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Indian Phytopath News

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From President's Desk

It is indeed a great pleasure to inform you that the Indian Phytoathological Society, New Delhi is the Co-organizer in XIX International Plant Protection Congress (IPPC 2019) to be organized by ICRISAT at Hyderabad (Telangana) from November 10-14, 2019. A separate Technical Session is being scheduled on "Detection and diagnosis of plant pathogens: DNA barcoding" during the conference in which a good number of Plant Pathologists from India and abroad are going to participate. You are aware that the United Nation General Assembly has declared 2020 as the International Year of Plant Health. To commemorate this mega event in India, IPS has taken a lead to organise 7th International Conference during January 16-20, 2020 in view of the aims, objectives and challenges being faced by the United Nations to fulfil their sustainable development goals. I am happy to share that IPS along with 13 most prominent plant protection institutes/societies (IARI, NIPB, NBPGR, IASRI, NIAP, NCIPM, APS, SLAMPP, ISMPP, APP, ISMPP, South Asia Biotechnology Centre, FARMER) within and outside the country are acting as Co-organizers and International Society for Plant Pathology (ISPP) as collaborator during the conference and probably it would be the first time when these many societies have come closer in joining hands with IPS in celebrating the International Year of Plant Health. I am to inform all the esteemed members that the Emergent Executive Council meeting of IPS was also convened on 23rd September, 2019 to review the progress in the organizational activities of this conference. A good number of scientists have consented to participate in the conference from abroad. Different committees for smooth conduction of the conference have been constituted. Efforts have been made to obtain financial assistance from various agencies viz., government, corporate and private partners. The overall progress of the conference appears to be satisfactory. At this juncture, I would humbly urge all of you to submit abstracts and register yourself. It is also requested to contribute news, views and success stories for the *Indian Phytopath News,* so that the latest scientific information may be circulated to all the members of the society in time. Your critical comments and fruitful suggestions in improving the wholesome activity of the society are most welcomed.

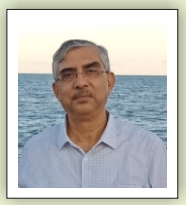
M.P. Thakur
President, IPS

IN THIS ISSUE

Editorial

Climate change driven challenges in Agriculture

B.N. Chakraborty
Chief Editor, IPS Newsletter



The role of agriculture is not only crucial in mitigating, but also in adapting to climate change which is depriving the livelihoods of millions of people around the world. The problems associated with climate change and extreme weather variability are real and will impact nearly every food producer and food manufacturer as well as the issues are global in their impacts and their solutions. No industry is more dependent on predictable weather and climate patterns than agriculture. Volatile climate changes create enormous challenges to meeting the needs of the world's growing population. Yet farmers are acutely divided over climate change. If the changes in weather and climate are predictable, then food producers can adapt. But unpredictable or extreme changes like intense and persistent drought, or torrential rainfall leading to flooding could have catastrophic economic impact. According to many agriculture scientists and extension experts, more diseases of plant and animal with prevalent pests and pathogens are evident and there will be stresses on food industry. Technology will play a key role in helping the food

and agriculture sectors adapt to these changes. New hybrid seed technologies bred for drought and pest resistance will increase yields and qualities resistant to the negative effects of climate change.

Countries around the world plan for a significant role of agriculture in mitigating and adapting to climate change. Despite major improvements in the last decades to eradicate hunger, the international community is still distant from reaching the "Zero Hunger". To keep meeting the world's growing food demands, the Food and Agriculture Organization (FAO) of the United Nations projected that current agricultural production levels need to rise up to 60 percent by 2050. Though changes in crop yields are hard to estimate, the Intergovernmental Panel on Climate Change (IPCC) warns that decreases of 10 to 25 percent may be widespread by 2050 in the face of climate change. To assist countries in developing and transforming agricultural systems that both limit their impact on and are resilient to climate change, FAO mobilizes support in promoting Climate Smart Agriculture (CSA) around the world. CSA has proven to be an invaluable method to build productive, resilient and climate-smart agricultural systems to enhance sustainable development and ensure food security.

Research Highlights

Possible association of viroid with leaf crinkle disease of urdbean (*Vigna mungo* L)

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Urdbean leaf crinkle disease (ULCD) is an economically important disease affecting urdbean and mungbean causing up to 100% yield losses in severely infected crop. The disease is characterized by the appearance of extreme crinkling, curling, puckering of leaves, stunting and malformation of floral organs. Most recently, viruses such as CPMMV, SYMMV, GBNV and MYMIV were found associated with urd and mung samples showing leaf crinkle symptoms using next-generation sequencing approaches. Notably, these were all samples from the field where mixed infections are common.

