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IARI NEWS

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From Director Desk...

In this quarter, we report identification of two soft-seeded and nutritionally-rich guava hybrids and a semi-dwarf papaya genotype, suitable for high density planting. Further, two doubled haploids ornamental kale genotypes viz. KtDH-57 and KtDH-19 and a high-yielding onion selection viz. 2020ENTO were developed. Furthermore, a new and improved artificial inoculation method for development of false smut disease of rice was established. Additionally, a Loop Mediated isothermal Amplification (LAMP)-based diagnostic protocol for successful detection of phytoplasma associated with sweet cherry was developed and causal organism for bunchy top and stunted growth of banana, earlier reported in five districts of Tripura, identified using molecular approaches. During the period, we also organized and celebrated some important events such as Agricultural Education Day, World Soil Day, World Food Day, National Farmers'Day etc. In addition, significant contribution was made for the capacity building of farmers and other stakeholders through organization of various training programmes, field visits, demonstrations etc. The scientists and other staff members of the institute brought many accolades and generated sizable revenue for the institute during this period by winning various awards, patents, research projects and through commercialization of their technologies.

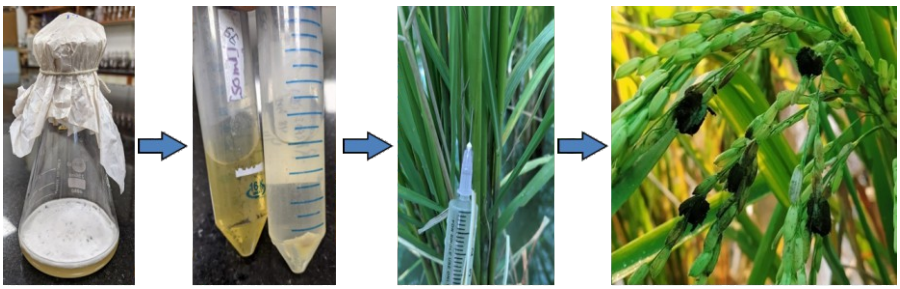
I am sure that the technical information included in the newsletter would be extremely useful to its readers. I wish to congratulate all those who contributed their work for this newsletter and the staff of the publication unit for bringing out the newsletter well in time.

Dr. A.K. Singh
Director, IARI

RESEARCH

Improved artificial inoculation method for the false smut disease of rice

IARI has developed the new and improved artificial inoculated method for the development of false smut disease of rice. False smut disease symptoms were clearly visible after 21 days of inoculation with the incidence of 8-30% depending on the isolate



Flask Containing *U. Virens* Culture on potato sucrose broth

Hyphae and conidia were collected by filtration and centrifugation at 3000 rpm for 5 minutes

2 ml of conidial suspension was jnjected during booting stage

Development of disease symptoms on rice plant after inoculation

Pictorial representation of inoculation method

Promising Yellow Capsicum Genotype (KTYC-4)

A promising yellow capsicum genotype has been developed at ICAR-IARI Regional Station, Katrain through reverse breeding. This genotype has yellow-colored blocky fruits with 4 lobes and has an average fruit weight of 81.70 g. Its plants attain a height up to 75.73 cm, which bears about of 10.80 fruits/plant. The average yield under naturally ventilated polyhouse conditions is 261.02 q/ha.

Capsicum genotype

Promising Doubled Haploid Ornamental Kale Genotypes

Ornamental kale is a new flower crop and has potential for commercial cultivation in India. In

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this context, two promising genotypes (KtDH-57 & KtDH-19) of ornamental kale have been developed at IARI, RS, Katrain through microspore culture.

KtDH-57

KtDH-19

2020ENTO – A promising selection for *kharif* season onions

A promising selection of onion '2020ENTO' was developed through recurrent selection, which can be grown during *kharif* season using seedling method. The recorded yield is 25% & 52% higher than Bhima Dark Red and Bhima Super, respectively.

