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Vegetable-Newsletter

ICAR-Indian Institute of Vegetable Research

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From the Director's Desk

The COVID-19 pandemic has spread extensively all over the world and posed great menace to human being affecting health, life style, employment, food and nutrition. The unfolding crisis has recognized the resilience of the agricultural sector and threatened people's access to food via multiple dynamics. Lockdown measures and disruptions in supply chain have changed the way people engage and interact with the food system to acquire, prepare and consume food. People showed interest in kitchen and community gardening to grow their own plants to ensure their food and nutrition. Nevertheless, this also presents a great opportunity for us to reconsider and start looking for the hidden potential of agriculture, especially vegetable production for nutrition, and health security. Despite challenges posed by Covid-19 pandemic, agriculture/horticulture was the only sector to register positive-growth among all other sectors. For the first time since 2013-14, agriculture recaptures the economic sustainability and it could be a silver lining for the Indian economy as it is estimated to grow at a rate of 3.4% for the year 2020-21 (first advance estimate). Likely, total horticulture production in 2021 is estimated to be 331.05 million tonnes (third advance estimates) an increase of 2.93% over last year production. The total production of vegetables is estimated to be 197.20 million tonnes, 4.8% higher than the previous year production (188.28 MT). COVID-19 has also imposed a new set of challenges for the individual to maintain a healthy diet. A balanced and healthy diet can boost the immune system, which can be further strengthen through healthy and diversified diets. An adequate intake of zinc, iron, and vitamins A, B12, B6, C& E is essential to maintain our immunity. Since vegetables are rich sources of antioxidants, vitamins, and minerals, hence consumption of vegetables will protect us against several diseases and maintain our health.

T K Behera
Director, ICAR-IIVR

Promising Genotypes

A new carotenoid rich pumpkin genotype - VRPK-19-03

Pumpkin (Cucurbita moschata) crop has a central importance among vegetables serving as both functional and satiating food. It was grown in 0.8 million ha area with 1.71 million tonnes production in India in 2017–2018 (HORTSTAT, 2020). The high productivity, nutritive value and availability window enhances its prominence as a commercial crop well suited for meeting food and nutritional security. The major nutritional compounds in pumpkin are total sugars, dietary fibres, carotenoids and antioxidant capacity. Currently, most of the pumpkin cultivars widely cultivated in India are yellow fleshed which contain lower carotenoid content. Therefore, breeding work was undertaken to develop a new deep orange fleshed pumpkin variety with higher carotenoid content in comparison to widely grown yellow fleshed varieties. The newly developed line showed a higher carotenoid content (4.83 mg/100g fw) and recovery percentage (83.3-85.0%) over the traditional cultivars where the carotenoid content (~1.53 mg/ 100 g fw) and recovery are lesser (~73.9-81.4%) due to higher fleshy part, seed and peel. β-carotene, precursor of Vitamin 'A' are powerful oxidants and help in protection from eye disorders, macular region degeneration, cancer and aid maintenance of healthy skin. Higher β-carotene content (3-5 fold), deep orange colour and higher recovery of this variety shall create demand for this new variety as the awareness among the masses for health has increased considerably. The number of fruits per plant ranged from 2.0 to 7.0, while average fruit weight ranged from 0.652 kg to 1.57. Fruit length ranged from 12.47 cm to 18.33 cm and diameter ranged from 10.25 cm to 13.50 cm. The fruit shape was cylindrical with bottle and crooked neck in the population. Overall, this newly developed pumpkin line shall prove useful for pumpkin breeders, consumers and farmers.

Sudhakar Pandey, Vikas Singh, Swati Sharma, T. Chaubey, P. Karmakar, Keshav Gautam