A large number of symptomatic field samples from Delhi were tested, but could not find a consistent association of any of these viruses even on severely symptomatic samples. So we established a culture of the disease by sap transmission in the greenhouse under controlled insect-proof conditions. We tested these samples for the presence of already reported viruses using ELISA, PCR and RT-PCR and also looked for other viruses using electron microscopy and illumina sequencing of small RNA and transcriptome. The small RNA from samples collected from the greenhouse culture were aligned with all known viral sequences present in the GenBank both manually as well as using programs specially designed to identify viruses. We could not find reads of any of the known plant viruses including the ones which were already reported. It was also checked for the possibility of novel viruses using conserved domain searches, but could not find any virus related sequences. To our surprise, however, we were able to find the reads matching viroids in all symptomatic samples, both field and greenhousefrom small RNA as well as transcriptome. The consensus sequence identified from reads matching viroids had extensive secondary structures, high G-C content and the conserved domain, which is signature sequence for viroids. A few reads could be detected aligning with viroids from healthy samples also, but they were insignificant compared to that of symptomatic samples and were too few to be assembled into a complete sequence.

Possible association of viroids identified from small RNA sequencing was supported by findings from two separate experiments.In the first experiment, sap used for inoculation was maintained at different temperatures for 10 minutes before inoculation to identify the thermal inactivation point. The thermal inactivation point was determined between 70°C and 75°C. In another experiment, the seed transmission characteristics as studied and seeds were collected from mechanically inoculated, severely symptomatic plants maintained in insect proof glass house. Upto 100% seed transmission was observed. High thermal inactivation point due to extensive secondary stuructures and seed transmission are characteristic of viroids. Thus, the present findings strongly point to viroid etiology of the disease. However further studies will be required to conclusively prove viroid as the infectious agent.

Fig: (a) Urdbean leaf crinkle disease infected plant, and (b) healthy plants

Training/Workshop organized

Workshop on Nanotechnology organized by AAU, Jorhat

Department of Plant Pathology, College of Agriculture, Assam Agricultural University, Jorhat in collaboration with AIMIL Ltd., Kolkata organized a workshop on "Nanoparticle Tracking Analysis (NTA): A New Technique for Nanoparticle Characterization and Aggregation Studies" on 22 August, 2019 under the sponsorship of National Agricultural Higher Education Project (NAHEP)-ICAR. Total 22 nominated faculties and PG scholars from three colleges of AAU and a PhD scholar of NIT-Agartala, Tripura attended the workshop. Dr. Suman Roy, AGM, Mr. S. Banerjee, Mr. Arindom Roy and Mr. N. Das of AIMIL LTD. were the resource persons and provided hands on training to the participants. Dr. L.C Bora, Prof. and Head, Plant Pathology mentioned that the nanolab of the University headed by Dr. Pranab Dutta is first of its kind in the north-east India where scientists and students from different regional and national institutes visit for training and internship programmes.

Training on "Use of Foldscope" at Assam Agricultural University, Jorhat

A training programme on "Use of Foldscope- a Paper Microscope" was held at the Department of Plant Pathology, Assam Agricultural University, Jorhat on 12th September, 2019. The programme was organized by College of Agriculture, Tripura in collaboration with AAU, Jorhat. There were 42 participants including Assistant Professors, Research Scholars and PG students of various disciplines like Plant Pathology, Entomology, Nematology etc. Dr. D.P. Awasthi, Assistant Professor (Plant Pathology), CA, Tripura was the resource person of the training.

Training on Molecular Systematics of Fungi at IARI

A training programme entitled "Genomics Assisted Molecular Systematics of Fungi" was organized in the Division of Plant Pathology, ICAR-IARI, New Delhi from 9-17 September, 2019 under NAHEP-CAAST (Centres for Advanced Agricultural Science and Technology) project on "Genomics-Assisted Crop Improvement and Management". This training was solely student centric and 25 students from 20 different universities of 19 states of India received the training. Dr. Deeba Kamil (Senior Scientist) was the Course Director of the training. Dr. T. Prameela Devi, Dr. Amrita Das and Dr. A. Kumar were the Course Coordinators. Dr. Viswanathan Chinnusamy, Principal Scientist & Head, Division of Plant Physiology, ICAR-IARI is the Principal Investigator of the NAHEP CAAST Project of IARI. Important basic and advanced techniques like morphological identification of fungal flora, nucleic acids extraction, sequencing and their manipulations by bioinformatics tools were dealt in the training and also trainees were exposed to the facilities viz., Transmission Electron Microscope, Incinerator, Phenomics and Genome Sequencing. The entire programme was on live telecast in the YouTube.

