IRRI's hub for South-South Cooperation on Rice Research





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IRRI develops first speed breeding protocol for rice



Varanasi (December 18, 2023)

ISARC

Scientists from the International Rice Research Institute (IRRI) developed a robust, first ever speed breeding protocol for rice that will achieve 4 to 5 crops of rice in one year - almost double of what has been possible in breeding programs until now. This protocol will be important to accelerate breeding new improved varieties of rice to cope with climate change and the needs of a growing world population.

Called SpeedFlower, the protocol focuses on optimizing light spectrum, amount and intensity, along with temperature, humidity and other variables that expedite growth, flowering and maturity in rice. The protocol is suitable for the vast majority of rice grown globally, including for indica and japonica rice.

"We can now develop new high-yielding,

climate-resilient, and nutritionally superior rice varieties in a much shorter duration. This is a major scientific step toward significantly boosting genetic gain in rice, ultimately contributing to global food security," said program lead Drs. Vikas Kumar Singh, Uma Maheshwar Singh, and Pallavi Sinha.

The success of Speed breeding in other crops led to the establishment of a state-of-the-art SpeedBreed facility at the ISARC in Varanasi, India. To achieve speed breeding in rice, the facility has been customized with controlled growth parameters using fully enclosed walk-in growth chambers.

"SpeedFlower demonstrates a remarkable impact of speed breeding on crop research. With this protocol, we can expedite crossing and inbreeding activities, completing them within 1.5–2 years instead of the usual 6–7 years required in the field," said ISARC Director, Dr. Sudhanshu Singh.



SpeedFlower described

The protocol focuses on optimizing light spectrum, intensity, photoperiod, temperature, humidity, nutrient levels and hormonal regulation to expedite growth, flowering and maturity in rice. It has demonstrated flowering within just 60 days for tested rice varieties and achieved a 50% reduction in seed maturity time, irrespective of their natural flowering durations.

A subset of 198 genotypes, representing 12 diverse sub-groups of Oryza sativa L. from the 3,000 Rice Genomes Project (3K RGP) was selected to validate the optimized SpeedFlower in the speed breeding facility at ISARC. The subset was chosen based on their molecular diversity, different flowering durations and geographic locations. In field conditions, the flowering time of these genotypes ranged from 58 to 127 days. However, when grown under the optimized SpeedFlower, all 198 genotypes successfully flowered within a shorter period of 58 days. The protocol's significant reduction in flowering time for photosensitive and late-duration genotypes, along with synchronization among segregating remarkable generations, addresses a major bottleneck in breeding programs.

The SpeedBreed Facility and the innovative SpeedFlower protocol mark a significant leap in rice breeding, addressing generation time and seasonal constraints. The optimized protocol works for all the maturity durations (early, medium and late) of *indica* and *japonica* rice and enables synchronous flowering.

Partnerships for SpeedBreed and SpeedFlower

Considered as a model facility for speed breeding in rice, IRRI plans to establish a consortium to offer support services to National Agricultural Research and Extension Systems (NARES) and private companies on establishing and operating speed breeding facilities.

The protocol will be further refined for enhanced output and comprehensive testing will be done to a broader range of rice genotypes. The program proponents aim to further collaborate with NARES, including other centers under the CGIAR, to leverage shared knowledge and expertise toward optimizing the protocol for other crops.

"We continue to push research boundaries to develop innovations that are urgently needed in light of a growing food and climate crises. This breakthrough sets the new standard toward accelerating genetic gains for global food security," said IRRI Interim Director General, Dr. Ajay Kohli.

The study behind the protocol was led by Drs. Vikas Kumar Singh, Uma Maheshwar Singh, and Pallavi Sinha and was developed with funding support from the Department of Biotechnology (DBT), Government of India. The research has been conducted as part of the collaborative research project with the Indian Council of Agricultural Research (ICAR).



IRRI Regional Director for Asia explores opportunities to strengthen partnerships with stakeholders in Bangladesh and Nepal



Bangladesh and Nepal, (January 21-26, 2024)

International Rice Research Institute (IRRI) Regional Director for Asia, Dr. Jongsoo Shin, visited Bangladesh and Nepal from 21 to 26 January 2024 to strengthen IRRI's partnership with major stakeholders in Bangladesh and Nepal.

In Bangladesh, Dr. Shin met the newly appointed Agriculture Minister Dr. Md. Abdus Shahid, and congratulated him on behalf of IRRI on his prestigious appointment as the Minister of Agriculture. He briefed the Agriculture Minister about IRRI's research and development activities Bangladesh in and acknowledged the government's strong support for IRRI. The Agriculture Minister appreciated IRRI's significant contribution to increasing rice production in Bangladesh. The minister identified some challenges in Bangladesh's agri-food system such as the increasing population, scarcity of land and water, climate change, food price inflation, inefficient value chains, etc., and requested IRRI's continued partnership to increase rice production in the future.