ICAR-Indian Institute of Vegetable Research, Varanasi, UP

VRPSel-17: A Versatile Vegetable Pea Genotypes for Multiple Genetic Studies

Since the early 1950s, garden pea (Pisum sativum L.) has been used as a model plant species in the various genetic studies. The inflorescence trait, number of flowers per peduncle/node (FPP) is among one of the major yield attributes that has played a significant role in genetic improvement of legumes through various breeding programmes including vegetable peas. Substantial variation has been reported for this economic trait among different legumes such as 1-9 in chickpea, 1-5 in Pisum, 1-4 in grass pea, and 2-7 in lentil. The trait is treasured by the breeders and researchers for both agricultural and evolutionary significance. Besides, the genotypic background, trait is affected by so many other factors viz., environment variation, soil nutrient status, agronomical practices etc. Thus, a varied expression of FPP can be seen within a single genotype as well within single plant of a genotype. Further, most of peas genotypes bears one to two FPP with a definite pattern like single flower at lower few nodes followed by two flowers/peduncle on some of middle nodes that again terminated into single flower at the upper nodes. Thus, it is difficult to get single/double/multi flower on all the flowering nodes of a plant/genotype. VRPSel-17 (No-17) is a mid-season genotype of vegetable pea, unique in the fact that it bears only one flower (white) on all its flowering nodes, and not affected by external growing conditions including the environment. The genotype is showing consistent flowering behaviour of single FPP on

all the reproductive nodes over the years and seasons. The genotype is kept as unique selection from the germplasm, maintained at ICAR-IIVR, Varanasi since last few years and presently in use for various genetic studies. The genotype is also characterized by its indeterminate shoot growth habit (average plant height 160cm) with longer internodal and peduncle length that reflects as a dominate trait in its off-springs. Pods are 6-7cm long, green in colour having 20-25 pods per plant with four to five seeds per pod. Seeds are smooth, yellowish cream (GYG161C) in colour having 100-Green seed weight of 37-40g. The genotype is also resistant to major pea diseases powdery mildew and rust. Although this genotype is having low pod yield (60-70gm/plant) than the commercial cultivars, due to its distinct morphological appearance, this genotype can be used in multiple genetic studies such as inheritance of flower numbers, flowering times, seed and pod characters, peduncle traits, and diseases studies.

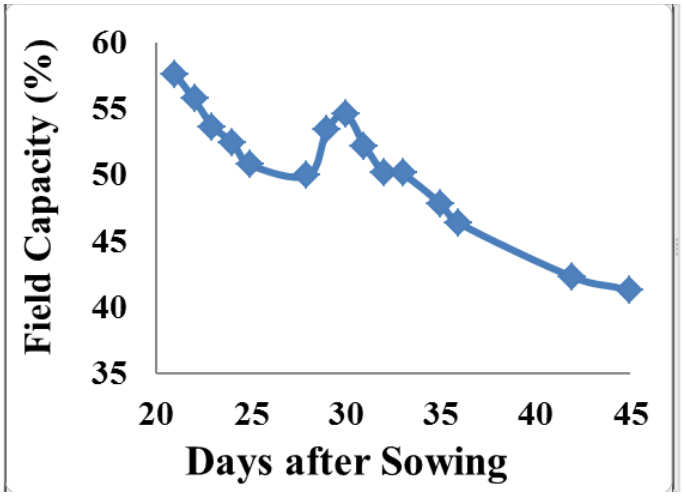
VRPSel-17 at flowering and pod formation stage bearing single flower on each reproductive node

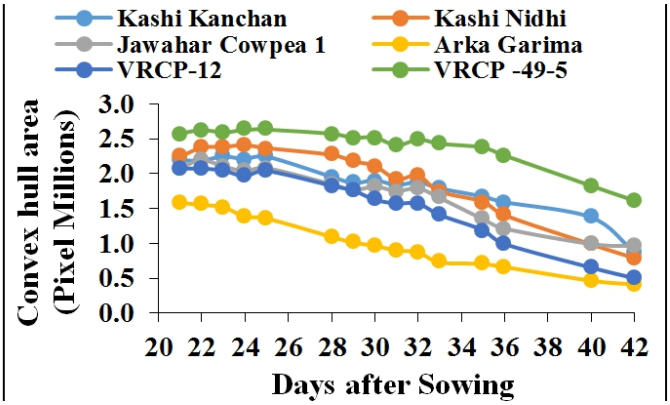
Jyoti Devi, RK Dubey, SK Sanwal, PM Singh and Jagdish Singh

ICAR-Indian Institute of Vegetable Research, Varanasi, UP

Convex hull area as a surrogate parameter to assess shoot architectural responses in cowpea genotypes under water deficit stress