Seminar/Symposia attended

- **Dr. M.P. Thakur,** Director Instruction & Controller of Examination of Indira Gandhi Krishi Vishwvidyalaya, Raipur, Chhattisgarh, presented Keynote address on "National and International Scenario of Mushroom Research and Innovations in Production and Value Chain Management" in the "International Conference on Innovative Horticulture and Value Chain Management - Shaping Future Horticulture" organized by Swadesh Prem Jagriti Sangosthi at GBPUAT, Pantnagar (Uttarakhand) during May 28-31, 2019. Dr. Thakur chaired a Technical Session on "Recycling of Agrowaste" in All India Seminar on "Waste to Wealth"

organized by Institutions of Engineers, Chhattisgarh State Centre, Raipur during June 16-17, 2019. He also presented a keynote address on “Recent Advances in Mushroom Processing, Biofortification and Product Development of Oyster Mushroom” in "SCON International Conference on Food Science, Nutrition and Public Health-2019” organized by Scholarena, Delaware, USA at Park Hotel Clarke Quay, Singapore during June 27-28, 2019.

- **IPS members participated in Plant Health 2019 and APS-IPS Working Group Meeting**

Dr. Mahender Singh Yadav, Principal Scientist, Plant Pathology, ICAR-National Research Centre for Integrated Pest Management, Pusa Campus, New Delhi and Zonal President (Delhi chapter) participated in the American Phytopathological Society (APS) Annual Meeting cum Plant Health 2019 Conference held at Cleveland, Ohio, United States during 3rd to 7th August, 2019. The theme of conference was “Sow, Know and Grow”. Dr. Yadav presented a research paper on “Weather-based epidemiological models for Alternaria blight of oilseed Brassicas in India” in the Technical Session on “Predictive Disease Modeling”. On 5th August, 2019, APS-IPS Working Group Meeting was held at Huntington Convention Center of Cleveland. In this meeting, APS President, APS President Elect, APS Vice President along with APS members from USA and IPS members from India participated. Dr. Yadav represented the Indian Phytopathological Society (IPS), New Delhi. Dr. Pratibha Sharma, ICAR Emeritus Scientist, Former Secretary of IPS and Liaison officer of APS Office of International Programs (OIP) also attended this meeting. A close collaboration of APS with IPS was decided in the meeting and hence APS members were invited for participation in the IPS's 7th International Conference 2020. APS Travel Grant for Indian students for participation in APS Annual Meeting was discussed in detail.

Actionable items for IPS, New Delhi: In APS- IPS working Group meeting, it was informed that the UN General Assembly has proclaimed year 2020 to be International Year of Plant Health to raise awareness about the importance of Plant Health. This is being done to achieve UN's Sustainable Development Goals and to strengthen Plant Protection Services at all levels. Accordingly, IPS will formulate a programme in this direction on 'Plant Health' because “Plant Health is an Earth Wealth”. APS resources provide online education facility on Plant Pathology which could be utilized by the teachers, researchers and students

Awards/Honours

- **Mr. Raghunath Mandal,** Assistant Professor, Department of Plant Pathology, BCKV, Mohanpur, Dist. Nadia, West Bengal has been awarded Netaji Subhas- ICAR International Fellowship (NS-ICAR-IF) 2018-19. He will work on "Investigating the virulence of putative Blumeria effectors and targeting their RNAi derived gene silencing to design new strategies for the control of powdery mildews of barley" at Royal Holloway, University of London, Egham Hill, Egham, Surrey UK.

- **Dr. K. Sesha Kiran,** attended workshop on MALDI-TOF based identification of microbes organized by National Centre for Microbial Resources – NCCS, Pune on April 24, 2019.
- **Dr. Prem Lal Kashyap,** Scientist (Plant Pathology), ICAR-Indian Institute of Wheat and Barley Research (IIWBR), Karnal conferred with 'Prof. Mahatim Singh Memorial Award-2019' for his significant contributions to wheat pathology on 26th August, 2019 in the 58th All India Wheat & Barley Research Workers' Meet at ICAR-IARI, Regional Station, Indore, India.

