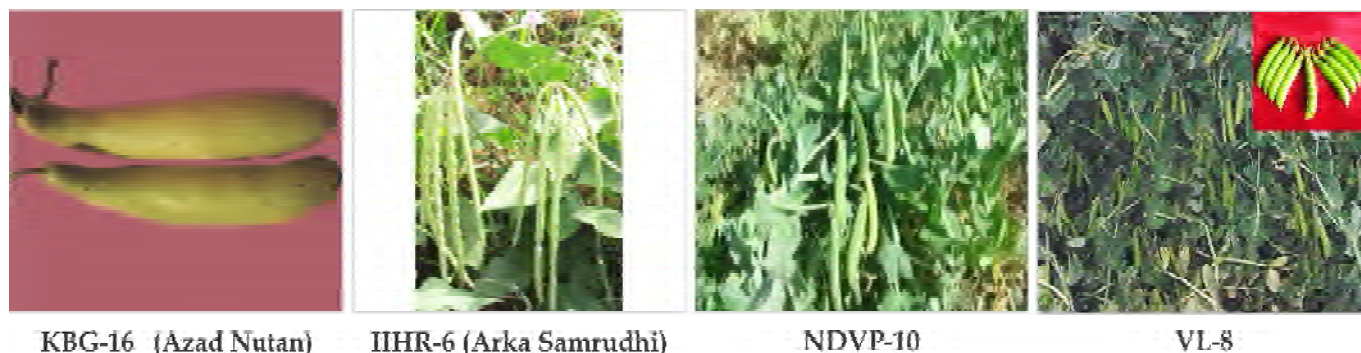
KS-17(Azad T-5)



G-282 (Yamuna Safed-3)



RHRBG-4-1 (Pusa Ujawala)



KBG-16 (Azad Nutan)

IIHR-6 (Arka Samrudhi)

NDVP-10

VL-8

### Physiology, Biochemistry and Processing

The brief conclusion of the first experiment on studies on “Effect of Cycocel on seed viability in onion” indicated that cycocel at 250, 500 and 1000 ppm respectively did not have any significant effect on seed yield, seed weight, germination, vigour index and seedling length at harvest or during storage of 18 months in onion variety Agri Found Dark Red and Agri Found Light Red at NHRDF, Nasik.

Studies on “Screening of Chilli cultivars for drought tolerance” was made at IIHR, Bangalore. Three cultivars of chilli viz, Arka Lohit, Pusa Jwala and Byadagi were screened for drought tolerance. Water stress was imposed at vegetative, flowering and fruit development stages. Observations were recorded on R.W.C., leaf water potential, osmotic potential, stomatal conductance and photosynthetic rate at all the three stages of water stress. Results indicated that cv. Arka Lohit had maximum RWC at all the stages of water stress. There was good recovery in Arka Lohit followed by Pusa Jwala and Byadagi because of intermittent rains. Least yield reduction was observed in Arka Lohit (10%) followed by Pusa Jwala (12%) and Byadagi (14%).

“Biochemical composition of vegetable identified at AICVIP”, nineteen varieties of muskmelon were analyzed for Dry matter content, TSS and Vitamin C content. Dry matter content varied from 5-13.3 whereas TSS, vitamin C content varied from 8.34 to 31.28 mg/100 g fresh weight. The maximum vitamin C content was found in NS 7455. Seventeen varieties of tomato were analyzed for dry matter, TSS, vitamin C and acidity. The dry matter content varied from 4.1 to 7.2%. There was less variation in TSS content. It varied only from 4.2-5.4 per cent. There was much variation in the vitamin C content. The acidity expressed as g. of anhydrous citric acid/100 ml juice varied from 17.6 mg upto 46.11 mg.

In the second experiment on “Nitrite and Nitrate content of leafy vegetables”. Nitrite and Nitrate content in 3 varieties of cabbage and 5 varieties of raddish were analyzed. Maximum Nitrate content (1635 ppm) was recorded in cabbage variety “Pride of India”, whereas in raddish the maximum Nitrate content was recorded in Pb Safed (1475 ppm). There was less variation in Nitrate content in cabbage varieties, even in raddish varieties it varied only from 5.5 ppm to 6.6 ppm. The committee suggested to include Palak and Methi instead of cabbage and raddish in this trial.

Eight lines of pea were evaluated for processing (stored frozen) after six months storage at  $-18^{\circ}\text{C}$ . Based on the chemical composition of stored peas and also sensory evaluation test, Pb-29 (a) recorded highest chlorophyll, ascorbic acid, total sugar and comparatively low alcohol insoluble solids. In the sensory evaluation test, Pb 29(a) recorded higher score for colour, texture and flower. Thus it was concluded that Pb 29 (a) was found best suitable for storage under frozen conditions.



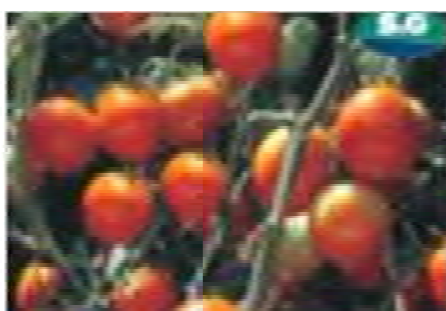
## Heterosis Breeding Trial

The committee has recommended the following hybrids for release after thoroughly scrutinizing the data of minimum two years provided by PDVR.