Plants exhibit various morphological responses to minimise the transpirational loss under drought stress. In this context drooping/rolling of leaves in response to depleting soil moisture has been widely acclaimed in different crops. These characteristics of plants are important for breeding programmes, however such phenomenon is difficult to quantify during large scale germplasm screening. Image based parameters can explain such changes quantitatively. Convex hull area is one of the image parameter, which tells about the spread of canopy from top view or/and side view. It is a polygonal structure, which adjoins the peripheral points of plant parts by keeping all the plant parts inside the convex shape. Convex hull area was used as parameters to estimate the spread of the leaves within the plants. The convex hull area of six cowpea genotypes were assessed under well-watered and water stressed environments in high throughput Phenomics Platform at ICAR-NIASM, Baramati to evaluate the promising genotypes having water deficit stress tolerance. Soil moisture was maintained in the range of 40-58 % of the field capacity. In this experiment all genotypes exhibited higher convex hull area under well-watered condition than under the





water stressed condition. Convex hull area increased when water was supplied to plants. It was observed that VRCP-49-5 showed highest convex hull area and least influenced by water stress than other genotypes whereas Arka Garima showed least convex hull area and very high response to water availability. This indicated that convex hull area can be used to differentiate the shoot architectural responses of cowpea genotypes.

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2; ICAR- National Institute of Abiotic Stress Management, Baramati, MH

Production Technology

Brimato: A new technology for production of brinjal and tomato in same plant through grafting

Dual or multiple grafting is a new technological option, wherein two or more than two scions of the same family are grafted together to harvest more than one vegetable from single plant. At ICAR-IIVR, Varanasi dual grafting of brinjal and tomato (brimato) was successfully demonstrated in field during 2020-21. In this study, brinjal hybrid-Kashi Sandesh and improved cultivar of tomato-Kashi Aman were successfully grafted onto brinjal rootstock- IC 111056. Grafting operation was performed when brinjal seedlings were 25-30 days and tomato 22-25 days old. Grafting was done by side/slice method, wherein 5-7 mm slanting cuts (45° angle) were made both in rootstock and scion. Grafted plants were transplanted in field 15-18 days after grafting operation. During early growth stage, precaution was taken for maintaining balance growth both in brinjal and tomato scions. Also shoots, if any arises below grafting union, removed immediately. Fertilizers were applied at 150:60:100 kg NPK/ha, apart from 25 tons of FYM. Both brinjal and tomato starts fruiting 60-70 days after planting. Experimental findings revealed that about 36.0 fruits with 2.383 kg yields were harvested in tomato/ plant, while in brinjal 2.684 kg yields were obtained from 9.2 fruits/plant. Dual grafted brimato technology would be very useful for the urban and sub-urban areas, where limited spaces are available for accommodating vegetables in vertical garden or pot culture over terrace and compound. Research on commercial production of grafted brimato is continued at ICAR-IIVR, Varanasi.

Brinjal and tomato is ready for harvest from Brimato plant

Additional chief secretary (Agril.) U.P. is visiting Brimato field at ICAR-IIVR, Varanasi

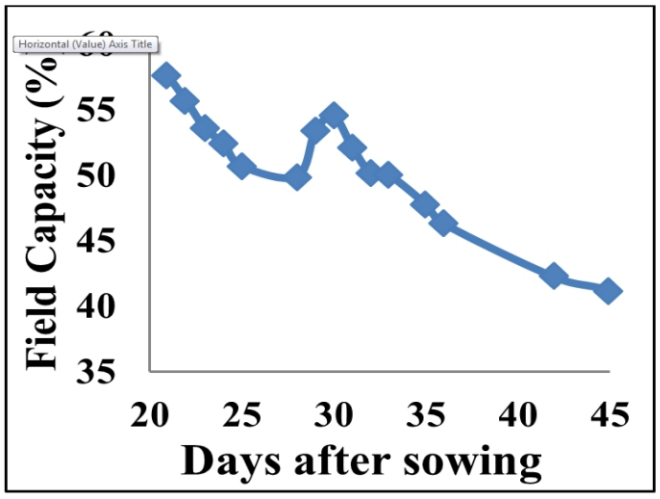
Anant Bahadur, Anish Kumar Singh, Jagdish Singh and T. K. Behera