Dr. Shin also visited different stakeholders in Bangladesh including the Bangladesh Agricultural Research Council (BARC), the Bangladesh Rice Research Institute (BRRI), the World Bank, and the Korean International Cooperation Agency (KOICA), briefed them about IRRI's research and innovations in the rice-based agri-food systems and learned their investment priorities in the agri-food systems. He brought up opportunities for future collaborations on food and nutrition security, building climate-smart, rice-based agri-food systems, value addition, modern breeding techniques, and capacity building for government agriculture personnel.



In Nepal, Dr. Shin met with the Agriculture Minister, Dr. Bedu Ram Bhusal; the Agriculture Secretary Dr. Govinda Prasad Sharma; the Executive Director of Nepal Agriculture Research Council, Dr. Dhruba Raj Bhattarai; Joint Secretary of Agricultural Development Division, Dr. Ram Krishna Shrestha, and other senior officials from the Ministry of Agriculture and Livestock Development to discuss IRRI's research activities and partnerships in the country.

Nepal is currently importing about 20% of its rice demand and this is a major concern for national food security and draining of foreign currency reserves. Increasing rice production, achieving self-sufficiency in rice, and decreasing annual rice imports are major priorities of the government in Nepal. The Agriculture Minister sought IRRI's support to increase rice production in Nepal through research, innovation, and capacity development.

Dr. Shin also discussed possible collaborations and future funding opportunities for the rice-based agri-food system in Nepal with officials from development partners including USAID, Winrock Nepal, and KOICA to discuss the possible collaboration opportunities in areas of climate-resilient agriculture, rice seed production and marketing, testing and scaling of improved rice varieties, intensification and diversification of rice-based cropping systems, and agricultural value chain development.

IRRI Participated in the International Conference on Food & Nutritional Security through Agriculture Ecosystem



Hyderabad (February 01-02, 2024)

National Institute of Agricultural Extension Management (MANAGE), in collaboration with its esteemed Knowledge Partners - International Rice Institute (IRRI), International Crops Research for the Semi-Arid Tropics Research Institute (ICRISAT), International Potato Center (CIP), and Harvest Plus, hosted a ground-breaking International Conference on "Food & Nutritional Security through Agriculture Ecosystem." More than 250 delegates representing scientists, extension professionals, research scholars, and academia including experts participated in the event. The conference was inaugurated by Dr. P Chandra Shekara, Director General, MANAGE; Dr. Victor Afari-Sefa, Deputy Director General, Research, ICRISAT; Dr. Joanna Kane-Potaka, Deputy Director General, IRRI; Dr. Samarendu Mohanty, Asia Regional Director, CIP; Dr. Binu Cherian, Country Manager, HarvestPlus; and Dr. Veenita Kumari, Deputy Director (Gender Studies), MANAGE.

During the inaugural address Dr. P. Chandra Shekara, DG – MANAGE stated that food and nutrition security are not goals but necessity. It is everyone's responsibility to design and implement policies to ensure food and nutritional security in the world. He mentioned that MANAGE is mainstreaming food and nutritional security initiatives in its agricultural extension programs and schemes like training Input Dealers, Agripreneurs under AC&ABC, RKVY-RAFTAAR, and digital agriculture schemes.

Dr. Joanna Kane-Potaka, said that we can't work in silos and we need to integrate our specializations to address food and nutritional security. She highlighted the on-going breakthrough research in rice at IRRI and stressed the need for greater collaboration change at farmers' level.

A national-level women agripreneurs exhibition 2024 featuring 25 women agripreneurs from 10 states across the country was also organized. The exhibition showcased different value added products of millets, honey, coconut, mushroom, fruits, and spices. As part of the conference more than 90 research papers were presented under seven important themes, including keynote papers by eminent speakers. Dr. Swati Nayak, South Asia Lead, Seed Systems and Product Management, and Dr. Sugandha Munshi, Senior Associate Scientist and Lead Specialist from IRRI too were speakers at panel discussions organized during the conference.

ISARC hosts a series of planning workshops and meetings to escalate Direct Seeded Rice in South Asia

Varanasi (March 06-07, 2024)

IRRI South Asia Regional Centre (ISARC) hosted the first annual review meeting of the PlantDirect Project (A project on Dry Direct Seeded (DDS) rice for the Indo-Gangetic plains of India). The project is being carried out through IRRI in collaboration with the Bill and Melinda Gates Foundation.

This two-day event had the presence of BMGF Senior Program Officer Dr. Gary Atlin, Chairman of the Centre for Research and Development (CRD) Dr. B.N. Singh, Vice Chancellor of Chaudhary Charan Singh Haryana Agricultural University Dr. B.R. Kamboj, delegates from Indian Council of Agricultural Research and other state agricultural universities and IRRI senior scientists and representatives.

The meeting involved technical discussions on priorities and activities under the project, progress, and key achievements in the past year, work plan for the upcoming year on gendered intentional product concepts for breeding varieties under the project, planning on the establishment of a dedicated IRRI-NARES DDS breeding network, identification and addressing the trait gaps in DDS elite breeding pool, etc.