2020ENTO

Guava Hybrid Pusa

Two guava hybrids and one pure inbred line were identified for release as varieties. The major characteristics of these varieties are as under:

Guava Hybrid Pusa Aarushi

It is a red-pulped, soft-seeded hybrid having small seed core, large fruit (160-175 g) and high TSS (12.50 to 13.6°Brix), with high vitamin C content and higher yield.

Guava Hybrid -1 (PUSA AARUSHI)

Guava Hybrid Pusa Pratiksha

Guava Hybrid -2 (PUSA PRATIKSHA)

It is a soft-seeded white-pulped hybrid of Guava with excellent flavor and fruit quality traits. Fruit weight and TSS ranges from 155-190 g TSS &12.30 to 14.04°Brix respectively.

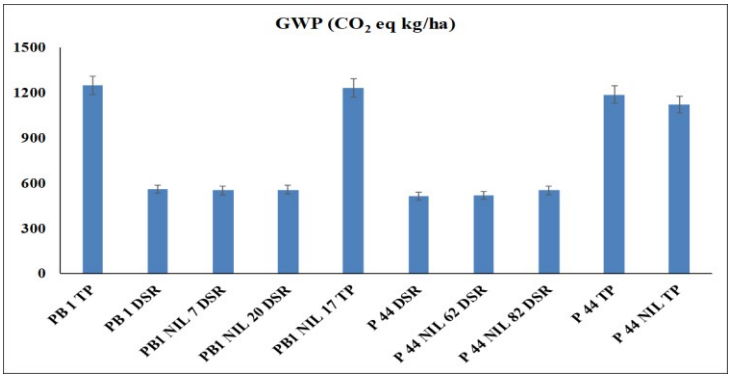
Papaya Pusa Peet (P-7-2)

It is a semi-dwarf, gynodioecious, early flowering (68 DAP), light green color of stem and petiole, low fruiting zone 95-135cm, fruit size small to medium (725-1115 g), good TSS (9.0 to 12.1°Brix), deep yellow pulp color fruit yield ranging from 32-48 kg/plant under Delhi conditions. It is fairly rich in antioxidants and suitable for high density planting (1.5 x 1.5 m).

Fruits of papaya Pusa Peet

Greenhouse gas mitigation potential of new varieties of rice for direct seeding cultivation

The greenhouse gas emission was quantified from conventional



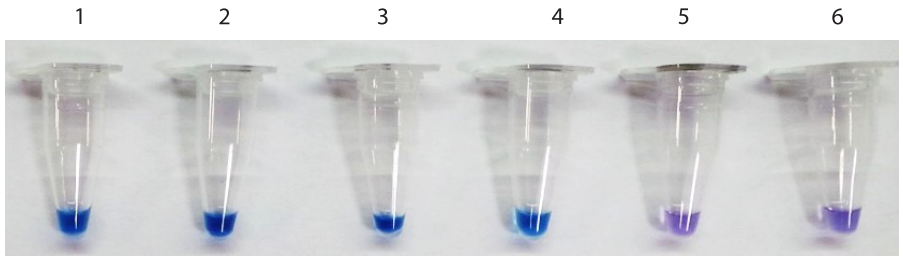
Global warming potential (GWP) of different rice varieties

flooded rice and direct seeded method growing conventional rice using PB1 and P44 and improved PB1 and P44 varieties. Methane emission was reduced by 77.5-82.4% in direct seeding method, however, there was an increase in N_2O emission ranging from 8.4-22.6%. Global warming potential was reduced by 54.9- 58.7% in P44 and 56- 57.6% in PB-1. Approx. 38-40% water saving in direct seeding method with new variety was recorded as compared to transplanted rice