ICAR-Indian Institute of Vegetable Research, Varanasi- 221 305, UP, India

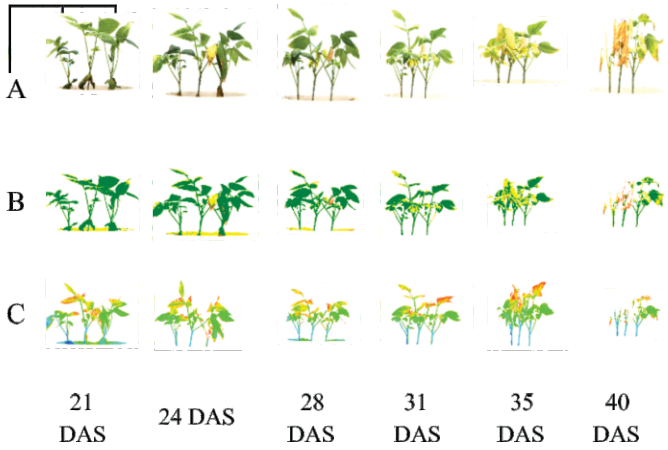
High-throughput phenomics tool to assess the water stress responses in genotypes of cowpea [Vigna unguiculata (L.) Walp].

Plants manifest various physiomorphological alterations such as changes in plant shoot architecture, drooping or rolling of leaves to minimise the transpirational area in response to depleting soil moisture. These characteristics of plants are important for breeding programmes, but such phenomenon is difficult to quantify during large scale germplasm screening due to low-throughput, labor-intensive, costly, and time-consuming. Image-based plant phenotyping using automated digital cameras can explain these parameters effectively. There are reports that three dimensional digital volume, which is a derived feature from projected side and top areas can be used as to

estimate plant biomass accumulation. Digital volume enables the high-throughput non-destructive estimation of biomass for plants regardless of whether or not plants are stressed. In this experiment six genotypes of cowpea including local check Kashi Kanchan variety grown in pots were tested under water deficit condition in National Plant Phenomics Facility, ICAR-NIASM, Baramati. Experiment was conducted to optimise image based

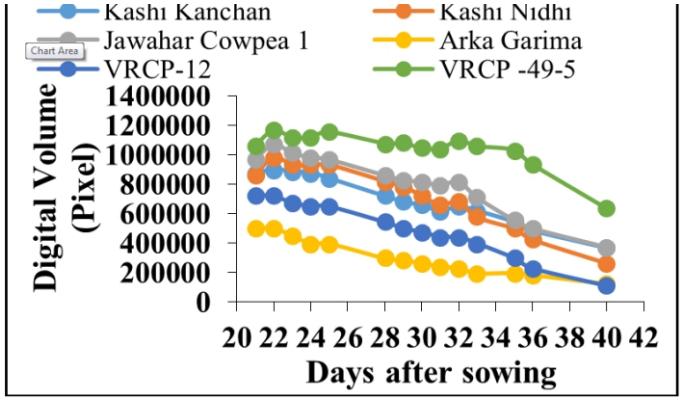


Field capacity during cowpea plant growth



Images of Cowpea taken after 21 DAS to 40 DAS. (A) Side view original images of Cowpea plants. (B) Processed image of the same plants shown in A, where green depicts healthy leaves and yellow indicates senescent areas (C) NIR images of the same plants shown in A.

phenotyping method to assess responses of cowpea genotypes to deplete soil moisture stress and identification of promising genotypes superior to locally adapted genotype. Soil moisture was maintained in the range of 40-58 % of the field capacity (Fig. 1). VRCP 49-5 genotype having high digital volume as compared to other genotypes and it was maintaining higher upto 40 DAS under water deficit condition (Fig. 3). It was also observed that the rate of decrease in digital volume after 32 DAS was faster in VRCP 49-5 as compared to others genotypes. Hence image based non-destructive tools can be used as a high throughput tool to screen a large number of germplasms.



Response of cowpea genotypes under depleting soil moisture

Rajeev Kumar[1], Jagdish Rane[2], B. Rajasekhar Reddy[1], Krishna Jangid[2], Jagdish Singh[1], N P Singh[2]

1. ICAR-Indian Institute of Vegetable Research, Varanasi, UP
2. ICAR- National Institute of Abiotic Stress Management, Baramati, MH

Pest Management

Kashi Taru variety (Brinjal) is resistant to postharvest losses caused by Rhizopus stolonifera

Damage caused during harvesting, packaging, storage and transportation can induce infection caused by postharvest pathogens. Rhizopus stolonifer is a polyphagous saprophytic fungus that can survive under wide range of temperature and relative humidity causing huge postharvest losses. It causes damage in both fruits and vegetables including eggplant. Few brinjal varieties can resist infection caused by R. stolonifer and thereby reduce postharvest losses. Kashi Taru brinjal variety is found to be resistant whereas IVBHL22 and IVBHL23 are susceptible to the infection caused by the postharvest pathogen R. stolonifer. Prolonged incubation of two weeks could not cause infection in the Kashi Taru variety.