Speaking at the event, Dr. Gary Atlin highlighted the impacts of climate changes on the Rice-Wheat crop systems and the need to address the challenges faced by small landholders through innovations and research. Describing the PlantDirect project as an initiative for leveraging IRRI-India research to new approaches to Direct Seeded Rice, he encouraged the scientists to develop research findings on shorter-duration rice varieties whilst maintaining soil saturation, carbon emissions, and yield outputs for stable and sustainable rice cropping systems. He also appreciated the speed breeding facility established in ISARC which enables faster varietal development of rice varieties which further can advance research processes.

IRRI Rice Breeding Innovations platform Research Director Dr. Hans Bhardwaj seconded the remarks of Dr. Atlin and thanked him for conceptualizing PlantDirect as a project that would surely benefit the farmers for crop-establishment methods and build the resilience of their livelihoods against the challenges caused by climate changes.

"I welcome each one of you who are present here for this fruitful discussion of developing climate-resilient agri-food systems through research and development. Advocating the comments presented by previous speakers, I would also like to stress the strong integration of agronomic management & identification of breeding targets in DDS systems to enhance the system productivity. We also have a big opportunity to tap into the area of carbon credit markets which can add to the economic stability of our farmers.", said ISARC Director Dr. Sudhanshu Singh.

A series of other planning and review meetings were also organized at ISARC to discuss the progress and achievements of the projects revolving around Direct Seeded Rice.

- Gender Intentional Dry- DSR Product Profile Stakeholders Workshop to discuss the current market segmentation and target product profiles (TPP) for both regions, focusing on genetic, agronomic, and social relevance.
- Scale Direct Annual Planning and Reflection Meeting to reflect and discuss progress made to date, approach adopted and future course of actions to deliver on the objectives and work packages under the ScaleDirect project. ScaleDirect is a project launched by IRRI in collaboration with USAID & Bayer to scale DSR initiatives in six countries, namely, India, Bangladesh, Nepal, Kenya, Tanzania, and Mozambique.

ISARC holds Stakeholder meetings and training on climate-smart agriculture

Varanasi (March 13-15, 2024)

The International Rice Research Institute (IRRI) South Asia Regional Centre (ISARC) is actively working on leveraging research expertise and knowledge-sharing initiatives with its stakeholders through education and capacity development.

Under similar initiatives, ISARC organized a three-day Stakeholder Meeting and Training program on Climate-Smart Agriculture (CSA) in collaboration with Bihar Agriculture University (BAU). This meeting cum training program had the participation of 30 BAU scientists, research and technical assistants who were provided with the necessary knowledge and skills to navigate the complexities of modern rice cultivation practices in the face of climate variability. The training program covered a wide array of topics over three days, including Climate Smart Agriculture Context, Precision Agriculture, Water Management Techniques, Weed Management Strategies, Gender among others. Participants received the opportunity to learn from esteemed experts and engage in hands-on activities to enhance their practical skills. Additionally, the featured interactive program sessions, O&A discussions, and opportunities for networking and knowledge exchange.

Highlighting the significance of such training programs, ISARC Director Dr. Sudhanshu Singh said, " Over the past 12 months, ISARC has organized around 20 training programs in collaboration with universities and organizations like Indian Council of Agricultural Research (ICAR), Bihar Agriculture University (BAU), Banaras Hindu University (BHU), World Bank, Odisha Government, Department of Agriculture, Fatehpur and Mahatma Gandhi Kashi Vidyapith (MGKV). These training programs provided by IRRI agricultural experts had over 787 participants from various sectors within the agriculture domain including farmers, students, researchers, scientists, and government officials. Through these training, ISARC is providing cutting-edge research insights, hands-on skills and on-field exposure on varied topics such as Direct Seeded Rice (DSR), climate-resilient agriculture, breeding for crop innovation, SpeedBreed, rice value addition and other agricultural technologies.

The three day training program included sessions from National Academy of Agricultural Sciences Vice President Dr. A. K. Singh, National Seed Research and Training Centre Seed Technologist Dr. M. P. Yadav, Assistant Professor of Agronomy at BAU Dr. Asheesh Chaurasiya along with IRRI experts such as DDG-Strategy, Engagement and Impact Ms. Joanna Kane Potaka, IRRI Education Head Dr. Anilyn Maningas, Senior Scientist- Soil Sciences Dr. Anthony Fulford. Senior Scientist-Mechanization and Postharvest Dr. Rabe Yahaya, Senior Associate Scientist Dr. Ashok Kumar, Dr. Uma Shankar Singh, Dr. Sugandha Munshi and others.

