

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 :** 15<sup>th</sup> - 18<sup>th</sup> 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)                                 |                                 |
|                   | Solan              | Holland special, KM-1, EC 103576 (Late Group) |                                 |
|                   | Sabour             | 91-1, 91-2, 93-3 (Early Group)                |                                 |

| Crops       | Sources                 | Notables/Promising lines  |
|-------------|-------------------------|---|
| Chillies    | IIVR                    | IC 119500, EC 345655  |
|             | Coimbatore              | CA 138 (Co4)  |
|             | Kalyani                 | Suryamukhi, Beldanga Local  |
|             | Lam                     | EC 113937, LCA 348, EC 15916 (against thrips)   |
|             |                         | LIC13, LCA 253, LIC 36, EC 12896 (against mites)  |
| French bean | NBPGR Shillong          | IC 204000, 204212   |
|             | NBPGR Shimla            | EC 405197, 421105 (Bush type)<br>EC 405199, 421101, 243196 (Pole type)                  |
| Garlic      | NHRDF (Karnal)          | Coll. No. 14, 299, 345, 349, 351  |
| Ivy gourd   | IIVR                    | VRK 33, VRK 58 (Long fruited type)<br>VRK 10, VRK 22 (Oblong fruits)                    |
|             | Raipur                  | ACC. No.59, 48, 35, 5   |
| Muskmelon   | Ludhiana                | Sard melon, Australian Melon 99-1   |
| Okra        | IIVR                    | BO-2, EC 329361, IC 11174, K11173, EC 329422  |
|             | Bhubaneshwar            | KS 404, BBSR-12, VB 9101  |
| Parwal      | IIVR                    | VRPG-44, VRPG-93  |
|             | Kalyani                 | Kalidamodar, Bralmachara, Hilli   |
|             | CHES (Ranchi)           | Swarn Alaukik, Swarn Rekha, 39 x 1F <sub>1</sub> ,                                      |
|             | Sabour                  | Rajendra Parwal-1, Rajendra Parwal-2,   |
| Pea         | Palampur                | Palm Priya, DPP-62, DPP-4, PMR-20   |
| Pumpkin     | Hyderabad               | CM 50, CM 64, CM 74   |
| Cucumber    | IIVR                    | Ranchi-9, VRC 7, Bihar-10   |
|             | NBPGR (Thrissur centre) | IC 203838   |
| Tomato      | IIVR                    | CLN-1466B, CLN 1460A, S-1-96-66, Equinox, EC 400504                                     |
|             | NBPGR (Hyderabad)       | EC 326139, 315481, 162508, 251709, 252780, 165700 (Field tolerance against late blight) |
|             | CHES (Ranchi)           | Arka Meghali, CH24, EC 385654, EC 388943  |
|             | Solan                   | EC 174045, NO 187, T777   |

## Vegetable Agronomy

### Recommendations

#### Cauliflower

1. Application of 100 kg/ha nitrogen and planting at 60x60 cm spacing gave maximum C:B ratio (1:3.92) in cauliflower variety Snowball-16, hence it is recommended for Srinagar conditions.

#### Onion

2. Based on maximum yield (10.62 q/ha) and C:B ratio (1:7.66), planting of bulbs at 45x30 cm spacing and application of nitrogen @ 120 kg/ha is recommended for onion seed production under Tarai conditions of Pantnagar.
3. For maximum bulb yield (552 q/ha) and C:B ratio (2.22), application of pendimethalin @ 1 kgai/ha + one hand weeding at 45 days after planting is recommended in onion crop under south Saurashtra conditions.

#### Cabbage

4. Application of Azotobactor along with 75% of the recommended dose of nitrogen (150 kg/ha) gave

maximum yield (360.5 q/ha) and C:B ratio 1:3.82, hence it is recommended for cabbage variety Pride of India under Srinagar conditions.