Varieties resistant to the postharvest diseases are beneficial to the farmers as it will increase their income. Breeding strategies to develop disease resistant varieties are in vogue these days. The existing popular vegetable varieties can be screened for various postharvest pathogens which can be considered as an important trait before recommending a variety for vegetable production.

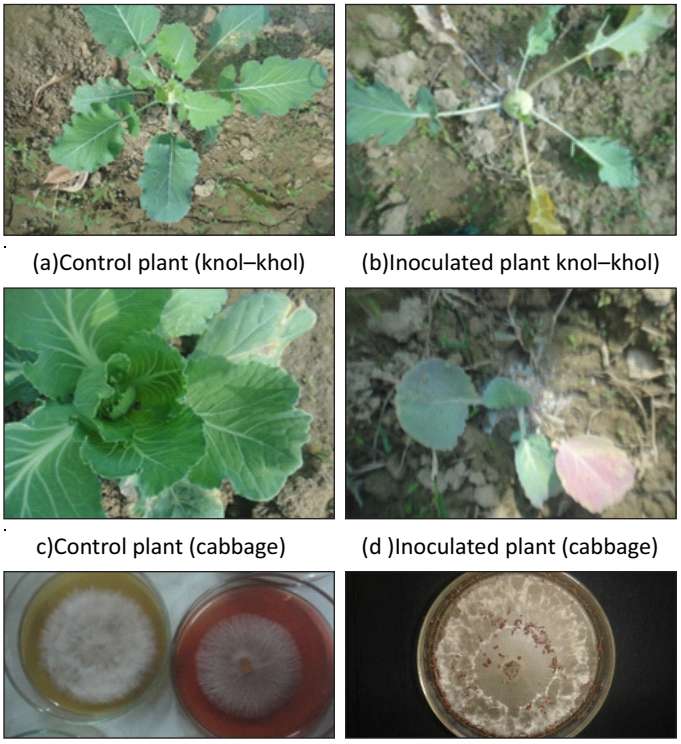
Kashi Taru, IVBHL22 and IVBHL23 brinjal variety tested against postharvest pathogen *Rhizopus* under laboratory conditions

Vijaya Rani, Sujan Majumder, Rani A T, Pratap Divekar, Shailesh Kumar Tiwari, Koshlendra Kumar Pandey, Jagdish Singh

ICAR-Indian Institute of Vegetable Research, Varanasi, UP

Inoculation technique of Sclerotium rolfsii for screening of resistance in cole vegetable crops

Sclerotium rolfsii is a wide host range soil- borne fungal pathogen causing collar rot in Cole vegetable crops. During 2020-2021, the effectiveness of sorghum-meal-sand inoculation technique of S. rolfsii in sick plot (7 m length × 6 m width) on cauliflower (cv. PusaSnoball), cabbage (cv. Golden Acre) and knolkhol (cv. Local) was standardized. Sorghum seed powder (150 g) properly mixed with sand (250 g) finally filled in conical flasks for further experimentation. Each flask containing 400 g of a composite mixture of sorghum seed powder and sand (3:5) which is suitable food base and substrate for mass production of inoculum (multiplication of mycelia and sclerotia). Composite mixture of sorghum-meal-sand of each flask mixed with 30 days old 100 ml of sclerotial potato dextrose broth (PDB) of S. rolfsii (Sr- 1) for preparation of inoculum. The plants were inoculated with sorghum-meal-sand inoculum (3:5:2) mixture (1g per plant) after 21 days of transplanting (DAT) through ring spot method. The disease severity assessed using a 1-5 point rating scale after 14 days of inoculation (DAI). Non inoculated plants were used as check. This is the first report of inoculation technique for resistance screening of cultigens of Cole crops against S. rolfsii.