Development of LAMP based diagnostic for Phytoplasma in Sweet Cherry

Symptoms of leaf roll, shoot proliferation, swollen nodes, flat branch, rosette, witches' broom and stunting were observed in sweet cherry orchards from Srinagar, Jammu & Kashmir, India during 2019–2021. Phytoplasmas association was confirmed by amplifying *16S rRNA, secA, rp, tuf* and *secY* genes in symptomatic samples from all the sweet cherry samples in nested PCR assays. Pair wise sequence comparison, phylogenetic analysis and virtual RFLP analysis (16S rRNA gene) of all the genes confirmed the presence of *Candidatus* Phytoplasma asteris (16SrI) and *Ca.* P. trifolii (16SrVI) related strains in sweet cherry trees from all the surveyed locations. The presence of *Ca.* P. asteris and *Ca.* P. trifolii related strain identified in the sweet cherry are the new host records and reported first time in India. A suitable Loop Mediated Isothermal amplification (LAMP) based diagnostic protocol was developed by designing LAMP based primers, for successful detection of phytoplasma associated with sweet cherry.

Phytoplasma symptoms on cherry



LAMP assay results of cherry phytoplasma strain Lane 1-3: cherry symptomatic samples; 4: Positive control; 5-6: Cherry healthy samples

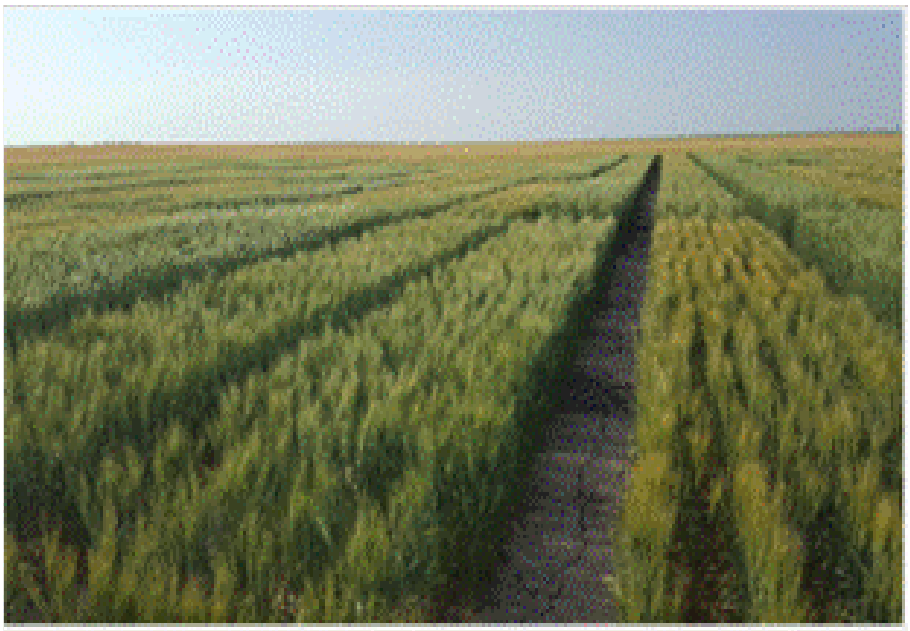
Identification of phytoplasma, banana bunchy top and banana streak Mysore virus

Symptoms of bunchy top, leaf chlorosis and necrosis, and stunted growth were noticed in two banana varieties *viz* Champa and Sabri, in five districts of Tripura. Aster yellows phytoplasma (16SrI-D subgroup) were detected in both the varieties at seven locations (Lembucherra, Boromura, Mohanpur, Cesrimile, Tuichindra, Udaipur and Kailasahar) in these districts on the basis of *16Sr RNA/ secA* gene sequence comparison and virtual RFLP analysis of *16S rRNA* gene sequences. Banana bunchy top virus (BBTV) and banana streak Mysore virus (BSMYV) were also detected and characterized in the symptomatic banana samples of both the varieties from Tulacona, Champamura, Lembucherra, Morcherra, Longpong, Subalsingh, Hawaibari locations of the three districts. Mixed infection of '*Ca.* P asteris', BBTV and BSMYV was also detected in Sabri variety of banana at Lembucherra location of West Tripura district. The results suggest that aster yellows phytoplasma and two viruses (BBTV, BSMYV) are the major biotic stress responsible for banana stunting, bunchy top and little leaf with chlorosis symptoms in two major popular banana varieties in Tripura, India.