- Application of 120 kg N/ha and planting at 60x30 cm spacing gave maximum yield 313 q/ha and C:B ratio (1:2.57) hence it is recommended for cabbage variety Pride of India under Kymore Plateau and Satpura hills conditions of M.P.

## Tomato

- Planting of tomato hybrid ARTH-4 at 80 x 30 cm spacing on raised bed subjecting to staking and without pinching of shoots is recommended for Kanpur conditions.



Stacking in Tomato

## Stacking in Tomato

- Application of 40 kg N/ha as basal + 20 kg/ha as top dressing + 20 kg/ha as foliar spray resulted in maximum yield (277 q/ha) and C:B ratio 1:246 in tomato variety JT-99, hence it is recommended for Kymore Plateau and Satpura hill area of M.P.
- The application of 180 kg/ha nitrogen and 120 kg/ha  $P_2O_5$  gave maximum yield (503 q/ha) and C:B ratio (1:2.07) in tomato hybrid ARTH-3, hence it is recommended for adoption under Varanasi conditions.

## Capsicum

- The capsicum hybrid Bharat gave maximum yield (328 q/ha) and C:B ratio (1:5.15) with the application of 180 kg/ha nitrogen and 120 kg/ha  $P_2O_5$ , hence, it is recommended for Varanasi conditions.

## French bean

- French bean variety Arka Komal gave maximum yield of 96.5 q/ha and CB ratio 1:1.38 along with the application of 120 kg N and 60 kg  $P_2O_5$ /ha, hence it is recommended for Varanasi conditions.

## Bitter gourd

- Maximum yield of 57.68 q/ha and C:B ratio 1:2.61 were recorded with the application of 90 kg nitrogen, 60 kg phosphorus and 60 kg potassium/ha in bitter gourd variety Hirvani. Hence, it is recommended for Rahuri conditions.

## Varietal Trial

After thorough examination of the data over the years provided by the IIVR, the following entries were identified and recommended under AICRP (VC) Programme during XIX<sup>th</sup> Group meeting held at IIVR, Varanasi

| Crops           | Name of Entries  | Source        | Recommended zones |
|-----------------|------------------|---------------|-------------------|
| Brinjal (long)  | Punjab Sadabahar | PAU, Ludhiana | IV, VI            |
|                 | NDB-28-2         | Faizabad      | IV                |
| Brinjal (round) | D-2-88-6         | Sabour        | VII, VI           |
| Tomato (det.)   | BT-116-3-2       | Bhubaneshwar  | V, VI             |
|                 | NDT-3            | Faizabad      | IV, VII           |
|                 | KS-118           | Kalyanpur     | IV                |
|                 | DVRT-2           | IIVR          | VI                |

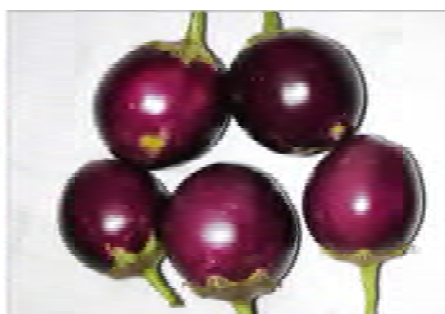
| Crops                   | Name of Entries    | Source        | Recommended zones |
|-------------------------|--------------------|---------------|-------------------|
| Tomato (ind.)           | BT-20-2-1          | Bhubaneswar   | IV, VII           |
|                         | NDT-9              | Faizabad      | IV                |
| Chillies                | AKC-86-39          | Akola         | VII               |
|                         | BC-14-2            | Bhubaneswar   | V, VI             |
|                         | RHRC-Cluster Erect | Rahuri        | VII               |
| Garlic                  | VLG-7              | Almora        | I, IV             |
| Cauliflower (Snowball)  | KT-25              | Katrain       | I                 |
| Bitter gourd            | PBIG-1             | Pantnagar     | IV                |
| Bottle gourd            | PBOG-61            | Pantnagar     | IV, VI            |
|                         | BG-L-C-2-1         | Ludhiana      | IV                |
| Cucumber                | CHC-2              | Ranchi (CHES) | IV                |
| Pumpkin                 | CM-350             | Vellanikkara  | VII, VIII         |
|                         | NDPK-24            | Faizabad      | IV, VI            |
| Ridge gourd             | CHRG-1             | Ranchi (CHES) | IV                |
|                         | PRG-7              | Pantnagar     | VII               |
|                         | IIHR-7             | IIHR          | VIII              |
| French bean (bush type) | CH-812             | Ranchi (CHES) | VII, III          |
| French bean (pole type) | CH-819             | Ranchi (CHES) | I                 |
| Pea (Early)             | VRP-2              | IIVR          | VI                |
|                         | NDVP-12            | Faizabad      | IV                |
| Pea (mid season)        | VRP-3              | IIVR          | I                 |
| Pea (edible Podded)     | Organ Sugar Podded | Ludhiana      | VI                |