The opening program, scheduled for the morning of March 13th, commenced with a welcome message by Dr. Anilyn Maningas, Head of IRRI Education, setting the tone for the event. Dr. Sudhanshu Singh, Director of the ISARC, in his opening remarks, highlighted the significance of the program in the context of current agricultural prospects in Bihar. Distinguished speakers including Dr. Asheesh Chaurasiya, Assistant Professor of Agronomy at BAU, and Dr. Ashok Kumar, Senior Associate Scientist II at IRRI, shared their valuable insights. Dr. Ajay Kumar Mishra, Senior Associate Scientist I in Soil Science at IRRI presented an overview of the course, setting the stage for the subsequent sessions.

The training program covered a wide array of topics over three days, including Climate Smart Agriculture Context, Precision Agriculture, Water Management Techniques, and Weed Management Strategies, among others. Participants received the opportunity to learn from esteemed experts and engage in hands-on activities aimed at enhancing their practical skills.

The first two sessions on Integrated Weed Management and water management in Direct Seeded Rice (DSR) were delivered by Dr. Ashok Kumar, Senior Associate Scientist II, Program Coordination, ISARC. ISARC capacity building specialist Dr. Riti Chatterjee involved the participants in a Buzz Session before her session on the Adoption and Dissemination Pathways for Climate-Smart Agriculture Technologies and Practices for Climate-Resilient Livelihood.

On the second day IRRI Scientist II- Soil Sciences Dr. Anthony Fulford delivered a session on Climate Smart Agriculture Practices contributing to judicial use and recycling of resources including carbon capture & Carbon Credits that sparked high enthusiasm among the participants. Dr. Ajay Kumar Mishra and his team conducted a hands-on session on the Digital Tools that are being used for Climate Smart Agriculture. Dr. M. P. Yadav, Seed Technologist at National Seed Research and Training Centre delivered a lecture on the influence of biotic and abiotic factors that affect the seed quality. In his one-hour long session, he also covered the quality seed production of rice. A talk on Agriculture Mechanization, Post-Harvest and Residue Management was delivered by Dr. Rabe Yahaya, Senior Scientist II - Mechanization and Postharvest at IRRI.

The third day embarked on the keynote sessions delivered by Dr. A. K. Singh, Vice President of the National Academy of Agricultural Sciences, and Dr. Uma Shankar Singh, the founding director of ISARC. providing invaluable insights into cutting-edge agricultural practices. Dr. A. K. Singh, in his session on Precision Agriculture and Climate Change, stressed that because of fast changing climatic conditions, studying the rainfall data for the last 10 years is becoming more meaningful than taking the data of the last 30 or 50 years. Dr. U. S. Singh delivered his session on Climate Resilient Rice Varieties and how it can be a Powerful Strategy for Climate Change Adaptation. The last session of the 3-day training program on Engagement of women in rice based systems was delivered by Sugandha Munshi, Dr. lead specialist,Sustainable Impact Platform, IRRI. She covered the women inequality issue in agriculture and the success stories of women farmers. She stressed in her lecture that "Inclusion is not a Standalone concept-Integration is the key!".

Additionally, the program featured interactive sessions, Q&A discussions, and opportunities for networking and knowledge exchange. The training culminated with a post-evaluation, feedback session, and certificate distribution ceremony, ensuring that participants leave with a comprehensive understanding of Climate-Smart Agriculture and its implications for sustainable agricultural development.

Beyond the classroom sessions, participants also had the opportunity to explore ISARC's state-of-the-art laboratory facilities like GIS Lab; Computational Biology Lab; General Lab; CERVA Lab. They are also engaged in field visits and demonstrations in the SpeedBreed Facility, Mechanizations Hub, Drone Demonstration, Regenerative agriculture and Soil Health Assessment, further enriching their learning experience.

This 3-days program concluded on 15th March with the closing remarks from ISARC Director Dr. Sudhanshu Singh, congratulatory remarks from IRRI gender lead Dr. Sugandha Munshi in the presence of chief guest Dr. U. S. Singh. Ms. Joanna Kane-Potaka, Deputy Director General- Strategy, Engagement and Impact, IRRI congratulated and wished the participants and officially closed the program.

This Stakeholder Meeting and Training program underscores the commitment of CGIAR-IRRI and BAU to fostering innovation and resilience in agriculture, paving the way for a sustainable and climate-resilient future. Impact of rural outmigration on women and women empowerment through entrepreneurship discussed at Krushi Odisha 2024

Odisha (January 14, 2024)

Women empowerment through agro-entrepreneurship and the impact of rural outmigration on the livelihood of rural households and the women who are left behind were featured at the 2024 Krushi Odisha in Bhubaneswar, Odisha.

The two issues were tackled in the panel discussions organized by the International Rice Research Institute (IRRI), Low-Glycemic Index (GI) rice industry and women empowerment through value addition of indigenous staple foods and Migration–impact on farm women.

The first topic explored the dual objectives of Odisha's Department of Agriculture and Farmers' Empowerment (DA&FE) and the Department of Mission Shakti (DMS) in promoting sustainable agriculture and uplifting the socio-economic status of women in the state through entrepreneurship development.

