IIRR
भाकृअनुप ICAR
भाचाअनुसं IIRR
ICAR-Indian Institute of Rice Research
NEWSLETTER
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Republic Day Celebrations

ICAR-IIRR celebrated the 74th Republic Day with great enthusiasm and pride on 26th January, 2023. The campus was decorated with the tricolor, and the spirit of unity and freedom was palpable. The celebrations commenced with the unfurling of the National Flag by the Director, Dr. R. M. Sundaram, and the solemn rendition of the national anthem

filled the hearts of all staff members with a deep sense of pride. The Director extended warm greetings to all the staff on the occasion of Republic Day and motivated them to contribute to nation-building with their whole heart. On this occasion, various competitions were organized for the staff members and the winners were awarded prizes The Republic Day was also celebrated at IIRR Farm, Ramachandrapuram where Dr. L.V. Subbarao, Head, Crop Improvement Division, unfurled the National Flag. All the staff of IIRR Ramachandrapuram farm participated in the celebrations.

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Winter School on "Development, Evaluation, and Biosafety Assessment of Genome Edited Crops: Hands-on Training"

ICAR sponsored 21 day Winter School on "Development, Evaluation, and Biosafety Assessment of Genome Edited Crops: Hands-on Training" which was successfully conducted by ICAR-IIRR, Hyderabad, from 20th January to 9th February, 2023 in collaboration with Agri Biotech Foundation (ABF), Hyderabad. This training course covered various in-vogue topics on Genomic Editing through a series of structured modules. Expert resource persons were identified from various ICAR institutes, SAUs, International Research Organisations, and other National Organisations who delivered the lectures, hands-on experience, and field visits.

The inaugural function of this course was held in the forenoon of 20th January, 2023. Dr. Ramesh V. Sonti, Director, ICGEB, New Delhi, inaugurated the program. Dr. P. Anand Kumar, former Director, ICAR-NRCPB and ICAR-IIRR, was the guest of honour, and Dr. R. M. Sundaram, Director of ICAR-IIRR, presided over the function. A total of 25 participants from various ICAR institutes and state agricultural universities covering 17 states/union territories attended the training. Dr. T. R. Sharma, DDG (CS), ICAR, was the chief guest, and Dr. Seema Jaggi, ADG (HRD), ICAR, was the guest of honour for the valedictory function. Dr. R. M. Sundaram, Director ICAR-IIRR, in his remarks, wished for the success of the winter school.

Research Notes

Rice root-knot nematode *Meloidogyne graminicola* - an emerging threat to rice cultivation

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Rice is the staple food for more than two-thirds of the Indian population. Improving and sustaining rice production thus becomes vital for ensuring India's food and nutritional security. Rice crop is grown in diverse ecosystems, with irrigated ecosystems being the most productive, accounting for a major share of rice production. Rice production is facing an acute labor and water shortage in recent years as a result of urbanization, increased demand for water for

human and industrial usage, and decreased and irregular rainfall due to climate change. In this context, we cannot continue to grow rice in the flooded irrigated habitat in the same way we do currently, i.e. with abundant water and labor. It is anticipated that by 2025, around 20% of the total area under irrigated rice may experience physical water scarcity and 28% may experience economic water scarcity in Asia. This encourages the adoption of new water-saving rice production practices such as Aerobic Rice, Direct Seeded Rice (DSR), Alternate Wetting and Drying (AWD), and System of Rice Intensification (SRI), etc. These new water-saving systems being introduced in irrigated environments to overcome the shortage of water and labor, encourage the rapid build-up of pathogenic nematode species such as rice root-knot (*Meloidogyne graminicola*) and root lesion (*Pratylenchus* spp.) nematodes.

Rice root-knot nematode *M. graminicola* is an obligate plant parasite. It is the most pathogenic of the nematodes that infect rice. Rice root-knot nematode once thought to be a severe problem only in the uplands, is now emerging as a serious threat to rice farming throughout the country and in other rice-growing countries. In India, it is estimated that rice root-knot nematode infestation causes a 16% crop loss of INR 23,272 million per year. The above-ground symptoms of rice root-knot nematode are manifested as depleted vigor, reduced growth, and chlorosis of seedling leaves in nurseries and the main field (Fig. 1). The below-ground symptoms include swelling of roots resulting in the formation of hook-shaped or club-shaped terminal galls or knots on the roots of seedlings (Figs. 2 & 3), and grown-up plants in the main field (Figs. 4).