Punjab Sadabahar



NDB-28-2 (Narendra Brinjal-2)



D-2-88-6



BT-116-3-2 (Utkal Pragyan)



NDT-3



KS-118 (Azad T-6)





DVRT-2 (Kashi Anupant)



B'T-20-2-1 (Utkal Raja)



NDT-9 (Narendra Tomato-4)



AKC-86-39 (Jayanti)



BC-14-2 (Utkal Ava)



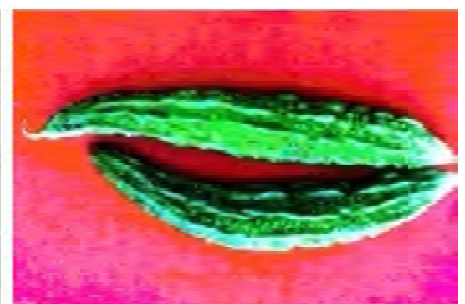
RHRC Cluster Erect



Garlic VLG-7



KT-25



PBIG-1(Pant Karela-2)



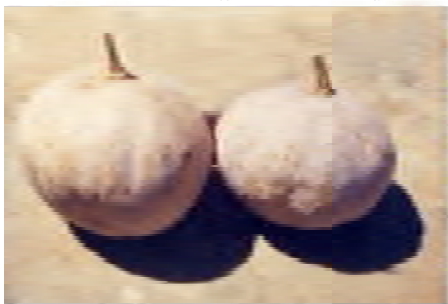
POBOG-61 (Pant Lauki-3)



BG-L-C-2-1 (Punjab Long)



CHC-2 (Swarna Ageti)



CM-350 (Sooraj)



NDFK-24 (Narendra Agrim)



CHRG-1 (Swarna Manjari)



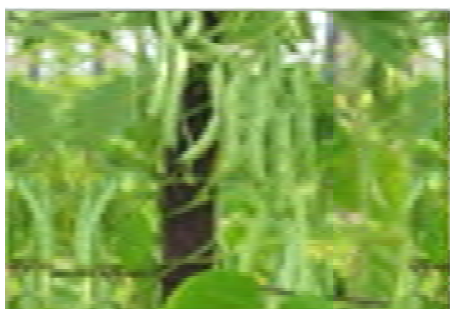
PRG-7 (Pant Torai-1)



IIHR-7 (Arka Sumeet)



CH-812 (Swarna Priya)



CH-819 (Swarna Lata)



VRP-2 (Kashi Kanak)



NDVP-12



VRP-3 (Kashi Aarti)



Organ Sugar Podded

## Insect Pest Management

### Recommendations

Three years studies at IIHR, Bangalore indicated that spraying of NSKE (5%) is effective in reducing the damage caused by leaf miner in cucumber. Another neem formulation econeem @ 7.5 ml/lit is also performing well and 5 applications of any of these neem products may be recommended at 10 days interval from 20 DAS.

