

Director's Desk

Stagnant sugarcane yield and low sugar recovery was the identity of sugar industry in U.P. over the years. To break this orthodox jinx with large scale adoption of innovative technological interventions was the major challenge. Institute accepted the challenge and started collaborative work with strategic plans encompass technological interventions, sensitization of stakeholders, deployed scientific manpower with active cooperation and logistic support from sugarcane development department, Govt. of U.P. and sugar mills. The beleaguered efforts of the Institute have culminated into sweet sugarcane harvest as U.P. had achieved record sugar production of 8.77 mt during the sugar crushing season 2016-17 and elevated to the first position amongst sugar producing States. The sustained efforts of the Institute to implement sugarcane development plans in participatory mode involving the stakeholder i.e., ICAR-IISR (public research institute), State cane department (development agency), Sugar mills (private) and sugarcane growers have contributed significantly in achieving matchless success of U.P. sugar sector. In partnership mode, IISR introduced technological interventions, sugar mills supported financial outlay for development activities, State cane department made available functional linkages for executing activities and farmers spared their land, labour and capital inputs for execution of collaborative programme in the command areas of sugar mills.

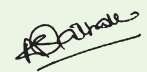
गत कई वर्षों से गन्ने की कम उपज एवं कम चीनी परता उत्तर प्रदेश के चीनी उद्योग की पहचान सी बन गयी थी। इस अपरिहार्य स्थिति को बदलने के लिए नवोन्मेशी प्रौद्योगिकी हस्तक्षेप को बड़े क्षेत्र में अपनाना एक चुनौती थी। संस्थान ने इस चुनौती को स्वीकार कर गन्ना विकास विभाग, उत्तर प्रदेश व चीनी मिलों, सभी के सक्रिय सहयोग से प्रौद्योगिकी हस्तक्षेप को नीतिगत योजना बनाकर अपनाया। इन समन्वित प्रयासों से वर्ष 2016-17 के चीनी पेराई सत्र में उत्तर प्रदेश में 87.7 लाख टन चीनी का उत्पादन करके नया कीर्तिमान स्थापित किया गया।

The non-availability of quality healthy cane seed was major obstacle in replacement of rejected/old sugarcane varieties with newly released varieties. This issue was addressed with implementation of entrepreneurship development in seed cane production at farmers' fields. With this approach, annually 2,000 tonne breeder seed of new cane varieties was produced and multiplied in nurseries and distributed by sugarcane development department ensured that it reached to the farmers. This seed system minimized the healthy seed scarcity of new cane varieties up to some extent. Prior to 2012, State sugarcane development department was unwilling to adopt



recommended, varieties released by Central Variety Release Committee (CVRC). The Institute raised this issue with the State Government of U.P. and since the year 2013, CVRC released varieties were added in the variety list, recommended for cane cultivation. This paved way for huge adoption of early maturing, high sugar varieties, especially Co 0238 and CoLk 94184 in Uttar Pradesh. These varieties changed the sugarcane and sugar production scenario of U.P. considerably during past 3-4 sugar seasons. Another breakthrough was achieved by adoption of trench method in about 1.50 lakh ha leading to cane yield enhancement by 15-20 t/ha. Post-harvest losses remained major concern as it impairs sugar recovery. The Institute addressed this problem by identifying a mixture on harvested cane which resulted in gain in sugar recovery by 0.3 to 0.5 units which adds ₹ 3 lakh/day to a sugar mill of 5,000 TCD. The large scale adoption of sugarcane planters helped farmer to complete planting timely amidst labour scarcity which also helped in productivity gain by 8-10%. Similarly, introduction and adoption of ratoon management device (RMD) enhances ratoon crop yield by 10-15%. Sugarcane intercropping with pulses, vegetables, oilseeds and cereals gave opportunity to cane growers to earn additional income of ₹ 50,000 to ₹ 1,50,000 per ha depending on produce local market price. The Institute also organised trainings for farmers, cane development personnel and sugar mill officers. Interface meetings with State sugarcane department and sugar mills officials were organized regularly to prepare strategies and road map for introduction of IISR interventions on farmers' fields. These interactive meetings helped in resolving the problems faced at various levels and plans were implemented with active participation of all the stakeholders.