Integrated management practices for the management of rice root-knot nematode include: (i) solarization of fields marked for raising rice nursery with polythene sheets 30-60 days during summer months; (ii) keeping fields weed free as several weeds serve as alternate hosts for this nematode; (iii) avoiding excessive use of nitrogenous fertilizers; (iv) growing resistant/tolerant cultivars wherever available; (v) *in situ* green manuring with sunnhemp, daincha, etc.; (vi) rotation of rice with non-host or poor host crops like mustard, mung bean, cowpea, etc. (vii) application of organic amendments such as neem cake, caster cake, or vermicompost at 1-2 t/ha or FYM at 10 t/ha in nursery beds and main field; (viii) seed treatment with biological control agents such as *Pseudomonas fluorescens* at 10g/kg seed; (ix) soil application of *Pseudomonas fluorescens* at 20 g/m2 in nursery beds (x) carbofuran application at 3 kg a.i./ha in nursery soil and 1 kg a.i./ha in main field 30 days after transplanting. Timely detection of the nematode problem and implementation of the above management measures help in reducing the nematode damage in rice.

Despite the potential to inflict substantial economic losses, rice farmers and extension workers have little knowledge of nematode problems and management options. Because of their microscopic size, subterranean habitat, and lack of distinct above-ground symptoms, nematode damage often goes unnoticed. Nematode damage symptoms are sometimes confused with nutritional deficiencies and other physiological disorders. Therefore, extension approaches like 'seeing is believing' may fail to address this issue. Often, by the time the above-ground symptoms manifest in the field, a significant nematode population builds up in the soil or plant, and the damage must have been beyond economic control limits, making it difficult to salvage the existing crop from these hidden foes. Commonly advocated practices like 'waiting for the pest population to exceed certain thresholds' before initiating remedies may not suit this situation. Therefore, whenever poor plant growth is observed in the absence of visible pest/disease signs, soil, and plant samples must be sent to the nearest nematologist to determine the role of nematodes and to undertake prompt interventions.

Fig. 1. Rice root-knot nematode infestation in the nursery (A) and (main field (B)

Fig. 2. Characteristic root galls caused by rice root-knot nematode

Fig. 3. Rice root-knot nematode infected (A) and healthy (B) rice seedlings in nursery

Fig. 4. Rice root-knot nematode infection on rice plants in the main field

Panorama of Institute Activities

Cancer Screening Camp Organised at ICAR-IIRR

ICAR-IIRR, in collaboration with the Rotary Club Krishi, Rajendranagar, and the Rotary Club of Global Wizards, and MNJ Cancer Hospital, Hyderabad, has conducted a Cancer Screening Camp for the women employees of the Institute. The camp aimed to detect early cancer symptoms among the target groups for breast, cervical, oral, and abdominal cancers. The target beneficiaries were tested with the oral examination, abdominal sonogram, mammogram, and digital mammogram in women aged above 50 years. There were about 105 beneficiaries, including scientists, administrative, technical and skilled supporting staff, with more belonging to the farm women category.

New Year's Feast

ICAR- IIRR Thrift Society conducted its general body meeting and hosted the lunch for all the members on January 11, 2023

Celebrating Innovations: Inauguration of New Products Unit of ICAR-IIRR

The Director, ICAR-IIRR, inaugurated the IIRR products unit on February 27, 2023. The unit houses equipment to prepare edible products (ready to cook and ready to eat) from biofortified rice varieties developed by ICAR-IIRR and machinery to produce botanicals to promote ecologically safer plant health management methods. The long-term plan is to on board women's self-help groups to produce rice-based products.