In Kalyanpur for control of brinjal shoot and fruit borer, maximum net income and C:B ratio was obtained by spraying cypermethrin @ 50 gai/ha at 20, 35, 50 and 65 DAT.

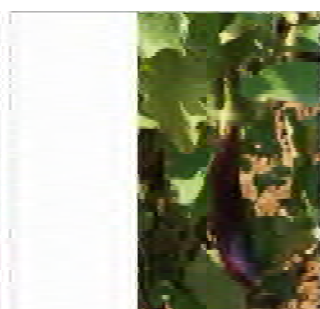
### Heterosis Breeding

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

|    | Crops                | Name of hybrids | Source         | Recommended zones |
|----|----------------------|-----------------|----------------|-------------------|
| 1. | Brinjal Long         | ARBH-541        | Ankur          | All               |
| 2. | Brinjal Long         | PBH-6           | Pandey seeds   | All               |
| 3. | Brinjal Round        | JBH-1           | Junagadh       | All               |
| 4. | Tomato Indeterminate | BSS-20          | Beejo seetal   | All               |
| 5. | Cucumber             | PCUCH-1         | Pant Nagar     | All               |
| 6. | Bottle gourd         | NDBH-4          | Faizabad       | All               |
| 7. | Bitter gourd         | RHRBGH-1        | Rahuri         | All               |
| 8. | Okra                 | DVR-3           | IIVR, Varanasi | All               |



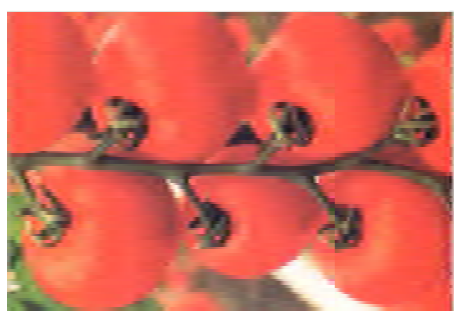
ARBH-541



Brinjal PBH-6



JBH-1



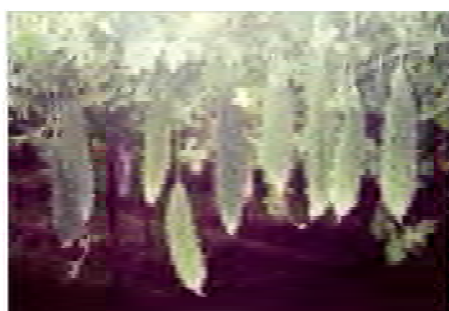
BSS-20 (Meenakshi)



PCUCH-1 (Pant Sankar Khira-1)



NDBGII-4



RHRBGH-1 (Phule Priyanka)



DVR-3



## DISEASE MANAGEMENT

Following recommendations were finalized and accepted in the group meeting

### Seasonal occurrence of brinjal diseases (IIVR, Varanasi)

Continuous survey for five years revealed that the crop is infected by ten fungal diseases, one each bacterial, viral and phytoplasma diseases. Among the fungal diseases phomopsis blight ranks first in relation to incidence and economic damage. The maximum incidence of *phomopsis* blight was observed after 105-135 days of transplanting. Next important disease is *Alternaria* blight as per incidence recorded although this disease does not cause much economic loss as it appeared late in the season. Other important fungal diseases recorded are *Sclerotinia* blight and Collar rot.

### Seasonal occurrence of chilli diseases (IIVR, Varanasi)

Two diseases have been identified as major problem namely anthracnose (di-back) and damping off. Di-back symptoms appeared during last week of September to middle of October. Fruit rot symptoms also post harvest loss.

Bacterial leaf spot rank third economically important disease. Which appeared only on at early stage of September and in late stage of January. Incidences of *Cercospora* & *Alternaria* were very high at later stage of crop growth i.e. in January. Other minor diseases recorded are root rot, collar rot, *Sclerotinia* blight, *Myrothiceum* leaf spot, bacterial wilt. Enation leaf curl on chilli was observed since last three years but incidence was very low.