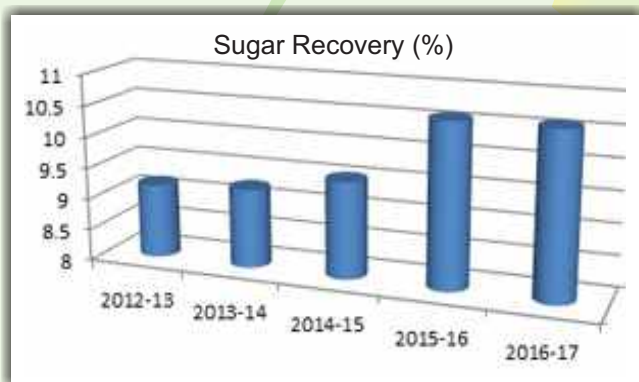
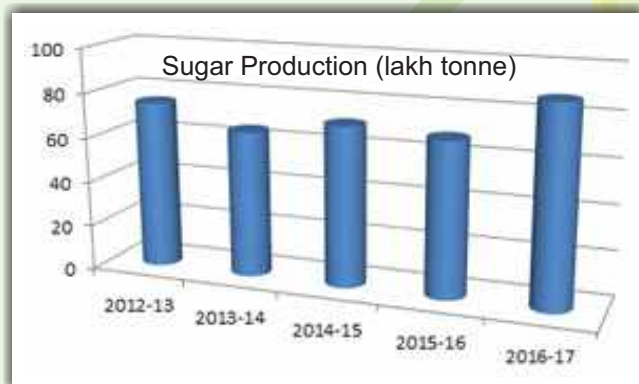
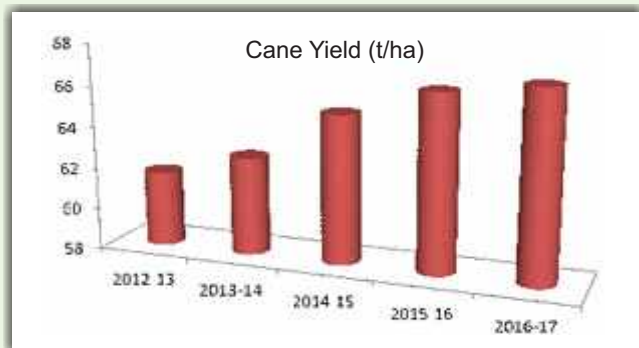
The impressive outcome of participatory efforts of all the stakeholders has now quite evident in Uttar Pradesh. The State had marched ahead with improved cane productivity and sugar recovery has also improved tremendously during past few sugar crushing seasons.


(A.D. Pathak)

SECTORAL NEWS: SUGARCANE AND SUGAR INDUSTRY

Uttar Pradesh recorded the highest ever sugar production

During sugar crushing season 2016-17, Uttar Pradesh has created history with the highest ever sugar production of 8.77 mt and it becomes leading sugar producing state of India. It was possible because of collective efforts of ICAR-IISR, state cane development department, sugar mills and farmers. All the stakeholders have played their role and contributed significantly in achieving unparalleled success of sugarcane and sugar production in Uttar Pradesh.



Cane Development Minister, UP chaired a meeting of sugarcane researchers

A meeting of scientists from ICAR- IISR, Lucknow; UPCS, Shahjahanpur and its different centres along with officials from State Sugarcane Department was organized on April 12, 2017 under the Chairmanship of Shri Suresh Rana, Hon'ble Minister of Cane Development and Sugar Industry, Govt. of U.P. He took stock of recent advances made in sugarcane research and also emphasized that the research findings should



be made simple and communicated in local language to the farmers. He called upon the scientists/researchers to work in planned but stress free manner by utilizing the collective wisdom. Dr. A.D. Pathak, Director, IISR presented an overview of improved technologies and narrated the example of success story of Bihar Seed Cane Production Programme and emphasized that the similar programme is needed for Uttar Pradesh also.

भाकृअनुप-भारतीय गन्ना अनुसंधान संस्थान, लखनऊ व उत्तर प्रदेश गन्ना शोध परिषद, शाहजहाँपुर व उसके विभिन्न केन्द्रों में कार्यरत वैज्ञानिकों एवं राज्य गन्ना विभाग के उच्च अधिकारियों की एक बैठक श्री सुरेश राणा, माननीय गन्ना विकास एवं चीनी उद्योग मंत्री, उत्तर प्रदेश सरकार की अध्यक्षता में संस्थान परिसर में 12 अप्रैल 2017 को आयोजित की गयी। श्री राणा ने गन्ना अनुसंधान की नवीन उपलब्धियों की जानकारी ली तथा उन्होंने उन्नत गन्ना प्रौद्योगिकी को तीव्र गति से प्रसारित करने पर बल दिया। श्री राणा ने केंद्र व राज्य सरकार के शोध संस्थानों में आपसी समन्वयन को और सुदृढ़ करने की आवश्यकता बताई।