(a)Control plant (knol–khol) (b)Inoculated plant knol–khol)

c)Control plant (cabbage) (d)Inoculated plant (cabbage)

(e)PDA culture plate and sclerotia of*S. rolfsii*

A.N. Tripathi and Kuldeep Srivastav

ICAR-Indian Institute of Vegetable Research, Varanasi - 221305 (U.P.)

Gummy stem blight: An Emerging disease of cucurbitaceous vegetables

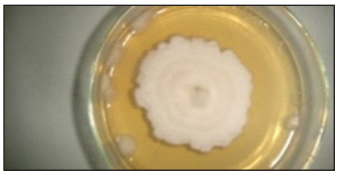
During May-June, 2021 severe disease incidence of gummy stem blight has been occurred on bottle gourd at ICAR-IIVR, Research Farm. Its incidence was recorded more than 50% on bottle gourd. Almost all the cucurbits such as cucumber, bottle gourd, bitter gourd, pumpkin, ash gourd, ridge gourd, muskmelon, watermelon etc. are infected by gummy stem blight in field and polyhouse. Gummy stem blight (GSB) is caused by Stagonosporopsis

cucurbitacearum (syn. Didymellabryoniae). S. cucurbitacearumis an air -borne, seed- borne and soil-borne facultative necrotrophicplant pathogen. Initially typical symptoms of gummy stem blight are appeared as dark brown spots at the margin of the leaves and water soaked area on the stem near soil line. Drops of gummy brown exudate with amber colored plant sap appear on stems under certain conditions. Black dot like pycnidia is also observed on the infected stems, leaves and fruits. Pathogen was isolated from diseased stems and leaves of bottle gourd (var.Kashi Ganga), by plating surface sterilized tissues on potato dextrose agar (PDA) medium. Inoculated PDA plates were produced white mycelium after 4 weeks of incubation at 24 ºC. Conidia were cylindrical non-septateto monoseptateand 60 x 40 µm in size. Based on the morphological and microscopic characteristics, the pathogen was identified as Stagonosporopsis cucurbitacearum (syn. Didymellabryoniae). Mass inoculum prepared on sterilized potato dextrose broth (PDB). Sterilized PDB flasks (100 ml) were inoculated with 5 ml suspensionor 5 PDA plugs (5mm) of pathogens. Inoculated flasks incubated at room temperature for 7 days. The conidial suspension was filtered through cheese cloth to remove mycelium, fruiting bodies and agar. The spore suspension was standardized to a concentration of 2.3 × 106 spore per ml by haemocytometer. A 14 days old plants of bottle gourd (cvKashi Ganga) was inoculated by spraying of inoculum (2.3 × 106cfu/ml). Before inoculation, WETCIT®(surfactant) was added @ 1.0 ml/l to the inoculum. Inoculated pots were covered by polythene to maintain humidity for 4days under green garden shed net. Visual rating of disease development and disease severity on leaves and stem were assessed using a 1-5 visual rating scale 7 days after inoculation. The pathogenicity test was also performed by detached fruit and leaf method. The pathogen was re-isolated from inoculated plants to fulfillment of Koch postulate. Control plants developed no disease symptoms. This report represent an emerging threat of gummy stem blight and its inoculation technique for mass screening of resistance in cultigens of cucurbits which will contribute for vegetable grafting and resistance breeding programme.

(a) Typical symptoms of gummy stem blight on bottle gourd

(b)Control plant

(c)Inoculated plant



(d) PDA culture plate of *S. cucurbitacearum (Didymellabryoniae*)

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Success stories

Building Capacities of Farmers of Jharkhand

Agriculture plays a vital role in the Indian economy. Although nearly 60% of the population is engaged in agriculture, the sector accounts for only 20% of India's gross domestic product (GDP). Low crop production is one reason. To increase productivity, the World Vegetable Center has joined with the Jharkhand Opportunities for Harnessing Rural Growth (JOHAR) project to introduce farmers to good agricultural practices and technologies that can improve vegetable yields, safely protect crops from pests and diseases, nourish the soil, and raise incomes. JOHAR is in operation since 2018 with the main focus on crops like Tomato, Chilli, Brinjal, Cabbage, Cauliflower, Green peas, Bitter Gourd, Cucumber, Watermelon and Muskmelon. Trainings are provided to farmers continuously to prepare them for implementing best agricultural practices. Both theoretical and practical knowledge are imparted in these phase wise trainings on the basis of crop duration. The trainings are spread over phases to help farmers retain the knowledge and apply it practically. If they face any challenge in doing the same,

then the WorldVeg staff advises them with the best possible solution.