"DMS and DA&FE recognize the important role played by women in the agricultural sector," said Dr. U.S. Singh, IRRI advisor for Asia and Africa. "There is the need to empower not just the women farmers but all women across the value chain by featuring opportunities for entrepreneurship, developing and promoting innovative products, and engaging them in capacity development."

Innovative products include IRRI 147 and IRRI 162 rice with low-GI and high-protein value recently

released by IRRI. Low-GI rice varieties not only have the potential to revolutionize the rice-based dietary landscape and provide healthier options for consumers but also higher income for farmers.

The impact of migration on farm women discussed the results of a study conducted by the CGIAR GENDER Impact Platform in collaboration with the Indian Institute of Technology Hyderabad and IRRI. The study generated data for understanding the migration patterns and their impacts on the women left behind and the livelihood of rural households.

"One significant challenge is the low productivity of farms managed by women," said Dr. Rajitha Puskur, a scientist at IRRI and lead for CGIAR's Evidence Module. "This is attributed to their lack of knowledge and skills in farm management, limited access to technologies and training opportunities, and a dearth of institutional credit. The absence of access to women-friendly machinery and equipment further hinders their efficiency."

Dr. Swati Nayak, South Asia lead for Seed System and Product Management and recipient of the 2023 Norman Borlaug Field Award, discussed how seed production and marketing can help in the socio-economic development of women.

Krushi Odisha is an annual agriculture-related event organized by DA&FE and the Federation of the India Chamber of Commerce and Industry. This year's Krushi Odisha celebrated women in agriculture and was held in Bhubaneswar from 12 to 14 January. Odisha Government and IRRI seal new agreement to promote agro-entrepreneurship among women

Odisha (January 13, 2024)

A new tripartite agreement between the International Rice Research Institute (IRRI), the Department of Agriculture and Farmers' Empowerment (DA&FE), and the Department of Mission Shakti aims to support women self-help groups (SHGs) to gain skills in managing small-scale enterprises for value-added rice products.

Under the agreement, signed during the 2024 Krushi Odisha in Bhubaneswar, IRRI will support the government agencies in promoting premium quality rice with nutritional benefits and ready-to-cook and eat products from broken rice and bran.

The IRRI-led project, in collaboration with the Odisha

Millets Mission, will establish a pilot plant facility and train women SHGs and farmer-producer organizations on rice and millet value addition and entrepreneurship. DA&FE initiated the Odisha Millet Mission to boost millet production to create new income avenues for farmers.

Although rice bran is used mainly as cattle feed and fuel in India, a study conducted by Sheffield Hallam University showed that 7.7 million tons of nutritious food could be produced from rice bran.

Additionally, the market demand for rice bran derivatives in food and beverage applications as healthy alternatives is increasing providing small and medium enterprises in Odisha with economic opportunities.

UPCOMING EVENTS

Training of trainers (ToT) for AWD in Andhra Pradesh, MP and Haryana in April-May, 2024
Seed System Accelerator Meet- 2024 at ISARC on April 22, 2024

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ACTIVITIES AT A GLANCE

Varanasi (January 07, 2024)

Official from the Directorate of Agricultural Engineering, Madhya Pradesh visited ISARC to witness a range of scalable machinery and implement needed to address rice-based cropping systems and enhance smallholder farmers' resilience at climate change. Mechanization and Postharvest sub-unit emphasized overview of the current research and extension programs at the centre and concluded on exploring potential pathways leading to future partnership with MP government.

IRRI-DSR-Odisha/CSISA project team organized interaction meetings on "Gender Inclusive Strategies for Mechanized-DSR Scaling in Odisha" at Angarpada village of Kushumi block and at Radho village of Udala block in Mayurbhanj. Progressive farmers, service providers, WSGs, NGOs and FPO members (37 female & 8 male at Angarpada; and16 female & 12 male at Radho) shared their views on present status, challenges, opportunities/scopes and strategies for scaling DSR in Mayurbhanj keeping women as central in decision making and on ground execution.

Odisha (January 22-23, 2024)

BHU, Varanasi (February 01, 2023)

CERVA unit lead scientist Dr. Nese Sreenivasulu delivered a lecture at BHU on "Low Glycemic Index Rice and Nutritional Security in India." The event, attended by Dr. Sreenivasulu and IRRI South Asia Regional Centre scientists, focused on the health benefits of low-GI rice varieties, particularly for managing conditions like diabetes and obesity. The session highlighted the importance of incorporating low-GI rice into diets for better public health and sustainable food choices. It provided valuable insights into IRRI & CGIAR's research efforts and emphasized innovative approaches in rice cultivation and processing to enhance nutritional content. IASRC hosted 51 farmers under the initiative of the Department of Agriculture as part of their sub-mission on the Agricultural Technology Management Agency (ATMA) scheme for the year 2023- 2024.

During the session, the farmers were exposed to various topics including premium rice production, rice value addition, product diversification for emerging markets, farm mechanization, and postharvest technologies. Additionally, they had the opportunity to explore natural farming practices and familiarize themselves with a range of farm machinery such as seed drills and straw management systems through field and farm machinery hub visits.