Symptoms on banana varieties (A) Sabri variety plant showing leaf chlorosis and stunting at Kailashahar; (B) Shoot proliferation, leaf chlorosis and bunchy top appearance in Champa variety at Chesrimile; (C) Stunted growth and typical streak symptoms on the margins of the leaves of Champa variety at Tulacona; (D) Typical leaf chlorosis with necrotic margins in Champa variety at Boromura; (E) Severe stunting with leaf chlorosis and streaks in Champa variety at Champamura; (F) Leaf chlorosis with yellow streaks and marginal necrosis in Sabri variety at Lembucherra; (G) Severe stunting with little leaf and necrosis in Champa variety at Tuichinda; (H) Severe stunting, little leaf and leaf chlorosis in Sabri banana at Longpong; (I) Stunting with little leaf and chlorotic streaks in Sabri variety at Udaipur

Wheat plant Senescence Quantification using SENESCENCICA: Machine Learning algorithms

Leaf senescence is an integral response of leaf cells to the normal ageing process due to unfavourable conditions. Many physiological, biochemical and molecular studies of leaf senescence have shown that leaf cells undergo highly coordinated changes in cell structure, metabolism and gene expression during senescence. The earliest and most significant change is the breakdown of chloroplasts; leaf senescence leads to the degradation of photosynthetic pigments such as chlorophyll. The degradation manifests in observable leaf colour changes from the usual deep green to pale green, yellow and brown. Current methods for phenotypically measuring senescence are entirely visual and labour-intensive. Using the high definition, high-resolution RGB images, One could attribute plant image colour into a few categories of senescence and green portion. Based on pixel values of each category, it is possible to train machine learning algorithms that can classify each



Screenshot of software

pixel belonging to either the green or senescence portion. Once pixels are classified, the senescence portion is segmented from the green portion and they can be quantified. In this study, wheat plant image data was taken from Nanaji Deshmukh Plant Phenomics Centre ICAR-IARI. Six machine learning algorithms, Naïve Bayes, KNN, Decision Tree, Random Forest, Gradient Boosting classifier, and Artificial Neural Network algorithms, were trained on five specified classes; light green, dark green, yellow, pale yellow and finally brown for the wheat plant. All the algorithms performed well and were able to classify the images. (This work was carried out in collaboration with IASRI)

Classified images with SENESCENCICA

EDUCATION

Agricultural Education Day

On the occasion of Agricultural Education Day 2021, a quiz competition on "Agricultural Education" was organized by PGSSU on December 03, 2021 through online mode to motivate students about agricultural studies and to test their awareness about the current affairs.

Special Lecture

A Special Lecture was organized on December 2, 2021 at Dr. B.P. Pal Auditorium, IARI, New Delhi which was delivered by Prof. Dharmendra Saraswat, Associate Professor, Department of Agricultural and Biological Engineering, Purdue University, USA on the topic "Deep Learning for Precision Pest Management: Opportunities and Challenges". Large numbers of scientists, students and staff member participated in this lecture.

EXTENSION

Field day on Pigeon pea

During the reported period, one field day on pigeon pea was organized on October 07, 2021 at Jhanjrola village of Gurugram district.

World Soil Day

A one-day awareness programme on importance of soil testing, soil health and balanced use of fertilizers was organized during the World Soil Day programme on December 05, 2021 at Village Joniya, Block Farrukhnagar, Gurugram.

World Soil Day

Mahila Kisan Diwas

KVK, Gurugram organized a gosthi in village Garhi Harsaru to celebrate the Mahila Kisan Diwas. During the gosthi, farm women were motivated to take up allied agricultural activities like value addition, mushroom production, vermicompost production, dairy farming etc. and create their own identity in this field also. The farm women were also informed about women health and nutrition and motivated them to first take care of their health and nutritional status

World Food Day

KVK, Gurugram organized a gosthi at village Dhan Chitterasen on October 16, 2021 to celebrate the World Food Day. During gosthi, KVK experts made the farmers and farm women aware about the history of celebrating World Food Day and emphasized on improving the quality of soil to improve the quality of food.