- **Dr. M. P. Thakur,** President IPS, Director, Instructions & Controller of Examination, Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh delivered Lead Lecture on “Advances in Organic Mushroom

Production: A key to income generation by tribal farmers" in Global Organic Convention 2019 on Natural Resource Management for Sustainable Agriculture, Soil Health & Quality Food held at Hotel Le Meridian, Nagpur during September 15-17, 2019. Dr. Thakur was invited to act as Co-Chairman of Technical Session 4 on Plant Protection in Organic Agriculture in the same convention. He was also delivered a talk on "Innovative Agricultural Skills for Enhancement of Farmers Income" during one day National Workshop on Igniting Minds through Skill Education and Research organized by Department of Commerce, Indira Gandhi National Tribal University Amarkantak (M.P.) on September 20, 2019.

- **Dr. D.P. Awasthi,** Asstt. Prof. (Plant Pathology) College of Agriculture, Tripura presented paper on the topic "Identifying pathogens associated with post-harvest fruits under market condition of Tripura" and was awarded with 2nd position in Oral Presentation on 33rd National Convention of Agricultural Engineers and National Conference on "Commercial Crops Processing and Value Addition" during 10th to 11th August, 2019 at Pragna Bhawan, Agartala organized by the Institution of Engineers (India), Tripura State Centre.
- **Dr. Usha Chakraborty,** Former Professor, Department of Botany , University of North Bengal has been conferred with the Fellowship of National Academy of Biological Sciences during 11th Annual Conference of NABS at Pondicherry University on 27th Sept., 2019.

- Union Minister of State, Steele, Government of India, Member of Parliament, Mandla, Dindori, Madhya Pradesh appreciated **Dr. Pramod Kumar Gupta** Scientist Plant Pathology for the working efficiency, disseminating agricultural and allied technologies for socio-economic upliftment of tribal farming community of Dindori district of Mandya Paradesh.

Felicitation

Felicitation to Plant Pathologists and Dignitaries

- Dr. M. P. Thakur, President, IPS along with Dr. Jagdish Kumar, Director, National Institute of Biotic Stress Management, Raipur, honoured **Dr. C. D. Mayee**, Former Chairman, ASRB, New Delhi (Fig.1); **Dr. P. K. Chakrabarty**, Member, ASRB, Department of Agriculture and Education, New Delhi; **Dr. M. Anandraj**, Former President, IPS and Former Director, Indian Institute of Spice Research Calicut and **Dr. S. Bharathi Dasan,** IAS & District Megistrate (an IARI alumnus) (Fig. 2) for their immense contributions in Plant Pathology and serving to the society in a meeting held at Hotel VW Kanyon, Raipur (Chhattisgarh) on 2nd July, 2019. Dr. Pankaj Kaushal, Joint Director, Dr. Anil Dixit and other faculty from NIBSM, Dr. C. P. Khare, Deputy Registrar & Principal Scientist (Plant Pathology), Dr. R. K. Dantre, Deputy Controller & Principal Scientist (Plant Pathology), Shri H. K. Singh, Asstt. Professor, from IGKV, Raipur was also present during the occasion.


Fig.1


Fig.2

Forth-coming Events

- **XIX International Plant Protection Congress (IPPC 2019):** The IPS is organizing a half day technical session on the topic "Detection and diagnosis of plant pathogens: DNA barcoding" in association with the XIX International Plant Protection Congress (IPPC 2019) i.e. International Association for the Plant Protection Sciences (IAPPS), ICRISAT and the Crop Protection Societies in India, at International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) during November 10-14, 2019 at Hyderabad, Telangana, India (***http://www.ippc2019.icrisat.org***).
- **Indian Society of Plant Pathologists (INSOPP)** is organizing Annual Meeting and National Symposium-2019 on "Mitigation of Emerging Plant Diseases under Changing Climate Scenario" at Tamil Nadu Agricultural University (TNAU), Coimbatore during December 16-17, 2019.
- **Advanced Center for Horticulture Research, SKUAST-Jammu** is conducting ICAR sponsored ten-day short course on "Recent advances in production of bio-fertilizers and bio-pesticides", scheduled to be held during November 13-22, 2019 at Main Campus, Chatha (www.skuast.org).
- **IPS 7th International Conference 2020:** The Indian Phytopathological Society (IPS) is organizing 7th International Conference on "Phytopathology in Achieving UN Sustainable Development Goals" at ICAR-IARI, New Delhi during January 16-20, 2020 (https://ipsconf2020.com).