Empowering Women: ICAR-IIRR Celebrates International Women's Day

International Women's Day was celebrated by the ICAR-IIRR, Hyderabad on March 9, 2023. Contributions of all the women personnel from scientific, technical, administrative, and SSS to the Institute's progress were acknowledged and they were felicitated by the Director, Dr. R. M. Sundaram at a function held on this occasion. The guest speaker, Ms. Mounika Desitti, a student entrepreneur, explained about the Nutrish App, which provides tasty and nutritious food at your doorstep. Student entrepreneurs Ms. Uzma Khatoon and Zainab Khatoon explained about a unique App developed by them i.e. India's only Bike Taxi service for women driven by women who aim to increase women's employment (https://dovely.org/). The IPM app developed by an in-house team of ICAR-IIRR Drs. B. Sailaja, Ch. Padmavathi, D. Krishnaveni, B. Sreedevi, and K. Surekha was also demonstrated on this occasion. The significance of acknowledging the contributions of women by dedicating a special day was elaborated upon by Dr. B. Nirmala, Senior Scientist, IIRR. An eclectic quiz on women achievers and the cultural heritage of our nation was organized by Drs. Brajendra, Mangrauthia, and Arun which was well enjoyed and enthusiastically participated by all the staff members. Dr. P. Muthuraman, Head, Transfer of Technology & Training Division, proposed the vote of thanks and reiterated the significant contributions of women to the Nation and institute building.


Capacity Building and Outreach Programs

Visit to Farmer's Fields in SPS Nellore District of Andhra Pradesh

Dr. B. Sreedevi, Principal Scientist, ICAR-IIRR, along with Senior Scientist Dr. U. Vineetha from the Agricultural Research Station and officials from the District Agriculture Department including ADAs C. Maruthidevi and Sujatha, as well as A.O. and VAAs, visited the fields farmers practicing Direct Seeded Rice (DSR) in Gandavaram village, Kodavaluru Mandal and interacted with them On 27th February, 2023. The discussion revolved around the issues related to weeds in DSR and the challenges posed by difficult-to-control weeds. It was observed that some farmers were using herbicides in quantities higher than the recommended dosage and were applying a tank mix of pre-emergence and post-emergence herbicides similar to insecticides. Additionally, certain farmers were applying double the recommended dose of herbicides regardless of the weed groups infesting their fields. Over the years, weeds like *Leptochloa chinensis* grass and *Cyperus difformis* have become significant problems, and conventional herbicides have proven less effective. During the interaction, the farmers were educated about the importance of applying herbicides at the right stage of weed and crop growth, using the correct method for effective control of prevalent difficult grass and sedge weeds, and understanding the critical stage of crop-weed

competition in DSR. Furthermore, updates were provided to the Agricultural Department officials and farmers regarding recently released low-dose post-emergence herbicides available in the market.

Visit to Farmer's Fields Shanker Konda Tanda, Ranga Reddy District

A situational analysis of rice cultivation practices and constraints was undertaken under the Institute project, Smart village strategies for accelerated rice technology transfer in Shanker Konda Tanda of Amangal Mandal, Ranga Reddy District, Telangana, on 4th January, 2023.

Activities Undertaken under the ICAR-IIRR SCSP Program

ICAR-IIRR organized an awareness program on Solar Pumpsets, the Pradhan Mantri Kusum Yojana, and Custom Hiring Interventions for destitute women. This program was sponsored by ICAR-IIRR SCSP Program and took place in Manchal Village, Ranga Reddy District, on 7th February, 2023.

A training program cum Famer-scientist interaction was organized on 02/03/2023 at Nagepur village of Varanasi district of Uttar Pradesh. Nagepur is one of the adopted villages of the Honourable Prime Minister of India. The need to adopt conservation agriculture practices in the rice-wheat cropping system was emphasized. Zero till system of crop establishment was recommended for the rice-wheat cropping system. The farmers were advised to adopt Direct Seeded Rice (DSR) method of crop establishment in rice cultivation. On 03/03/2023, a training program cum Famer-scientist interaction was organized at Khilchi village of Chandauli district. The farmers were sensitized about the benefits of the adoption of Direct Seeded Rice.

Under the ICAR-IIRR-SCSP, drying sheets were distributed to the 160 farmers of Ederepally and Avancha, villages of Thimmajipet mandal, Nagarkurnool district, Telangana on 14/02/2023. A farmer-scientist interaction was organized with the farmers. Similarly, the tarpaulins were distributed to the beneficiary farmers of Thotapally and Rachalaplly villages of Thimmajipet mandal, Nagarkurnool district, Telangana at ICAR-IIRR on 16/02/2023. The programs were coordinated by Drs. B. Nirmala and D. Krishnaveni.