Varanasi (February 05, 2024)

Bhubaneshwar (Februray 07, 2024)

A workshop on Innovation Packaging and Scaling Readiness (IPSR) for Mechanized DSR Case was organized to gather comprehensive insights into the mechanized DSR-led rice-based cropping systems in the framework Odisha, within of the DSR-Odisha/CSISA Project. The collective aim of the event was to identify potential barriers, problems, and challenges that might impede the widespread adoption of mechanized DSR and subsequent non-rice crops. Additionally, collaboratively pinpoint kev enablers/innovations/solutions for the sustainable upscaling of this technology were also discussed in this workshop.

Around 43 participants (5-females) from Department of Agriculture, OUAT, NRRI, KVKs, DMS, DSR-Odisha/CSISA project team, NGOs, FPO, women SHG, machine dealer, herbicide company, seed company along with farmers and service providers were involved. The IRRI Seed System Team conducts nationwide field trials to assess modern rice varieties for yield and compatibility. Farmer feedback guides selection, ensuring regional suitability. Empowering women in rice production, IRRI introduced a Community-based Rice Seed Entrepreneurship Model in Bangladesh. A training session at BRRI Barisal equipped 40 women ToT farmers from two groups with rice seed production skills. IRRI plans to train 400 women ToT farmers nationwide in 2024. The day-long program covered production, processing, storage, and sales, emphasizing quality and business aspects. Collaborative efforts with One CGIAR's Seedqual initiative enhance variety dissemination via women farmer networks, advancing seed security and genetic gain.

Bangladesh (February 07, 2023)

Varanasi (February 13-14, 2024)

A 5-day training on 'Space Technology in Agriculture' took place at the North Eastern Space Applications Centre under the Assam Agribusiness and Rural Transformation Project (APART). Organized by NESAC, in collaboration with the Department of Space and the North Eastern Council, the training aimed to enhance the capacity of faculty and staff from Assam Agricultural University (AAU) and its affiliated colleges. The goal was to ensure the sustainability and effective utilization of newly established GIS labs at AAU, Jorhat, and its affiliated colleges in Biswanath, Dhubri, and Nalbari. Seventeen participants attended, including faculty and project staff from various agricultural fields. The training covered both basic and advanced topics in remote sensing and GIS through lectures and hands-on sessions, focusing on soil resource mapping, crop acreage estimation, damage assessment, yield estimation, and site suitability analysis for different crops.

A two-day international workshop titled "Speed Breeding in Crops: A Rice Success Story" took place at the IRRI South Asia Regional Center (ISARC) . 18 national and international researchers from India and Bangladesh participated in this workshop to delve into various aspects of speed breeding, including the establishment and protocol optimization.

The workshop also provided the participants with hands-on experience in Speed Breeding facility visit to comprehend facility concepts and specifications.

Umiam, Meghalaya (February 19-23, 2024)

Odisha (February 20, 2023)

A field day-cum interaction meeting and exposure visit on mechanically sown rabi season crops was organized under IRRI-DSR-Odisha/CSISA at Bhimtali village of Udala block in Mayurbhanj district involving 44 participants including 8 women and 5 SPs from 8 nearby villages of 3 blocks. Challenges and opportunities for crop diversification and intensification during the rabi season were discussed with the participants.

A two-day stakeholders' workshop-cum-seed dialogue was organized by Assam Agricultural University with the technical support of IRRI under APART at AAU, Jorhat which had around 61 participants from AAU, IRRI, ASOCA, DoA officials, private seed companies producing farmer producer and seed organization/company (FPO/FPC's) from different districts of Assam. Discussions focused on increasing seed production, farmers' knowledge of different seed types, and challenges faced by Farmer Producer Companies (FPCs). Key topics included the need for equipment like laser land levelers, buyer-seller meets, awareness of new varieties, and mini processing units. Experts provided insights, and participants visited Assam Agricultural University's seed processing unit funded under APART for firsthand information.

Assam (February 20-21, 2024)

Varanasi (February 20-22, 2024)

As a part of the ongoing collaboration between IRRI & Bihar Agriculture University (BAU) under the Climate Resilient Agriculture Initiative of Government of Bihar, a three-day face to face training program centered on rice production practices was conducted at ISARC. The three-day program focused on the importance of rice production, starting from crop calendar preparation and farm planning, selection of right rice varieties, quality seed production to nutrient management, water management, weed management, pest management. Farmers received field exposure and hands-on experiences on usage of advanced farm machinery and demonstrations of the drone applications along with alternate crop establishment methods like Direct Seeded Rice (DSR), Alternate wetting and drying (AWD), etc. A specialized session on business models was also organized under the training.