Vishva Khadya Divas

National Farmers Day

National Farmers Day was celebrated on December 23, 2021 at Samaypur Katiyar village in Rajapur block of Ghaziabad district, Uttar Pradesh. The Joint Director (Ext), ICAR-IARI, Dr. B.S.Tomar was the Chief Guest of the programme. About 250 farmers from nine villages viz., Samaypur, Katiyar, Akalpur, Dhosa, Nagla, Nurpur participated in the programme. A training programme on Improved Crop Management Technologies in Wheat, Mustard and Vegetables was also organized.

RS Katrain celebrated the "Cabbage Day"

National Farmers Day celebration

Cabbage Day

ICAR-IARI, Regional Station, Katrain celebrated the "Cabbage Day" on December 21, 2021. About 80 stakeholders' *viz.,* farmers, representative from six private seed companies, state agriculture & horticulture department, ATMA, Subhash Palekar Natural Farming (SPNF) etc. attended the program. They were also made aware about signing of MoA with the institute for procuring elite cabbage material. A kisan gosthi was also organized after the field visit in which farmers interacted with the scientists, representatives of seed companies & state departments.

Swachh Bharat Abhiyan activities

The division of Agricultural Extension organized a Swachh Bharat Abhiyan activities in order to evoke a sense of responsibility among the people to keep their villages clean, cleanliness drive in the Rosanpur & Kanarsa villages of G. B. Nagar District, U.P. on October 30, 2021. In this drive, rural women and farmers were made to understand the importance of cleanliness and also how sanitation significantly contributes in reducing health related issues.

Activity photograph of "*Swachh Bharat Abhiyan*" activities

CAPACITY BUILDING

Farmer's trainings

KVK Gurugram organized four trainings on topics like preservation of seasonal fruits & vegetables, use of crop residue for improving soil health, minimization of nutrient loss during cooking/processing, termite management etc. were organized for practicing farmers and farm women to create awareness among them, in which a total of 101 participants benefited from Kaliyavas, Fazilpur Badli, Joniyavas and Gari Harsuru villages of Gurugram district.

Vocational Trainings for Rural Youth

KVK, Gurugram organized two training programmes for rural youth on "Scientific Bee Keeping" sponsored by National Bee Board at Tirpadi village and "Mushroom production technology" under ARYA project at KVK Gurugram.

Training under Krishi Kalyan Abhiyan III

KVK, Gurugram organized seven training programmes for farmers on "Diversified Agriculture", under Krishi Kalyan Abhiyan III at Gudhi, Sevka, Besi, Bhangoh, Chajupur, Khosi Kalan, Chahalka, Dalavas villages of district Nuh. A total number of 313 farmers and farm women participated in this programme.

Training under Jal Shakti Abhiyan

KVK, Gurugram organized 2 days training programme on November 16-17, 2021 for farmers on "Water Use Efficiency and Appropriate Crops", under Jal Shakti Abhiyan, at Kankrola and Harcharanpur villages of Gurugram district. During the training programme, different aspects such as rain water harvesting and efficient use of water in agriculture, micro irrigation system, water conservation and appropriate crops, were discussed with the participants.

Jal shakti abhiyan

Awareness-cum-training program on Farmer Producer Organization for Farmers' prosperity

A Scheduled Caste Sub Plan (SC-SP) sponsored program titled "Awareness-cum-training program on Farmer Producer Organization (FPO) for Farmers' prosperity" was conducted by the Division of Agricultural Economics, ICAR-Indian Agricultural Research Institute, New Delhi on December 4, 2021 at Fatehpur-Rajpur village, Aligarh district, Uttar Pradesh. This program was attended by 200 farmers from 15 villages. In the program, Scientists from ICAR-IARI and experts with experience in FPO shared their views on how to mobilize farmers, procedures in FPO formulation and strategies to sustain them. Scientists also interacted with farmers and answered their queries on farming and value addition in general and benefits of forming FPOs in particular.

