XVIII-Workshop

Venue : Punjab Agricultural University, Ludhiana

Date : 11th - 14th October, 1999

Collection, evaluation and conservation of germplasm

Promising lines identified

Crops	Sources	Notables/promising lines
Brinjal	Bhubaneshwar	BBSR34, BBSR-51, BBSR-48
Chillies	Coimbatore	CA 138
	Jorhat	No 31, No.27, No.32
	Kalyani	Suryamukhi, Beldanga Local Dhanilanka
	IIVR	PDC-40, IC 119481, K119457,K119497,
		119412, BD-213, EC 345625, JCA-17
	NBPGR	EC 339565, NIC 9577
Tomato	NBPGR	EC 315483 (Large fruit), ECS 257749,
		251706, 151628 (Salt tolerant)
Carrot (Tropical)	Hisar	HC-208, Hisar Local-1, HC-155
(a)Red colour	Hisar	
(b) Yellow	"	HCY-4-2
(c)Purple	"	HCP-160-1, HCP-4-2, HCP-1
(d)Black	"	HCB-22-1(Black core)
		HCB-165-1(Yellow core)
		HCB-22(Black core with white flesh)
Cauliflower		
-Early	Sabour	81-5, 93-3, 92-1, 94-1
-Mid(Katki)	IIVR	Katki-21, Katki 13-1, Katki-19
-Mid(Kuwari)	"	Early Kunwari-2-1, Kunwari-14-1,
		Kunwari-14-1
Amaranths	Jorhat	Strain-4, Strain-6
	Vellanikkara	VKA-44, VKA-6
Bitter gourd	Vallanikkara	VKB 120, VKB 113
Cucumber	Solan	Chamba Local 11
	IIVR	EC 27080, VRC-7,Dhaneswar-2,
		Kheera Barsati
Garlic	NHRDF	Collection No. 359
Onion	NHRDF	Collection No.381
Ivy gourd	IIVR	VRK-05
Parwal	IIVR	VRPG 44
	Kalyani	Sandhyamani, Kajli,Kajli Bombai,
		Kajli Damodar
	Sabour	Rajendra Parwal-1,
		Rajendra Parwal-2,
		84-1, 94-2, Mridangia, Nimia
Pumpkin	Hyderabad	CM-50

Vegetable Agronomy

Tomato

1. Based on the higher germination percentage, seedling vigour and economics (20 paise per seedling extra profit over control), seedling raising of hybrid tomato in 10x6 cm size polyethylene bags on raised bed with polyethylene layer is recommended under Pantnagar conditions of Tarai area.
2. Planting of tomato indeterminate hybrid ARTH-4 at 80x60 cm spacing on raised beds along with staking is recommended for higher yield (334 q/ha) and C:B ration (1:3:41) under Pantnagar conditions. Planting at 80 x 45 cm spacing along with staking is recommended for maximum yield (439 q/ha) and C:B ratio (1:4:52) under Coimbatore conditions. For Hisar and Durgapura conditions, planting of tomato hybrid ARTH-4 at 80x60 cm is recommended. Pinching of side shoots up to 30cm was not found economical at any of the above locations.
3. Based on the highest yield (643 q/ha) and C:B ratio (1:10.33), application of nitrogen @ 240kg/ha and P_2O_5 120 kg/ha is recommended for tomato hybrid ARTH-3 under Kanpur conditions. For Hisar conditions, application of nitrogen @ 180kg/ha and P_2O_5 @ 60kg/ha is recommended for obtaining highest yield (372q/ha) and C:B ratio (1:4.9) in the same hybrid.

Capsicum

Application of 120 kg nitrogen and 60 kg P_2O_5/ha is recommended for getting maximum yield (136 q/ha) and C:B ratio (1:1.50) under Tarai conditions of Pantnagar. For Faizabad conditions, application of 240 kg/ha nitrogen and 180 kg/ha P_2O_5 is recommended for obtaining the maximum yield (195.6 q/ha) and C:B ratio (1:4.22), while for Coimbatore conditions, application of 180 kg/ha nitrogen and 120 kg/ha P_2O_5 is recommended for the highest yield (63.7 q/ha) and C:B ratio (1:3.98) in the same hybrid.