AAU organized a content writeshop for the Rice-based Cropping System Knowledge Bank (RCSKB) with IRRI's technical support under the APART. Chaired by Dr. Sanjay Chetia, Dr. Virendar Yadav, Dr. Rupam Borgohain, and Dr. Debanand Das, the event aimed to finalize RCSKB's content. Scientists from various departments collaborated to localize and streamline the content for the upcoming digital platform. The RCSKB, an upgrade of the existing Rice Knowledge Bank, Assam, will include information on 15 crops and cater to the needs of small-scale farmers in Assam. It crop-specific knowledge, will provide best management practices, and recommended cropping systems for the state's six agro-climatic zones. The platform will also feature a webGIS portal and Fishery Knowledge Bank, accessible in both Assamese and English, to facilitate information access for scientists, researchers, extension workers, and farmers.

Assam (February 22, 2024)

Bhubaneshwar (February 22, 2023):

To discuss the insights of rabi season of 2022-23 and kharif 2023, generate common messages for communication, collect feedback on the progress during rabi 2023-24 and planning activities for kharif 2024, Convergence Platform (CP) Odisha Meeting was organized by the Directorate of Extension Education, OUAT and ATARI, Kolkata facilitated by CSISA and IRRI-DSR-Odisha in OUAT, Bhubaneswar.

A two-day training on 'Sustainable soil and plant health management in rice-based cropping system' was organized at AAU with the technical support of IRRI under APART project. The program was attended by members of Farmer Producer Companies (FPCs) and representatives from Krishi Vigyan Kendras (KVKs) of different districts of Assam.

The main agenda of the program was to insist on the importance of soil and plant health and to promote capacity building of bio-fertilizer and microbial agent production on farms and at pilot scale level. The workshop covered soil health, composting techniques, and digital agriculture, advocating for eco-safe, sustainable approaches.

Assam (February 26-27, 2024)

Series of activities in Assam under Mechanization and Postharvest (Jan-Feb 2024)

Rice value chain training and Demo

Rice value chain training and demonstration were conducted under APART in collaboration with AAU. In the program, farmers learned about a range of equipment, including mechanical transplanters, drum seeders, seed cum fertilizer drills, power weeders, reapers, reaper binders, axial flow threshers, combine harvesters, and portable rice mills. The training sessions also covered weed management in rice fields, plant protection equipment, and nutrient application practices, enhancing farmers' knowledge and skills in modern rice cultivation techniques. The training resulted in empowered farmers equipped with enhanced knowledge and skills in utilizing advanced machinery and modern cultivation techniques, contributing to improved efficiency and productivity in the rice value chain. Additionally, participants gained insights into effective weed management, plant protection, and nutrient application, fostering sustainable and resilient rice farming practices in Assam. A total of 57 training and demo programs were conducted with 1485 participants (35.6% women) in all APART districts.

Postharvest training and Demo

In the postharvest training session, farmers were introduced to various harvest and postharvest machines, including reaper, reaper binder, axial flow threshers, combine harvesters, and portable rice mills. The session focused on elucidating the working principles and operational methods of these different machinery, enlightening farmers on their efficient utilization. Additionally, innovative drying techniques for rice and storage methods such as the Solar Bubble Dryer, IRRI super bag were demonstrated, providing farmers with hands-on experience. The training aimed to familiarize farmers with these technologies and emphasize the importance of correct grain storage methods. Participants gained valuable insights into the principles of grain storage, enhancing their understanding of proper practices to maintain grain quality. The hands-on approach allowed participants to the machinery and directly explore in detail equipment, fostering a deeper understanding of their applications in the agricultural landscape. Overall, the event contributed to enhancing the technological capabilities of farmers in the region, paving the way for more efficient and sustainable rice cultivation practices. A total of training and demo programs were conducted with 1512 participants (38% women) in all

Rice value chain training

Postharvest training

IRRI scientists were honored to meet Bill Gates at the National Agricultural Science Complex (NASC) in Delhi. IRRI and BMGF have a long-standing partnership with a shared vision of maintaining food and nutrition security, as well as being champions of sustainable agriculture in the face of climate change challenges.

Dr. Sudhanshu Singh, Dr. Nese Sreenivasulu, and Dr. Swati Nayak enjoyed their opportunity to introduce IRRI's novel innovation - low and ultra-low GI rice, a healthier rice variety suitable for people with diabetes to Mr Gates, who took the opportunity to taste the new variety. They also discussed climate-resilient innovations including Green Super Rice (GSR), Direct Seeded Rice (DSR), and progress with the next stage of developing submergence-tolerant rice.

New Delhi (February 29, 2024)

ANNOUNCEMENTS

ISARC Cultivate turns one next month!!

We are thrilled to announce that ISARC Cultivate will be marking its first anniversary next month!

Over the past year, we've been dedicated to bringing you the latest news, stories, and updates from around the world, covering a myriad of topics that matter most to you. From breaking news to in-depth analyses, your trust and support have been the cornerstone of our success.

As we reflect on this milestone, we want to extend our heartfelt gratitude to each and every one of you for your unwavering support. Your viewership, feedback, and engagement have been invaluable, driving us to continually strive for excellence in journalism.