An off-campus training program on 'Integrated Crop Management in Rice was organised at Yelanduru during 16-17, February, 2023 for the farmers of Kesturu, Honnuru, Y. K. Mole, and Irasavadi villages of Yelanduru taluk of Chamarajnagar district, Karnataka. 110 farmers participated in the meeting. The program was coordinated by Drs. B. Nirmala.

Training farmers on soil testing and distribution of tarpaulins

ICAR-IIRR organized Soil Test Kit Training under TSP at Sandhyal tribal village, Ooty, Tamil Nadu, and distributed 150 soil testing kits and input materials on 25th March, 2023.

World Water Day Celebrations

Dr. P. Muthuraman and Dr. Brajendra, ICAR-IIRR, participated in the World Water Day Celebrations 2023 held at Farmers Training Centre, Dathappagudem, Yadadri Bhuvanagiri District, Telangana on 28th March, 2023.

Demonstration of Drone Spraying

In a remarkable effort to promote cutting-edge agricultural technology and foster greater awareness among farmers, demonstrations of spraying pesticides with Drones were organized at various locations in Telangana including Kanimetta village (Kothakota mandal of Mahbubnagar district) on 17/03/2023, Edulabad village (Ghatkesar mandal of Rangareddy district) on 20/03/2023, Bobbiligama and Muddemguda Village (Shabad Mandal of Rangareddy district) on 23/03/23, Peddapendyal and Thatikayala (Warangal district) on 27/03/2023, Regulakunta village (Yadadri Bhongir district) on 28/03/2023, Viswanathapalle, Ravindranagar and Kondapaka village (Siddipet district) on 29/03/2023 and Dharmaraopeta (Bhupalpalli district) on 31/03/2023. The demonstrations aimed to bridge the gap between traditional pesticide applications and the innovative solutions that drones offer.

Reaching the needy: Visits to farms affected by untimely rain

Scientists of ICAR-IIRR visited various farms affected by untimely rain during the third week of March and interacted with the farmers to advise them on post-rain crop care.

AICRIP Centre News

AICRIP Centre, SKUAST, Jammu, organized the input distribution programme at Banihal under the Tribal Sub Plan on 28th March, 2023.

Workshops, Webinars, Seminars and Trainings

Webinars

As part of the *Azad ka Amrut Mahotsava*, ICAR-IIRR, in association with the Society for Advancement of Rice Research, Rajendranagar, Hyderabad, organized the following webinars.

Shri Sandeep Kondaji, CEO Krishitantra, **delivered a talk** on "Digital technologies from lab to land "on 27th January, 2023.

Dr. Habil Joerg Fettke, Head, Biopolymer Analytics, University of Potsdam, Institute of Biochemistry and Biology, Germany, delivered a talk on "Starch metabolism in plants: a way forward" on 13th March, 2023.

Conferences attended by the IIRR staff

The Director, Dr. R. M. Sundaram, attended the Second Indian Rice Congress-2023 (IRC-2023) with the theme 'Transforming Rice Research: Recent Scientific Developments and Global Food Crisis,' organized by ICAR-National Rice Research Institute (NRRI) in Cuttack, Odisha from February 11th to 14th, 2023. Dr. Sundaram actively participated in a panel discussion during the event.

Dr. R. Mahender Kumar, ICAR-IIRR, participated in the Global Millets (Shree Anna) Conference inaugurated by Shri Narendra Modi, Hon'ble Prime Minister, on Saturday, 18th March, 2023 at New Delhi, in view of Celebrating the International Year of Millets with an exclusive global event showcasing exhibition and healthy culinary millet based possibilities.

Dr. R. M. Sundaram, Director, ICAR-Indian Institute of Rice Research, participated in the Kisan Mela organized at NDUAT, Faizabad, and addressed the huge gathering of farmers at the State-level Virat Kisan mela from 17-18th March, 2023.

Drs. L. V. Subba Rao, P. Muthuraman, and Brajendra Parmar, ICAR-IIRR, participated in the First National Traditional Paddy Conference-2023 at Central University of Tamilnadu, Thiruvarur, from 18-19th March, 2023.

Dr. B. Sailaja, ICAR-IIRR, participated in the workshop on "Farmer Centric Digital Transformation of Indian Agriculture" organized jointly by the International Crops Research Institute for the Semi-Arid Tropics ((ICRISAT) and Indian Council of Agricultural Research (ICAR) at ICRISAT, Patancheru, Hyderabad on 10th March, 2023.