Online training course on "Time Series Techniques for Forecasting in Agriculture"

National Agricultural Higher Education Project (NAHEP) funded online training course on "Time Series Techniques for Forecasting in Agriculture" was organized during December 1-10, 2021. The course is designed to familiarize the students with advanced quantitative techniques in specific areas such as demand projection of agricultural commodities and forecasting of agricultural prices using time series techniques. Besides, the training will help the students to get acquainted with Artificial Intelligence (AI) and Machine Learning (ML) which are emerging as important tools for forecasting.

Training under SCSP program

One day training program was organized on December 30, 2021 under SCSP scheme at ICAR-IARI, Regional Station Katrain. Forty farming tool kits and seed packets amounting to 2.0 lakhs were distributed to the farmers during the program.

Training under SCSP program

Training under NAHEP Scheme

A training programme was organized for students of CSA University of Agriculture & Technology, Kanpur under NAHEP scheme of ICAR at Division of Plant Pathology (online) during December 14-27, 2021, in which invited lectures on different aspects of plant pathology, entomology were arranged online and practical demonstration of different laboratory technique related to topic of training was given through online video mode.

On-campus Training programmes organized at CATAT

Two days training on improved technologies for *rabi* crops sponsored by ATMA Delhi Development Department, Govt of NCT Delhi was conducted from December 15-16, 2021. Seventy-two farmers attended the training programme.

Conference Organized

Indian Phyto pathological Society (Delhi Chapter) organized Virtual Symposium on "Plant Diseases: Impact on Food Security" at Division of Plant Pathology, ICAR-Indian Agricultural Research Institute, New Delhi (online) during December 17-18, 2021.

MISCELLANEOUS

Externally funded Projects sanctioned

- "Accelerating the mainstreaming of elevated Zinc in Global Wheat Breeding: A 'Fluoride in the Water' approach to nutrition (DFID DF)" funded by Bill & Melinda Gates Foundation & UK Department of International Development (DFID) for an amount of US$ 8000 for three years (Principal Investigator- Dr. Jang Bahadur Singh, Principal Scientist, IARI RS Indore, Dr. Harikrishna, Scientist, Division of Genetics IARI)
- "Impact of fertilizer on grain nutritional quality for human health: Fertilizer research & responsible implementation (FERARI)" funded by International Fertilizer Development Centre (IFDC), USA for an amount of US$ 125000 for two years (PI-Dr. Renu Pandey, Principal Scientist, Division of Plant Physiology, IARI)
- "Network Program on Precision Agriculture (NEPPA)" funded by ICAR for an amount of ₹ 1700 lakhs for five years (PI-Dr. R.N. Sahoo, Principal Scientist, Division of Agricultural Physics, IARI)
- "CRP on Agrobiodiversity Component-II: Evaluation of trait specific germplasm (Cucumber-Downy Mildew)" funded by ICAR for an amount of ₹ 40.25 lakhs for five years (PI-Dr. S.S. Dey, Senior Scientist, Division of Vegetable Science, IARI)
- "Exploring nutraceutical potential of shitake (*Lentinula edodes*) and Maitake (*Grifolafrondosa*) mushrooms and promotion of its production for entrepreneurial and socioeconomic livelihood in North East India" funded by DBT for an amount of ₹ 40.93 lakhs for three years (PI-Dr. Veda Krishnan, Scientist, Division of Biochemistry, IARI)
- "Stem reserve mobilization and stay green traits for yield stability in wheat under combined heat and drought stress" funded by SERB, DST for an amount of ₹ 42.15 lakhs for three years (PI-Dr. Ajay Arora, Principal Scientist, Division of Plant Physiology, IARI)
- "IOT enabled Universal Monitoring and Control System for efficient storage of Agricultural produce" funded by DST for an amount of ₹ 36.26 lakhs for two years (PI-Dr. Sangeeta Chopra, Principal Scientist, Division of Agriculture Engineering, IARI)
- "Task Force on Himalayan Agriculture-National Mission for Sustainable Himalayan Ecosystem (NMSHE)" funded by DST for an amount of ₹ 218.65 lakhs for five years (PI-Dr. S. Naresh Kumar, Principal Scientist, Division of Environment Science, IARI)