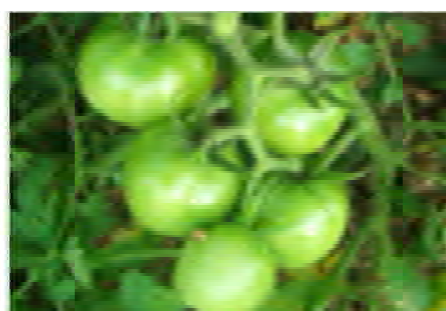
	Crops	Name of Hybrids	Sources	Recommended zones
1.	Cabbage	Quisto	Novartis (Sandoz)	IV
2.	Tomato (Determinate)	Avinash-2	Novartis (Sandoz)	VI
	-do-	HOE-303	Novartis (Sandoz)	IV
3.	Okra	DVR-1	PDVR	IV,VII
	-do-	DVR-2	PDVR	VI
4.	Bottle gourd	PBOG-2	Pantnagar	VII



Quisto



Avinash-2



HOE-303



DVR-1 (Shitla Uphar)



DVR-2 (Shitla Jyoti)



PBOG-2 (Pantnagar Sankar Lauki-1)

## Pest Management

### Salient findings and recommendations are as follows

**Brinjal:** Under Sabour and Hyderabad conditions, on the basis of net additional yield and net income, fruit borers can be controlled using cypermethrin @ 30 gai/ha at 20, 35, 50, 65 and 80 days after transplanting.

**Cabbage:** On the basis of reduction in the population of diamondback moth, Spodoptera and aphids, two sowing of mustard as trap crop, first 13 days prior and second, 25 days after cabbage planting in 25 rows, subsequently NSKE 4% spray at the primordial stage followed by two sprays at 15 days interval is recommended for management of cabbage pest complex under Hyderabad condition.

**Okra:** Economics studies on the basis of net additional income four Monocrotophos spraying @ 500 gai/ha at 20, 30, 50 and 65 days after sowing is recommended for control of okra pest complex under Varanasi, Kalyanpur and Sabour condition.

However, based on C/B ratio application of cypermethrin was found desirable. It was felt by the house that (a) It would be more appropriate to give recommendations on the basis of net economic returns than C/B ratio. (b) Further, it was decided that where not absolutely needed, synthetic pyrethroids should not be recommended for management of okra pests.

## Disease Management

1. At Coimbatore, soil application of carbofuran 3G @ 1 kg a.i./ha + covering the nursery bed with nylon net of 400 mesh followed by three sprays of neem oil 2% at 15, 25 and 35 days after planting had recorded lesser mosaic incidence and highest yield with a cost benefit ratio of 1:3.33.
2. To control late blight of tomato effectively at Junagadh or similar agroclimatic conditions, it is recommended to spray mancozeb @ 0.25% six times at 10 days interval started from 15 days after transplanting with cost benefit ratio 1:8.46.
3. At Vellanikkara, the diseases of fungal, viral and bacterial origin noticed during different seasons on tomato were early blight (*Alternaria solani*), black leaf mould (*Pseudocercospora fuliginea*), target leaf spot (*Corynespora cassicola*), mosaic, leaf curl, spotted wilt virus and bacterial wilt are greatly important during both rabi and summer seasons. Hence centre should concentrate on their management strategies. However, mosaic and leaf curl are less important during rabi season. During different seasons temperature and humidity varied between 22-31°C and 55-88% respectively.
4. Epidemiological studies conducted at Hyderabad revealed that as many as nine diseases are prevalent during Kharif and 5 diseases in rabi seasons. The diseases which are of common occurrence in both the seasons are *Alternaria* leaf spot, powdery mildew, leaf curl, mosaic and TSWV. The centre has experienced highest percentage of diseases during rabi season. The respective incidence of diseases viz. *Alternaria* leaf spot, leaf curl, powdery mildew, TSWV and mosaic was 28.33, 9.83, 25.00, 13.00, 2.00 per cent respectively.
5. At Vellanikkara, seed treatment and soil drenching with 0.2% captan was found most effective to control damping off of tomato. In case of brinjal, lowest damping off incidence was recorded with seed treatment and drenching with 0.2% Captan (during rainy season).
6. Recommendation on the integrated management of insect borne viruses in Chilli/Capsicum at Hyderabad and that of integrated management of disease complex of capsicum at Katrain, though completed three years could not be accepted in the absence of cost: benefit ratio. The centres are requested to furnish cost: benefit ratio before the recommendations are accepted in principle.

## Resistant Varietal Trial

The following varieties were identified for release.

	Crop	Variety	Breeding centre	Zone for which identified
1	Tomato (Bacterial wilt resistant)	BRH-2	IIHR	VII (Dapoli and Jabalpur)



BRH-2 (Bacterial wilt resistant)