French bean

Application of nitrogen @ 160 kg/ha and P_2O_5 @ 90 kg/ha is recommended for maximum green pod yield (65 q/ha) and C:B ratio (1:2.95) in French bean variety contender under Durgapura conditions. At Faizabad, application of 160 kg/ha nitrogen and 60 kg/ha P_2O_5 is recommended for highest yield (98 q/ha) and C:B ratio (1:2.44) in the French bean variety Patna Bean-2.

Okra

Application of metolachlor @ 0.75 kg ai/ha as pre-emergence spray followed by one hand weeding 45 days after sowing is recommended for effective weed management and obtain economic yield (63 q/ha and C:B ratio 1:3.67) under Coimbatore conditions.

Pointed gourd

Application of paddy straw mulch is recommended for effective weed management, higher yield (127 q/ha) and C:B ratio (1:1.99) under Faizabad conditions.

Pea

For maximum yield (118.79 q/ha) and C:B ratio (1:2.73), 3 irrigations, i.e., at pre-bloom (30 days after sowing), at bloom (50% flowering) and at pod set stages are recommended for the variety Azad Pea-1 under Faizabad conditions.

Garlic

Application of 50 Kg, N and 60 Kg/ha K_2O is recommended for highest yield (88.0 q/ha) and C:B ratio (1:2.63) in garlic variety GG-2 under Junagadh conditions.

Varietal Evaluation Trials

The committee could not identify any entry for release in the absence of consistent yield data from various centres. However, the review of 1999-2000 is awaited. The review of last 4 years can be taken and entries will be identified. There is a need for specific guidelines for identifying entries for release.

Physiology, Biochemistry and Processing

The session started with an introductory remark by the Chairman who emphasised the importance of Physiological and Biochemical information on vegetable crops, which can be utilized in the breeding programmes.

Studies made at chilli cultivars for drought tolerance at IIHR, indicated that the cvs. Pusa Jwala and Arka Lohit had significantly higher chlorophyll content and cv. Pusa Jwala also had the maximum proline content during the fruiting stage. An osmotic adjustment of 0.68 and 0.98 Mpa was observed in cv. Arka Lohit and Pusa Jwala respectively during the flowering stage. It was also reported that cvs. Pusa Jwala, and Arka Lohit had better osmotic adjustment, high stomatal conductance and photosynthetic rate during water stress, hence can be recommended for rainfed cultivation.

Insect Pest Management

Important Recommendations

a) Cypermethrin at 50 g a.i./ha at 20, 35, 50, 65 and 80 DAT was effective and most economical at Varanasi on variety 'Punjab Barsati' against the brinjal shoot and fruit borer.

b) Shoot clippings followed by destruction of larvae gave good control of brinjal fruit borer.

c) Root dipping in pesticide solution (Imidacloprid 200 SL @ 1 ml/ litre for 3 hours) gave an effective control of the leaf hopper on brinjal.

Tomato fruit borer(*Helicoverpa armigera*)

d) Tomato fruit borer, *Helicoverpa armigera* can be effectively controlled by alternative use of egg parasitoid, *Trichogramma braziliensis* @ 2,50,000/ha and use of NPV at 200 LE/ha at 15 days interval starting from the first appearance of eggs on tomato at Hyderabad.

Heterosis Breeding

The committee has recommended the following hybrids for release after thoroughly scrutinising the data of minimum two years.