- "Land application of treated effluent from Pulp and Paper Mill & Evaluation of Impact on Soil, Groundwater Properties & Crop Productivity" funded by CPPRI for an amount of ₹ 57.50 lakhs for five years (PI-Dr. A.K. Mishra, Principal Scientist, WTC, IARI)
- "Enhancing the livelihoods of tribal and rural women through technological intervention of trainings of postharvest handling and value addition of Custard Apple and Ber Fruits" funded by DSIR for an amount of ₹ 28.39 lakhs for two years (PI-Dr. Ram Asrey, Principal Scientist, Division of Food Science & Post Harvest Technology, IARI)

The Contract Research Project

Implement the Consultancy project entitled "Audit of tree plantation survival of Horticulture, South Delhi Municipal Corporation" with IARI and South Delhi Municipal Corporation. Under the PI ship of Dr. S.S. Sindhu, Head, Division of Floriculture and Landscaping at a total cost of ₹ 5,01,724/- and duration 50 man days.

Farmers- Scientists connect Meet

On the occasion of Amrit Mahotsav of India's Independence, one-day farmers- scientists connect programme were jointly organized by ICAR-Indian Agricultural Research Institute, Pusa New Delhi and the Department of Science and Technology (DST) on October 28, 2021. The programme was conducted in both online and off line mode. At the outset plantation of trees was done by the chief guest, Dr. Jitendra Singh ji, the Honorable Minister of State (Independent Charge) for the Ministry of Science and Technology as well as Ministry of Earth Sciences along with other dignitaries

Distribution of kitchen Garden Kits to the farmers by the Honorable Minister of State Dr. Jitendra Singh ji

Exposure visits to IARI Experimental farms

One-day exposure visit programme was organized for the betterment of beneficiary farmers of DBT's Biotech-KISAN hub project in the ICAR-IARI Experimental farms on October 29, 2021. The farmers visited various experimental farms and learnt about various high-tech technologies such as Protected Agriculture, Integrated Farming Systems, Vegetables, Floriculture and fruits cultivation practices. Further, they were also exposed under the guidance of ICAR-IARI Director to the indigenous rice varieties experimental farms for adoption of location specific traditional rice cultivation technologies in the eastern Uttar Pradesh region.

Demonstrations on "Low erucic acid Pusa Mustard 31, Pusa Nutri-Kitchen kits and Bio-fortified Wheat varieties DBW-303&187"

This Instate has developed low erucic acid Indian mustard health-pro varieties namely Pusa Mustard 31 (PM 31) and Pusa Nutri-kitchen

Distribution of bio-fortified wheat variety DBW-303& 187 for front line demonstrations

Distribution of Pusa Kitchen Garden kits for Front line demonstrations

Garden kits to have kitchen gardens in the available space of the farmers' fields and eating healthy vegetables for their nutritional benefits and good health. Along with these two bio-fortified varieties namely DBW303 developed for early planting, irrigated conditions of North Western Plains Zone with good chapatti and bread making quality and DBW 187 developed for irrigated timely sown conditions with the special quality of high Fe content (43.1 ppm) and resistant to yellow and brown rust developed by ICAR-Indian Institute of Wheat and Barley Research, Karnal also play very important role to address the nutrition security related concerns. Further, awareness also given to farmers about Nutri- rich varieties and kitchen garden's benefits for their nutritional benefits and good health.