Important dates

Abstract Submission (open)	:	September 01, 2019
Abstract Submission (closing)	:	November 30, 2019
Acceptance of Abstract	:	Within 10 days of submission
Early Bird Registration	:	Sept. 01, 2019 to Nov. 15, 2019
Registration (with late fee)	:	Nov. 16, 2019 to Dec. 31, 2019
Spot Registration	:	January 16-20, 2020

Plenary Speakers


Prof. Anupam Varma
India


Prof. A.N Mukhopadhyay
India


Dr. Serge Savary
France


Dr. Becky B. Westerdahl
USA


Prof. Appa Rao Podile
India


Dr. Hanu R. Pappu
USA


Dr. Ravi Khetarpal
Thailand


Prof. Robert F. Park
Australia

- **IPS Zonal Chapter Meeting and Symposium 2019**

Eastern Zone: Topic: Mitigating biotic stresses in agriculture for 21st Century: Changing Market Paradigm; **Venue:** Uttar Banga Krishi Viswavidyalaya, Coochbehar, WB; **Date:** Nov. 5-6, 2019 (Contact: Dr. P.M.Bhattacharya (ZP), pmbubkv2012@gmail.com; Dr. Ayon Roy (ZC), ayonroy.plantpathology@gmail.com)

Noth-Eastern Zone: Topic: Sustainable Plant Health Management in North-east India; **Venue:** ICAR Research Complex for NEH Region, Umiam, Meghalaya; **Date:** Nov. 7-8, 2019 (Contact: Dr. Pankaj Baiswar (ZP), pbaiswar@yahoo.com; Dr. Tasvina R. Borah (ZC), tasvinaborah@gmail.com)

Mid-Eastern Zone: Topic: Plant Health Management for Eco Friendly and Sustainable Agriculture; **Venue:** CSA University of Agric. & Tech., Kanpur, UP; **Date:** Nov. 6-8, 2019 (Contact: Dr. Ved Ratan (ZP), vedratancsau@gmail.com; Dr. U.K.Tripathi (ZC), pclinseed@gmail.com)

Southern Zone: Topic: Transdisciplinary Plant Pathological Research – The Way Ahead; **Venue:** Agricultural Extension Education Centre (UAS, Raichur), Koppal, Karnataka; **Date:** Nov. 28-29, 2019 (Contact: Dr. M.B. Patil (ZP), patilmb_65@yahoo.com; Dr. Y.S. Amaresh (ZC), ysama2008@rediffmail.com)

Central Zone: Topic: Challenges and Opportunities in Plant Pathology; **Venue:** Andhra University, Visakhapatnam, A.P.; **Date:** Dec. 17, 2019 (Contact: Dr. T.S.S.K. Patro (ZP), drsamuelpatro@gmail.com; Dr. P.K. Varma (Z C), penumatsakishore@gmail.com)

Northern Zone: Topic: Plant Disease Management for Food Security Under Climate Change Scenario; **Venue:** CCS HAU, Hisar, Haryana; **Date:** Dec. 12-13, 2019 (Contact: Dr. Rakesh Mehra (ZP), rmehra1354@gmail.com; Dr. P.L. Kashyap (ZC), plkashyap@gmail.com)

Delhi Zone: Topic: Bio-intensive Approaches for Management of Crop Diseases; **Venue:** Division of Plant Pathology, IARI, New Delhi; **Date:** Dec. 2019 (Contact: Dr. M.S. Yadav (ZP), dr.msyadav65@gmail.com; Dr. Nasim Ahmad (ZC), nasimnc@gmail.com)

Western Zone: Topic: Emerging Trends in Plant Pathology under Climate Change Scenario; **Venue:** Mahatma Phule Krishi Vidyapeet, Rahuri, Ahmednagar, MS; **Date:** Dec. 2019 (Contact: Deokar (ZP), cd_deokar@rediffmail.com; Dr. V.K. Bhalerao (ZC), vkb145@gmail.com)

New positions to Plant Pathologists

- **Dr Ashwani Kumar Basandrai** is assigned the charge of Dean, College of Basic Sciences, CSK HPKV, Palampur w.e.f. June 1, 2019.
- **Dr. Ashok Bhattacharyya,** Director of Research (Agri), AAU, Jorhat took over additional charge (I/c) of Vice Chancellor, AAU, Jorhat, Assam on 1st August 2019.

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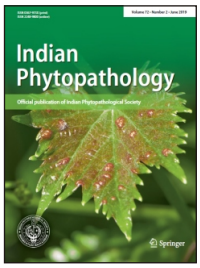

Editorial Board - Newsletter

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