Drs. C. N. Neeraja, J. Arvind Kumar, D. Sanjeeva Rao, S. K. Mangrauthia, K. Jyothi Badri, Divya Balakrishnan, Abdul Fiyaz, Suvarna Rani of ICAR-IIRR attended the training program focused on Grain Quality at IRRI South Asia Regional Center (ISARC), Varanasi, UP, India from 29-31st March, 2023.

Visitors to the Institute

The Minister of Agriculture, Agricultural Education, and Agricultural Research, Govt. of UP, visited ICAR-IIRR, Hyderabad

Shri Surya Pratap Shahi, the Minister of Agriculture, Agricultural Education, and Agricultural Research, Govt. of UP, visited ICAR-IIRR, Hyderabad, on 5th February, 2023. Dr. R. M. Sundaram, Director, ICAR-IIRR, welcomed Hon'ble Shri Surya Pratap Shahi Ji, who visited the Institute along with Officials of the State Department of Agriculture, UP, *viz*., Shri. S. B. Singh, Shri. V. P. Singh and others. The director gave a brief presentation about the institute's mandate, achievements, and new initiatives launched by the Institute. The Hon'ble Minister applauded the achievements of ICAR-IIRR and emphasized increased coordination and communication between ICAR institutes like ICAR-IIRR, the State Department of Agriculture, KVKs, and State Agriculture Universities of Uttar Pradesh. He also suggested that the ICAR-IIRR can play a central role in popularising high zinc and other biofortified rice varieties in some areas of UP state, where malnutrition in children and women is prevalent. He also suggested that ICAR-IIRR may supply seeds of climate-resilient and biofortified rice varieties in addition to the popular low glycemic index rice variety, Improved Samba Mahsuri. The meeting ended with a vote of thanks by Dr. MBB Prasad Babu, Principal Scientist and Head, Prioritization, Monitoring and Evaluation Cell, ICAR-IIRR.

Dr. Mangala Rai, Former DG, ICAR and Former Vice Chancellor, GBPUAT (G.B. Pant University of Agriculture and Technology, Pantnagar), visited ICAR-IIRR on 17th January, 2023.

The Director, ICAR-Central Institute for Women in Agriculture (ICAR-CIWA), Bhubaneswar, Odisha, Dr. Mridula Devi, visited ICAR-IIRR on 24th February, 2023 and discussed collaboration between ICAR-CIWA and ICAR-IIRR on areas of agriculture-nutrition linkages.

Dr. P. L. Gautam, former DDG, Crop Science at ICAR, National Member of NAHEP External Advisory Panel, former Vice Chancellor of GBPUAT (G.B. Pant University of Agriculture and Technology, Pantnagar), former Chairman of PPVFRA (Protection of Plant Varieties and Farmers' Rights Authority) in New Delhi, and former Chairman of NBA (National Biodiversity Authority) in Chennai, visited ICAR-IIRR in Hyderabad on 13th March, 2023. Dr. R. M. Sundaram, Director of IIRR, along with a team of scientists from ICAR-IIRR, provided Dr. P.L. Gautam with an overview of the ongoing activities at the institute. Dr. P. L. Gautam expressed his appreciation for the technologies and varieties developed by the scientists. During his visit, he also toured the field facilities, including the phenotyping facility for disease resistance against false smut and brown spot diseases.

Students of Annamalai University visited ICAR-IIRR as part of their All India Tour

Staff News

Promotion/Appointment/Transfer/Superannuation

- Dr. Shaik N Meera, Principal Scientist, Agricultural extension, was elevated to the Director, ICAR-ATARI, Hyderabad, and relieved from the Institute on 10/02/2023.

- Shri T.D.S. Prakash assumed the charge of Senior Finance and Accounts Officer at IIRR from 22-02-2023 after getting relieved from ICAR-CTCRI, Thiruvananthapuram.

- Dr. B. Jhansi Rani, Principal Scientist, Entomology, was superannuated on 28th February, 2023.
- Mr. K. Srinivas Rao, FAO, was superannuated on 31-03-2023.
- Mr. K. Narasimha, Senior Technical Assistant, was superannuated on 31-03-2023.

Forthcoming Events

- The 58th Annual Rice Research Group Meeting (ARGM) will be held at Assam Agricultural University (AAU), Jorhat, from 4-5th May, 2023.

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