30 days- land preparation, bed preparation, spacing and nursery preparation

30-60 days- water management, nutrient management, and pest infestation management

60-90 days- harvesting and post harvesting handling

Classroom training: Training is provided in a classroom to a group of around 20-25 farmers where they learn a "Package of Practices" to produce different crops. Here they gain theoretical knowledge and learn about modern methods used in agriculture. Few of the specific practices that farmers learn are: field preparation, spacing of crops, transplanting, nursery preparation, plant

Spraying of pesticide by farmer in his demonstration plot of brinjal at Chirugoda village of East Singhbhum district

Cabbage demonstration plot at Birhu village of Khunti district of Jharkhand

counting, irrigation management, pest infestation management, harvesting, sorting, grading and handling and market linkages.

Field demonstration and hands-on training: Farmers learn by doing when they can apply classroom knowledge in the field. A specified demonstration plot is selected where the Package of Practices and Good Agricultural Practices are followed for each crop. Demonstration plots are maintained by local farmers.

Technical advice in the field: When farmers report that a disease or pest is attacking their crops, WorldVeg staff visit their fields, identify the problems, explain the reason behind the problem, and provide the remedy. This advisory service has proven to be a great help to farmers as they strive to solve specific problems in their fields.

Exposure visits: Groups of people and farmers from different locations visit the demonstration plots maintained under WorldVeg, where they can see best practices in action and get their questions answered. Farmers can see differences after applying classroom knowledge in the field. The recent success is the usage of Integrated Pest Management which has really helped farmers in controlling the pest infestation in their crops.

Ramakrishnan M. Nair
ICRISAT Campus, Patancheru, Hyderabad

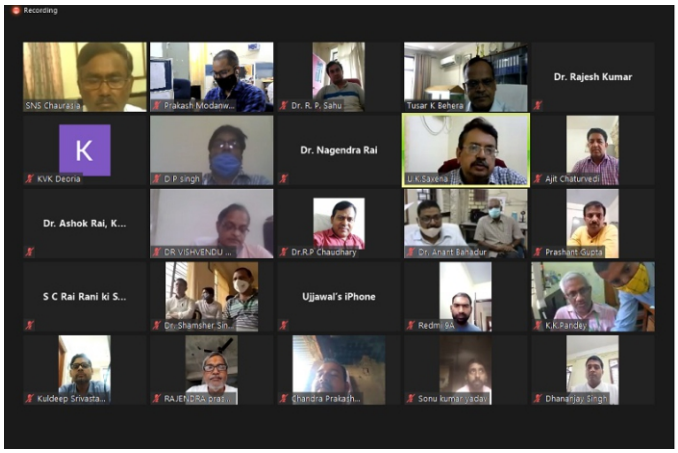
EVENTS

7th International Day of Yoga 2021 was celebrated at ICAR-IIVR, Varanasi

7th International Day of Yoga 2021 was celebrated at ICAR-IIVR, Varanasi with theme "Yoga for Wellness". The yoga programme was conducted by yoga Guru Shri Chandresh Dubey and Girish Upadhyay. All employees including Scientists, Technical, administration and supporting staff of the institute had participated in the event following Covid-19 protocols. Director of the institute Dr. T.K. Behera had emphasized the importance of yoga in daily life and research activities.

A webinar organized on awareness for the use of balanced fertilizers at ICAR-Indian Institute of Vegetable Research, Varanasi

The use of chemical fertilizers was the basis of the Green Revolution. Due to lack of knowledge about the use of balanced fertilizers farmers used to apply more fertilisers than recommended doses. In this context, a webinar was organized at the institute on 18th June, 2021 to create awareness among the farmers about the use of balanced fertilizers. On this occasion the director of the institute, Dr. T.K. Behera urged the farmers to get the soil tested before starting any farming and use fertilizers according to the "soil health test". He said that apart from macro nutrients, it is necessary to apply micro nutrients in the soil so that quality vegetables can be produced at low cost. On this occasion the coordinators of all three Krishi Vigyan Kendra of the institute also expressed their views. In this program, all scientists of the institute and more than 100 farmers participated and got their queries resolved.