	Crops	Name of hybrids	Sources	Recommended zones
1.	Watermelon	MHW-6	Mahyco	Durgapura, Faizabad, Vellanikara, Hyderabad, Pantnagar
2.	Tomato(Ind)	Sun-496	Sungro	Ludhiana, Kalyani, Coimbatore
3.	Bottle gourd	PBOG-1	Pantnagar	Pantnagar, Rahuri

MHW-6

SUN-496

Bottle gourd PBOG-1

Disease Management

Integrated management of disease complex of chilli/capsicum

Solan : Application of chlorothalonil (0.2%) at 15 days interval started from 30 days of transplanting is recommended for managing disease complex of capsicum. It reduced leaf spot and fruit rot incidence upto 16.89 and 6.33% respectively and increased yield 143.65 q/ha as against 74.86 q/ha in control. The cost benefit ratio was found to be 1:4.3. This recommendation has been advocated for managing bell pepper disease in Himachal Pradesh and similar agroclimatic condition.

Control of Buck-eye rot tomato

Solan : Four sprays of mancozeb @ 0.3% at 15 days interval are recommended for control of buck eye rot of tomato which gave only 11.45% fruit rot intensity and maximum yield 343.1 q/ha with cost benefit ratio 1:7.52.

Management of leaf blight disease of onion

Junagadh : Leaf blight of onion is effectively managed by four sprays of mancozeb (0.3%) + cypermethrin (0.01%) at 15 days interval starting from 25 days of planting. The treatment recorded minimum disease incidence (27.87%) and highest seed yield (997 kg/ha). The cost benefit ratio was found to be 1:15.45.

Rahuri: The spraying of mancozeb (0.3%) when sprayed along with cypermethrin (0.01%) alternatively with sticker sandovit (0.1%) starting from 15 days after transplanting at 15 days interval was found most effective in controlling leaf blight disease of onion. The treatment reduced thrips population (87%) and leaf blight (68%) and increased yield 229% over control. The cost benefit ratio was calculated to be 1:24

Sabour: Three sprays of mancozeb (0.25%) mixed with 0.015% cypermethrin starting with appearance of disease and subsequent sprays at 15 days interval have been found effective to control leaf blight disease of onion under Sabour condition. The treatment reduced 10.3% disease incidence and increased yield 271.11 q/ha. The C:B ratio was observed 1:9.6.

Chemical control of curd rot complex of cauliflower at (Solan)

Based on three years data, the results revealed that four sprays of Indofil M-45 + Streptocycline 0.25% + 0.01%) recorded 33.68 per cent disease incidence and cost benefit ratio of 1:14.37 which was maximum as compared to other treatments.

Integrated management of disease complex of chilli/capsicum (Coimbatore)

Disease complex of chilli can be managed by integration of seed treatment with thiram (0.2%) + soil application of carbofuran (1.25 kg ai/ha) and one spray of monocrotophos (0.05%) + mancozeb (0.3%) before transplanting. It was followed by four sprays of carbendazim (0.1%) at 15 days interval started from 30 days of transplanting. The treatment recorded minimum disease incidence of Cercospora leaf spot (6.99%) and die back (8.02%) of chilli as compared to control 37.34 and 40.52% respectively.

Chemical control of *Cercospora* leaf spot of okra in seed crop (Coimbatore)

Cercospora leaf spot of okra in seed crop can be effectively managed by spraying carbendazim (0.1%) at 10 days interval after 50 days of sowing. The treatment recorded lowest disease incidence (12.65%) with highest yield (143.12 q/ha) as compared to control (90.5 q/ha).

Seasonal occurrence of brinjal diseases (Coimbatore)

Alternaria and Cercospora leaf spot were two important diseases with maximum incidence 22% and 17.9% respectively observed between second fortnight of September to first fortnight of October.

Seed Production

Planting small sized onion bulbs (45 cm x 30 cm) for seed production on 11th October with a close spacing of 45 x 30 cm was found suitable for Zone III A of the Rajasthan State.

For seed production of early pea cv. Arkel in Himachal Pradesh, sowing of seeds on 30th October with 20 cm row spacing was found suitable (cost benefit ratio - 0.79).

A fertilizer dose of 25 kg N + 60 kg P_20_5 + 40 kgs K_20 per ha with a seed rate of 150 kg per ha. was found optimum for seed production of pea cv. Arkel in Himachal Pradesh with a cost benefit ratio of 0.98.