Join us in celebrating this special occasion as we look forward to many more years of informative broadcasting together. Stay tuned for exciting updates and special features in the coming weeks as we commemorate our first-year journey!

Thank you for being part of the "CULTIVATE" family. Here's to many more years of staying informed, empowered, and connected.

VISITS AT ISARC

February 09, 2024: Visit of Prof. Patricio Grassini from The University of Nebraska at ISARC.

February 06, 2024: Visit of Advisor, Health and Climate Change, Government of United Kingdom Dr. Christopher Browne and Dr. Vinod Paswan from Department of Food Technology, Banaras Hindu University (February 06, 2024)

March 07, 2024: Visit of Food Safety and Drug Administration Advisor to the Chief Minister of Uttar Pradesh, Dr. Gyanendra Nath and BARC Chairman Dr. Shaikh Mohammad Bakhtiar

March 11-12, 2024: Dr. Kamath, Head of Sustainable Agriculture & Partnerships at Bayer and scientists from ICAR, TNAU, CCS Haryana Agricultural University at ISARC experimental area

FEATURED PUBLICATIONS

Plant Biotechnology Journal

SpeedFlower: a comprehensive speed breeding protocol for indica and japonica rice

Kabade, P.G., Dixit, S., Singh, U.M., Alam, S., Bhosale, S., Kumar, S., Singh, S.K., Badri, J., Varma, N.R.G., Chetia, S. and Singh, R., 2023.

International Journal of Molecular Sciences, 24(2), p.1098

Codon usage provide insights into the adaptation of rice genes under stress condition

Tyagi, S., Kabade, P.G., Gnanapragasam, N., Singh, U.M., Gurjar, A.K.S., Rai, A., Sinha, P., Kumar, A. and Singh, V.K., 2023.

Life Science Alliance, 7(3)

Extreme trait GWAS (Et-GWAS): Unraveling rare variants in the 3,000 rice genome

Gnanapragasam, N., Prasanth, V.V., Sundaram, K.T., Kumar, A., Pahi, B., Gurjar, A., Venkateshwarlu, C., Kalia, S., Kumar, A., Dixit, S. and Kohli, A., 2024.

Communications Biology, 7(1), p.89

Superior haplotypes of key drought-responsive genes reveal opportunities for the development of climate-resilient rice varieties

Singh, P., Sundaram, K.T., Vinukonda, V.P., Venkateshwarlu, C., Paul, P.J., Pahi, B., Gurjar, A., Singh, U.M., Kalia, S., Kumar, A. and Singh, V.K., 2024.

Frontiers in Plant Science, 15, p.1272326

Superior haplotypes towards the development of blast and bacterial blight-resistant rice

Alam, S., Sundaram, K.T., Singh, U.M., Srinivas Prasad, M., Laha, G.S., Sinha, P. and Singh, V.K., 2024.

Oryza (2023). Vol. 60 Issue 4, PP: 567-577

Comparative study on seed metering units for wet-direct seeding of rice

Prabhat Kumar Guru, Atul Kumar Srivastava, Priyanka Tiwari, Ankur Nagori, B.S. Narwariya, and Suryakanta Khandai.

Oryza Vol. 61 Issue 1. PP: 1-11. DOI

Effect of different storage conditions on grain quality of paddy (2024)

Angshuman Sarmah, Pradip Ch Dey, Sanjay Kr Chetia, Ajay Kr Medhi, Milan Jyoti Konwar, Sanjib Ranjan Borah, Arunima Bharali, Mayuri Baruah, Martin Gummert and Suryakanta Khandai.

CGIAR Data paper, December 2023

"Food markets: Market and Vendor Characteristics" for 5 study districts of TAFSSA, viz., Nalanda (India), Banke (Nepal), Surkhet (Nepal), Rajshahi (Bangladesh), Rajshshi (Bangladesh)"

Bi AZ, Gupta I, Mahida D, Isanovic S, Boncyk M, Kabir ANMF, Choudhury S, Veettil P.C..

We want to hear from you!

As our valued partner in South Asia, we would like to hear your thoughts about ISARC Cultivate.

Please scan this QR code to give us your feedback on the newsletter.

Dr. Sudhanshu Singh

Director, ISARC sud.singh@irri.org

Dr. Nese Sreenivasulu Head, ISARC CERVA n.sreenivasulu@irri.org Dr. Rabe Yahaya Head, ISARC CESA r.yahaya@irri.org Dr. Anilyn Maningas Head, ISARC CEIRD a.maningas@irri.org

IRRI South Asia Regional Centre G.T. Road, Collectory Farm, Chandpur Varanasi, Uttar Pradesh, India Tel. no. (0542) 2518900

For more details, please email: TC Dhoundiyal at t.dhoundiyal@irri.org, Anil H. Pimpale at a.pimpale@irri.org and Ankita Tiwari at a.tiwari@irri.org