- Dr. B. Singh informed the house about the status of hybrid developed by private seed companies tested under AICRP (VC) and also about the work of ITMU at IIVR, Varanasi.
- In his concluding remark, the Chairman advocated the use of modern techniques like DNA Fingerprinting to protect breeching of the parental lines and other breeding material and re-emphasized on need of Public-Private Partnership.

### Plenary Session

- Dr. B. Singh, Project Coordinator, AICRP (Vegetable Crops) advised to record and send the Meteorological Data for proper assessment of the impact of climate change on the vegetable production in different agro-climatic Zones of the country.
- Chief Guest. Dr. N.C. Patel invited the attention of workers towards the need of efficient water management in crop production in general and in vegetable cultivation in particular. He also advocated to evolve the technology for uninterrupted supply of vegetables in urban areas through poly house production.
- In the concluding remarks, Chairman, Dr. U.C. Srivastava, suggested that proposal for notification of the identified varieties should be submitted well in time and it should also be registered in Biodiversity Authority of India in order to protect IPR issues.

## XXX-Workshop

**Venue : Govind Ballabh Pant University of Agriculture & Technology, Pantnagar**

**Date : 13th - 16th January, 2012**

### General Session

General Session on Action Report on the XXXth Group Meeting of AICRP (Vegetable Crops) was chaired by Dr. H. P. Singh, DDG ( Horticulture). Action Taken report was presented by Dr. B. Singh, Project Coordinator, AICRP (Vegetable Crops). Under this session, following important decisions were taken by the house.

### Distinguish characteristics with photograph of released and notified varieties must be deposited with PC Cell.

It was suggested by the Chairman Dr. H.P. Singh, DDG ( Horticulture) that Centers which have not yet provided the information on varietal characteristics and photographs etc. they once again be requested to submit the information. In this context, if needed, Council will draft D.O. letter to concerned universities, ICAR Institutes for furnishing the information.

### Minimum yield level in each crop should be decided for acceptance of trial

The Chairman, expressed concern over the low yield reporting from the experimental plots by the centres. He advised that trial should be properly monitored and properly managed so that full potential of the entries/ hybrids may be realized. Inviting the opinion of the house, it was decided to agree upon the minimum yield of all the vegetables taken under AICRP programme, Minimum yield fixed during the discussion will be communicated to all the centers.

## Minimum yield to be considered for identification of varieties/hybrids

| Crops | Minimum acceptable yield (t/ha) | |
|---|---|---|
| | O.P. | Hybrids |
| Tomato (Det.) | 20 | 30 |
| Tomato (Indet.) | 30 | 40 |
| Brinjal (Long) | 30 | 35 |
| Brinjal (Round) | 30 | 35 |
| Brinjal (Small round) | 30 | 35 |
| Chilli | 12 | 15 |
| Capsicum (OP) | 20 | 30 |
| Capsicum (Protected Cult.) | 30 | 40 |
| Paprika* | 8 | 8 |
| Cucumber | 20 | 25 |
| Bitter gourd | 15 | 20 |
| Bottle gourd | 25 | 30 |
| Pumpkin | 25 | 30 |
| Sponge gourd | 20 | 25 |
| Ridge gourd | 20 | 25 |
| Ash gourd | 30 | 40 |
| Pointed gourd | 15 | - |
| Ivy gourd | 15 | - |
| Muskmelon** | 25 | 30 |
| Watermelon** | 25 | 30 |
| Okra | 12 | 15 |
| Carrot (Temperate) | 20 | 25 |
| Carrot (Tropical) | 20 | 25 |
| Cauliflower (Early) | 15 | 20 |
| Cauliflower (Mid) | 20 | 25 |
| Cauliflower (Late) | 25 | 30 |
| Cabbage (Early) | 25 | 30 |
| Cabbage (Mid) | 30 | 35 |
| Cabbage (Late) | 30 | 35 |
| Broccoli | 15 | 20 |
| Kale | 20 | |
| Pea (Early) | 9 | |
| Pea (Mid) | 10 | |
| Pea (Powdery mildew) | 12 | |
| French bean (Pole type) | 15 | |
| French bean (Bush type) | 10 | |
| Cowpea | 12 | |
| Dolichos bean (Bush type) | 12 | |
| Dolichos bean (Pole type) | 15 | |

* Oleoresin content > 15 mg/100g, colour value >100 ASTA **TSS > 12 o Brix at 20°C

## Varietal Trials

The data for the year 2008-09, 2009-10 and 2010-11 was thoroughly scrutinized by the committee and it was found that the entries have inconsistent performance during the evaluation period. Therefore, none of the entries were identified for release and notification.