NATIONAL SEED PROJECT

Welcoming the participants the chairman stressed on the importance of breeder seeds. He desired that more emphasis needs to be given on quality of seeds. He said that if each centre manages the production well, the availability of quality seeds will not be a constraint any more. Thereafter he asked the centres to present the 1997-98 production reports one by one. Dr. K.E. Lawande expressed that some of the old varieties like Manjari Gota are still being multiplied and stressed on breeder seed production of new varieties only, while Dr. R.L. Kaul from NSC expressed that indents are placed as per the demands of the farmers and till new varieties are popularized among the farmers the old varieties may continue. For this, he stressed that frontline demonstrations may be carried out. Dr. Mangat from Century Seeds expressed that varieties in seed production chain should be on merit and not on the basis of old and new. He questioned about the availability of original stock of Pusa Himani. He further suggested that seed can also be extracted immediately after drying the chilli instead of storing the whole fruits of chilli for maintaining the proper seed quality. He stressed that the details about quantity of excess breeder seed should also be circulated to SAI for its effective utilization.

Dr. G. Kalloo, Director, IIVR, Varanasi pointed out that there is a set chain for seed multiplication and this should not be disturbed. He informed the house that nucleus seed is also monitored alongwith breeder seed to ensure quality seed production as per procedure. He further remarked that the variety Arka Anamika is severely infected by enation leaf curl virus in North India. Dr. H.S. Gill stated that in Punjab also this variety is severely infected by enation leaf curl virus. Replying to this Dr. O.P. Dutta

stated that Arka Anamika is resistant to YVMV and not to enation leaf curl virus. He expressed further that seed companies should purchase the nucleus seeds every year from the breeder to maintain purity.

At the end chairman concluded his observations with following remarks:

- The excess production of breeder seed should be properly stored for its effective utilization.
- Buffer stocking of breeder seed is must for any exigencies.
- Frontline demonstration should be conducted at KVK and also at other places for popularization of new important varieties so that old and obsolete varieties may be phased out.

Resistance Varietal Trial

The committee thoroughly reviewed the compiled data and suggested the following points:

Since several reports pertaining to the disease resistance trials were submitted on the spot and also observed several gaps in the compiled reports, it was not possible to make any valid conclusion in identifying the superior varieties. It was suggested to complete the compilation of the data and then identify the suitable varieties for different zones.

XIX-Workshop

Venue : Indian Institute of Vegetable Research, Varanasi

Date : 15th - 18th January, 2001

Collection, evaluation and conservation of germplasm

Promising Lines Identified

Crops	Sources	Notables/Promising lines	
Brinjal	Bhubaneswar	BBSR-36, BBSR-54, BBSR-8	
	CHES (Ranchi)	CH-575, CH-573, CH-665	
	NBPGR (New Delhi)	IC 127241, 126727, 99674, 89974, 249326	
		EC 438678, 305039, 136240	
	NBPGR RS Hyderabad	IC 111087, 112342, 136306 (Fruits >20 cm)	
Bitter gourd	Vellanikkara	VKB 120, VKB 113	
Bottle gourd	Faizabad	NDBG 129, NDBG 140, NDBG 208	
Capsicum	Solan	EC 393214-2, EC 203583	
Carrot (Tropical)	Hisar	Red coloured	HC 153-3, HC12, HC191, HC 118-2
		Yellow	HCY-4-2-1, HCY-83, HCY 4-2
		Black	HCB-1, HCB-22-1 (Black core)
		Purple	HCP-1, HCP 160-1, HCP-4-2-1
Cauliflower	IIVR	JB 23/47, PDVR-8, Kunwari-6 (Kunwari Group)	
		JBT 23/40, JBT 23/95, JBT 23/78 (Katki Group)	
		BSS-48, JBT 23/66 (Agahani Group)	
		Pusi-2, Pusi-4 (Pusi Group)	
	CHES (Ranchi)	CH965-68-4, CH 963-6, CH 1201-28-2 (Early & Mid season)	
	Solan	Holland special, KM-1, EC 103576 (Late Group)	
	Sabour	91-1, 91-2, 93-3 (Early Group)	