**Bacterial spot of tomato (*Xanthomonas axonopodis pv vesicatoria*)**

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

On the basis of three years report it has been concluded that three sprays of carbendazim (0.1%) from 50 days after sowing at 10 days interval recorded very low disease incidence (12.65%) of *Cercospora* leaf spot with the highest yield (143.12 q/ha) as compared to control (49.78% & 90.50 q/ha). The same treatment showed highest cost benefit ratio (4.14) as compared to control (2.28).

### Seed Production

1. The prescribed isolation distance of 200 m for certified seed production of okra is valid and should be maintained for quality seed production of okra as no NCP took place at the isolation distance of 200 m for the last five years at Ludhiana.
2. The seed sowing on 25<sup>th</sup> Nov. with 20 cm row spacing is recommended for higher seed yield of pea (Arkel) under Jabalpur conditions with a cost : benefit ratio of 1 : 3.35.
3. Application of 45:90:60 kg NPK/ha along with a seed rate of 75kg/ha in Pea (Arkel) is recommended for higher seed yield under Jabalpur conditions with a cost : benefit ratio of 1 : 3.01.
4. Application of 80 kg N + 40 kg P/ha with cost: benefit ratio 1:1.51 is recommended for higher seed yields of French bean cultivar Contender under Jabalpur conditions.
5. Sowing of okra (Harbhajan) on 15<sup>th</sup> May at 60x30 cm spacing is recommended for obtaining maximum seed yield with a cost : benefit ratio of 1 : 3.08 under Solan conditions.
6. Application of 100kg N/ha with planting at 60x30 cm spacing is recommended for obtaining maximum seed yield in Paprika under Solan conditions with a cost : benefit ratio of 1 : 3.08.



## NATIONAL SEED PROJECT

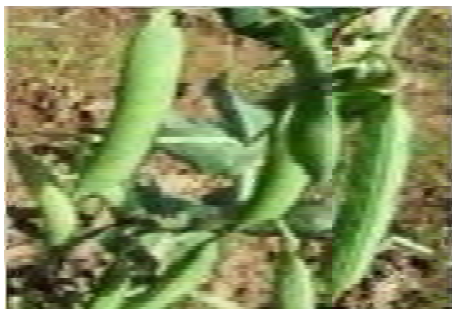
It was emphasized that for quality seed proper care should be given to breeder seed production as well as nucleus seed. The chairman stressed upon the centres to ensure the targeted breeder seed production and submission of report timely. During last Group Meeting it was suggested that buffer stocking of breeder seed is must for exigencies.

### Resistant Varietal Trial

After thorough examination of the data the following entries have been identified as resistant one and recommended for release under AICRP (VC) Programme during XIXth Group Meeting held at IIVR, Varanasi

In Muskmelon **DMDR-2** and **DMDR-1** developed at IARI, New Delhi, have been identified as a source of resistance against downy mildew and Cucumber Green Mottled Mosaic Virus.

| Crops             | Name of the entries | Centre    | Disease        |
|-------------------|---------------------|-----------|----------------|
| Peas (mid season) | DPP-68              | Palampur  | Powdery mildew |
|                   | KS-245              | Kalyanpur | Powdery mildew |
| Okra              | VRO-3               | IIVR      | YVMV           |



DPP-68 (Palam Priya)



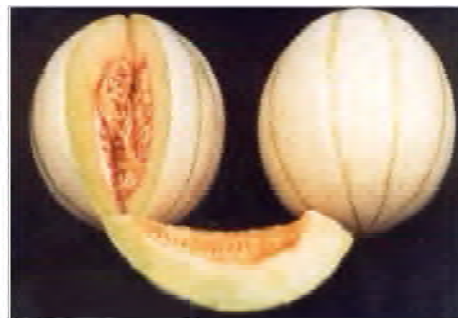
KS-245(Pea Azad P-5)



VRO-3



Musk melon- DMDR-2



DMDR-1