## Hybrid Trials

The committee thoroughly scrutinized the data for the year 2008-09, 2009-10 & 2010-11 and the following entries were identified for release and notification.

| Crops | F1 Hybrids | Source | Recommended zones |
|---|---|---|---|
| Brinjal (Long) | PHBL-51 | PAU, Ludhiana | IV |
| Brinjal (Small round) | PBHSR-31 | PAU, Ludhiana | IV & VI |
| Chilli | BSS-378 | Bejo Sheetal | VII |
| Okra | OH-597 | Syngneta | VII |
| | AROH-631 | Ankur | V & VII |
| Tomato (Det.) | VRTH-101 | IIVR, Varanasi | I & IV |

PHBL-51

PBHSR-31

BSS-378

OH-597

AROH-631

VRTH-101(Kashi Abhiman)

## Resistant Varietal Trials

The data for the year 2007-08, 2008-09, 2009-10 and 2010-11 was thoroughly scrutinized by the committee and the following two entries were identified for release and notification.

| Crops | Entries | Source | Recommended zones |
|---|---|---|---|
| Brinjal Bacterial wilt | VNR-218 | VNR Seed Company | II |
| Pea (Mid-season) powdery mildew | VP-434 | VPKAS, Almora | I & IV |

The entry BB-54 of brinjal and LE626, BT-106 and Megha Tomato-2 of tomato for bacterial wilt should be registered as a resistance line for bacterial wilt subject to challenge inoculation.

VNR-218

VP-434

## Vegetable Production

Based on the three year data following recommendations were emerged:

## IPNM

1 At Durgapura, the maximum yield (139.86q/ha) along with highest C:B ratio (1:2.64) in gardenpea cv. AP-1 was recorded with the application of +1/2 NPKrec. + Vermicompost @ 2.5 t/ha. Hence, it recommended for Durgapura conditions of Rajasthan.

2 At Jabalpur during kharif season application of Vermicompost @ 5t/ha along with the half the NPKrec. (30:40:70kg/ha) gave maximum net return(C:B ratio 1:1.52) in cowpea variety CP-4. Hence it is recommended for Jabalpur conditions.

## Protected cultivation

3 At IIVR, Varanasi cucumber variety Pant Sankar Khira is most promising under protected condition with the maximum yield (367.3 q/ha) along with highest C:B ratio (1:3.42). Hence it is recommended for Varanasi conditions.

4 At IIHR, under naturally ventilated poly houses capsicum var. Indra planted at spacing of 60 x 30 cm spacing with 4 stem training gave maximum yield of 1024.7 q/ha with C:B ratio (1:2.71) in tomato. Hence, it is recommended for IIHR conditions.

## Low tunnel

5 Under Faizabad conditions Narendra Sankar Lauki -4 maximum yield of 538.4 q/ha with B:C ratio of 1:4.78 is obtained when plating done on 15th Dec. under low poly tunnel.

## Organic Farming/Cropping Sequences

6 At Ludhiana, application FYM @ 10 t/ha along with poultry manure 2.5 t/ha is recommended for tomato with the highest yield of 459 q/ha and B:C ratio 1:3.51. and for Okra application of poultry manure 5 t/ha gave an yield of 110 q/ha with B:C ratio 1:3.41. (2012).

7 Organic production of Amaranths at Hyderabad application of FYM@ 20t/ha in combination with PSB + Azospyrillum @ 5 kg/ha is recommended for max. yield and high B:C ratio. (2012).

## Precision Farming

8 At IIHR precision farming involving protreys seedlings +raised bed method of cultivation + drip fertigation+ mulching+ foliar feeding of micro and macro nutrients in hybrid tomato gave max.

yield of 1149.6 q/ha with B:C ratio 1: 3.0. and for Okra raised bed method of cultivation + drip fertigation+ mulching+ foliar feeding of micro and macro nutrients gave yield of 327.9 q/ha with B:C ratio 1: 2.71(2012)

## Seed Production

1. Seedling vigour index and speed of germination can be used as vigour test to predict the planting value of okra seed var. Arka Anamika under Bangalore conditions.
2. For getting maximum seed yield in capsicum var. Arka Mohini under net house condition all the fruits should be retained in the plants under Bangalore conditions.
3. The poultry manure @ 7.0 t/ha has given maximum fruit and seed yield for tomato var. PKM-1 under Periyakulam conditions.
4. The seedling of 30 days old Azad T-5 cultivar of tomato may be suggested for transplanting in Gangetic plains of Northern India to obtain maximum seed yield under Kalyanpur conditions of Uttar Pradesh.
5. Maximum seed yield and germination can be obtained in brinjal variety Swetha by applying Azospirillum and 50% N+recommended full dose of phosphorus and potash at Vellanikkara conditions.
6. Maximum germination and vigour index can be obtained during storage of okra var. Arka Anamika by treating the seeds with polymer+imidacloroprid 1%+Bavastin 1% at Vellanikkara conditions of Kerala.