Plantation program was organized at ICAR- Indian Institute of Vegetable Research, Varanasi on the occasion of Environment Day

Plantation program was organized at ICAR- Indian Institute of Vegetable Research, Varanasi on the occasion of Environment Day on 5th June 2021. Ficus Panda plants were planted by Dr. Tusar Kanti Behera, Director of the Institute. About 50 saplings were also planted by other employees of the institute. On this occasion, the Director stressed upon the need to increase awareness among the people for environmental protection and resolved to plant trees in the campus and surrounding areas. In this sequence, the Director articulated his concern about the diseases caused by the continuously spreading pollution and suggested to maintain the amount of oxygen in the environment by planting trees.

Demonstration of vegetable techniques in the field of small and marginal farmers by ICAR- Indian Institute of Vegetable Research, Varanasi during the COVID-19 period

Under the leadership of Dr. Tusar Kanti Behera, Director of the Institute, on 01.06.2021, more than 100 small and marginal farmers of the selected villages under the Farmers' FIRST Project were distributed Cowpea (Kashi Nidhi), Sponge gourd (Kashi Rakshita), Brinjal (Kashi Sandesh) and Tomato (Kashi Aman) for demonstration in 41.25 acre area in kharif season. On this occasion, the Director listened seriously to farming related problems of the farmers and assured to make available technical support such as improved seeds, pest and disease management on need basis.

International Women's Day Celebrated at ICAR-Indian Institute of Vegetable Research, Varanasi

International Women's Day was celebrated at ICAR-Indian Institute of Vegetable Research, Varanasi on 8th March 2021. About 50 women farmers from the neighbouring villages joined the event. Apart from the programme organised at the institute, the virtual event organised by the ICAR was also attended by the participants. On the occasion, lecture was delivered on 'Gender equity and Role of women in Indian Agriculture'. The women farmers were motivated for their active participation in the agricultural sector, rural institutions and community life. Three women farmers were also awarded for their significant contribution in agriculture. One young professional of the institute also recognized for her outstanding contribution to the institution.

CFA Training Programme on "Improved Technologies in Vegetable Production to Support Food Safety and Security" organised at ICAR-IIVR, Varanasi

MANAGE, Hyderabad sponsored Certified Farm Advisor (Module-II) 15 days (14-28 February, 2021) training programme on "Improved Technologies in Vegetable Production to Support Food Safety and Security" organised at ICAR-IIVR, Varanasi. The training included around 35 lectures covering the prospects of vegetable cultivation, improved production technologies of major vegetable like tomato, brinjal, okra, chiili, cucurbits, cole, root and tuber crops etc. This training also highlighted the scope of minor legumes and aquatic vegetables in crop diversification, their role in nutritional security and overall sustainability of agricultural farming in India. Sessions on tuber crop production, onion production, and banana tissue culture were also scheduled. A series of lectures were carried out on soil and seed health, various disease and pest management strategies, pesticide residues management and harvest and postharvest handling etc. The training also covered about 10 practicals including the hands on technique in grafting, organic farming, mushroom cultivation, scientific bee keeping, aquatic, vegetable cultivation and post-harvest handing.

National Science Day- 2021 celebrated at ICAR-Indian Institute of Vegetable Research, Varanasi: School students motivated for science

National Science Day- 2021 (NSD- 2021) was celebrated with enthusiasm on 28 February 2021 at ICAR-IIVR, Varanasi on the focal theme of "Future of STI: Impacts of Education, Skills, and Work". Team of students from different schools of Varanasi visited the farm and laboratories of the institute and participated in NSD-2021 celebration. The Director of the institute motivated the school students to take up science as their subject for advanced studies and thereafter as their career, including agriculture science. Several competitive events were organized on issues related to science in general and agriculture in specific.

Joining/Transfer/ Retirement

Joining Dr. T. K. Behera (Director)	**Date of Joining** 28.04.2021
Transfer Dr. Vanitha S. M. Dr. A. T. Rani	**Date of Transfer** 06.02.2021 06.02.2021
Retirement Dr. R. N. Prasad (Principal Scientist) Sh. U. C. Saxena (SFAO)	**Date of Retirement** 31.01.2021 30.06.2021
Death Dr. Sunil Gupta	**Date of Death** 24.01.2021

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