Technology Commercialization

During October- December, under Lab to Land Initiative, sixty-six technologies of ICAR-IARI were transferred to 36 industry partners resulting in total revenue generation of 31,20,000.

Corporate Membership

In this quarter, Unit enrolled 77 industry partners for membership and generating a revenue of 3,08,000.

IP management

IPRs	Name of Institute	Application/ Registration No.	Name of Innovation/Technology	Date of grant	Application Granted/ Registered
Patent	ZTM & BPD Unit, ICAR-IARI	201711000736	An apparatus for in vivo mass production of entomopathogenic nematode	Granted on October 25, 2021	380017

Incubation Activities COHORT 2021

The two-month Incubation Programme was accomplished on October 01, 2021 for the pre-seed and seed startups, where the 54 startups were trained by technical, business, and IP experts by one-on-one mentoring and collective sessions. Based on the preparedness and stage of start-ups, the RIC- II committee had recommended 20 start-ups for the Pre-seed stage and 23 start-ups for Seed stage for the final consideration and approval by RKVY-RAFTAAR Selection & Monitoring Committee (RC). The RC Meeting for evaluation of selected startups under RIC-II meetings for ARISE 2021& UPJA 2021 Program was held online under the Chairpersonship of Ms. Chhavi Jha, Joint Secretary, RKVY through online mode at ZTM & BPD Unit, ICAR-IARI, New Delhi on December 2-3, 2021. In this, 19 startups have been finally selected for seed stage Funding and 17 Startup for pre-seed stage funding with a grant-in-aid support of 4.83 crores.

Maitri (Indo-Brazil Agritech Cross Incubation Program) Second Phase

After a successful first phase in 2019, the second phase of the programme was held virtually from December 7-17, 2021. The second phase was inaugurated in the presence of the Brazilian Ambassador to India and the Indian Ambassador to Brazil along with senior officials from DST and CEO, Pusa Krishi. Five startups incubated at Pusa Krishi were selected to participate in the programme. This one-of-a-kind initiative highlighted the opportunities available for stakeholders to work together and grow and played as a key instrument for bridging the gaps between two Agri-intensive nations.

BEEJ Pre Incubation Master Class series

PUSA Krishi organized a two weeks online pre incubation masterclass series BEEJ for young entrepreneurs to learn how to generate, build & scale start-up ideas in the agriculture sector. The primary focus of the program was to support young minds with some innovative

idea and aspiration to become an entrepreneur. The applications to apply for the Program were invited from November 24 to December 5, 2021, A total of 130 participants attended the series and were provided with E-Certificate for their active participation.

SRIJAN

It is a year-long incubation program that nurtures early-stage startups with full-throttle capacity building, infrastructure, and other resources to solve the big challenges in agriculture with innovative solutions. The program was launched on December 22, 2021 and online applications have been invited till January 9, 2022. After pre stage screening, 63 applicants were selected for making final presentation in front of the expert panel.

Other Activities

The Unit has facilitated in executing the MoAs with EFAARMS Pvt Ltd. and Agri Projunction Pvt. Ltd. for online trading of the products and publications of ICAR-IARI. It is first of its kind of arrangement to solve the problem of availability of quality Agri inputs to farmers.

Awards/recognitions

- Dr Rashmi Aggarwal, Head, Plant Pathology and Joint Director Education (Acting), IARI, New Delhi has been selected for prestigious Dr B B Mundkur award of Indian Phyto pathological Society, New Delhi for the year 2021.
- Dr K K Mondal, Principal Scientist, Plant Pathology awarded **Fellow ARRW 2021** by the Association of Rice Research Workers (ARRW), ICAR-NRRI, Cuttack and awarded **Fellow SARP 2020** by the Societies for Advancements of Research on Pomegranate, ICAR-NRCP, Solapur.

National & International Visits at IARI

The delegation from Israel H.E. Amb. Naor Gilon, Ambassador of Israel to India visited at ICAR-Indian Agricultural Research Institute (IARI), New Delhi on 18th November 2021.

Israel delegation with IARI team.

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