## Insect Pest Management

## The following recommendations were emerged out during discussion :

1. In chilli, seed treatment with thiamethoxam @5 g/kg and alternate foliar spray of NSKE @ 5 % and fipronil @1.5 ml/L at initiation of the pest and subsequent sprays at 15 days interval reduced the thrips damage at IIHR, Bengaluru.
2. In chilli, spraying of acephate in rotation with dicofol followed by neem oil and aqueous garlic extract was found to be most effective in controlling mites and acephate in rotation with dicofol followed by pongamia oil (1%) against thrips at IIVR Varanasi.
3. Two sprays of flubendamide 39.35 SC @1 ml/l , first at 50% flowering and second at 50 % pod setting was found most effective in management of cowpea pod borer Maruca vitrata at Anand.
4. In okra although chemical module was found effective but integrated module comprising of seed treatment with thiamethoxam 70 WS @ 3 g/kg seed, foliar spray of neem formulation (Multineem) @ 3 ml/lit at 40 DAS, foliar spray of endosulfan (1 ml/lit) + neem formulation @ 3 ml/lit at 50 DAS, foliar spray of spinosad 45 SC @ 0.3 ml/lit at 60 DAS, foliar spray of Bt formulation @ 2 ml/lit at 75 DAS and foliar spray of neem formulation @ 3 ml/lit 85 DAS was more effective in controlling jassids and fruit borer of okra, respectively with higher yields and high CB ratio at IIVR, Varanasi.
5. In brinjal, erection of pheromone traps @100 traps/ha, shoot clipping at weekly interval, destruction of infected fruit and four rounds of spraying of NSKE (4%) at 10 days interval was found effective for the management of brinjal shoot & fruit borer (BSFB) at Sabour conditions.

## Disease Management

The following recommendations are emerged :

1. Whitefly population was found to be higher during August-September irrespective of years in Kalyani. Maximum and minimum RH and rainfall had significant correlation with YVMV disease severity and whitefly population. Whitefly population increased with increase in relative humidity. Maximum temperature (28-32$^0$C) and average RH above 80% was found to be conducive for population build up of whitefly and severity of YVMV disease of okra. Minimum RH and minimum temperature were found to be the most important predictor for forewarning of YVMV disease severity of okra in Kalyani.
2. An IDM practice consisting of FYM (30 q/ha) + green manuring + soil application of PGPR (5 kg/ha)+PGPR root dipping (1%)+ liming (25q/ha)+Karanja cake (10q/ha)+ spent compost (10q/ha) found effective against bacterial wilt of tomato under Ranchi conditions.
3 Seed treatment with Metalaxyl+Mancozeb (0.25%) + 3 times removal of lower infected leaves in the morning and spray of Mancozeb (0.25%) in the afternoon found effective against downy mildew disease under bower system grown sponge gourd and the treatment recorded significantly higher yield (124.21 q/ha) than conventional (115.66 q/ha) and control (87.22 q/ha) under Sabour conditions and the same treatment also performed well against downy mildew of bitter gourd and bottle gourd at Bhubaneshwar and Hyderabad conditions respectively
4. Application of green manure (20 t/ha) + seed treatment with Carbendazim (0.25%) + soil drenching with Carbendazim (0.25%) two times at 15 days interval +soil drenching with Trichoderma harzianum (10 g/l) at 25 DAS, recorded significantly less incidence of Fusarium wilt (2.85 %) and high yield (253.28 q/ha) in bottle gourd under Sabour conditions.
5. Three foliar sprayings of fungicide tridemorph (0.1%) immediately after initiation of disease at 10 d interval was found effective against powdery mildew of pumpkin under Bhubaneshwar conditions.
6. Three foliar sprays wettable sulphur (0.2%) at 15 d interval starting from the initiation of disease found effective against powdery mildew disease of bottle gourd under Junagadh conditions.
7. Three foliar sprays of flusilazole (0.1%) at Varanasi conditions, triadimefon (0.25%) or tridemorph (0.1%) at Kalyanpur conditions and triadimefon (0.25%) at Sabour conditions was found effective in controlling the powdery mildew disease of pea.
8. Two foliar sprays of propiconazole (0.025 %) at 15d intervals found effective against Cercospora leaf spot and rust (Uromyces) diseases at Junagadh conditions. The same chemical performed well against Cercospora leaf spot disease under Kalyani conditions.

Forecasting model against major diseases of vegetable crops to be developed:

For developing forecasting model against blight (early and late blight of tomato), the Chairman advised that Director, CPRI may be consulted for validation of accuracy of the model given to different canters. He also suggested that trials should be monitored by the PC regularly.

Exchange of genetic material between public and private sectors is essential to enhance the efficiency of agricultural system

Under exchange of genetic material, the details of materials/ entries under MTA must be recorded from the respective centres while compiling the information.

Centers should continue more entries for multilocational testing under AICRP (VC) to make the program more vibrant.

Chairman reiterated that allotment of the funds to respective canters must be based on the performance of the centre. Notice should be given to the centre which is not performing well for last three years.