गन्ना शोध, विकास तथा चीनी मिलों की इंटरफेस बैठक व विचार-मंथन कार्यक्रम का आयोजन

भारतीय गन्ना अनुसंधान संस्थान, लखनऊ में गन्ना शोध विकास तथा चीनी मिलों की इंटरफेस बैठक व विचार-मंथन कार्यक्रम का आयोजन दिनांक 06 फरवरी, 2017 को किया गया। चन्द्रशेखर आजाद कृषि एवं प्रौद्योगिकी विश्वविद्यालय, कानपुर के कुलपति, डॉ. सुशील सोलोमन बैठक के मुख्य अतिथि थे तथा कार्यक्रम की अध्यक्षता उत्तर प्रदेश के गन्ना एवं चीनी आयुक्त, श्री विपिन कुमार द्विवेदी द्वारा की गयी। बैठक में उत्तर प्रदेश के 118 चीनी मिलों के प्रतिनिधि, अपर गन्ना आयुक्त, संयुक्त गन्ना आयुक्त, उप गन्ना आयुक्त, भारतीय गन्ना अनुसंधान संस्थान, लखनऊ तथा उत्तर प्रदेश गन्ना शोध परिषद, शाहजहाँपुर के वैज्ञानिकों ने भाग लिया। लगभग 300 प्रतिभागियों ने उत्तर प्रदेश में गन्ना एवं चीनी उद्योग की दशा एवं दिशा को प्रगति के मार्ग पर ले जाने के लिए विचार-मंथन किया। इस अवसर पर डॉ. सुशील सोलोमन की अध्यक्षता में एक समिति गठित करने का प्रस्ताव रखा गया जो मुख्य



रूप से प्रदेश में बीज गन्ना आपूर्ति हेतु विभिन्न विषयों पर विचार-विमर्श कर एक प्रभावी कार्य योजना तैयार करेगी। संस्थान के निदेशक, डॉ. अश्विनी दत्त पाठक ने उन्नत गन्ना किस्म विकास तथा गन्ना बीज उत्पादन के महत्व पर विस्तारपूर्वक जानकारी प्रदान की। उन्होंने उचित बीज उपचार तकनीक अपनाने के साथ उद्यमिता विकास करने का आह्वान किया। कार्यक्रम का संचालन, संस्थान के प्रधान वैज्ञानिक, डॉ. एस.एन. सिंह ने किया।

Annual Convention and Technical Expo-2017 of NISSTA organized

Two-day Annual Convention and Technical Expo-2017 of North Indian Sugarcane & Sugar Technologists' Association (NISSTA) on the theme "How to double farmers' income keeping intact economic interest of the sugar industry" was organized on May 12-13, 2017 at ICAR-IISR, Lucknow. Addressing as the Chief Guest, Dr. Solomon highlighted the need of reducing cost of cultivation by potential and proven technological interventions carried out at research centres. Dr. Bakshi Ram, Director, ICAR-SBI, Coimbatore thanked the organizers and delegates for appreciating his efforts of developing sugarcane variety Co 0238 which has become instrumental in making U.P. the top sugar producing state of the country. Dr. A.D. Pathak, Director, IISR highlighted the research achievements of the Institute and urged the scientists to work in collaborative and interdisciplinary mode. Mr. Yogesh Malik, Additional Cane Commissioner, UP appreciated the high sugar recovery of more than 13% in sugar mills of the State. Dr. B.L. Sharma, Director, UPCAR, Shahjahanpur narrated the achievements of the Council for improving the economic status of the sugarcane farmers.



संस्थान में "चीनी उद्योग के आर्थिक हितों को संरक्षित रखते हुए किसानों की आय कैसे दोगुनी की जाय" विषय पर निष्ठा द्वारा दो दिवसीय वार्षिक संगोष्ठी एवं तकनीकी प्रदर्शनी का आयोजन 12-13 मई, 2017 को किया गया। मुख्य अतिथि, डॉ. सुशील सोलोमन, कुलपति, चन्द्रशेखर आजाद कृषि एवं प्रौद्योगिकी विश्वविद्यालय, कानपुर ने किसानों की आय को दोगुना करने हेतु उत्पादन लागत को कम करने के सभी कारकों पर ध्यान देने पर बल दिया।

Zonal Breeders' Meet of AICRP on Sugarcane held

Zonal Breeders' Meet was organized at ICAR-IISR, Lucknow on January 23, 2017 to finalize the sugarcane genotypes for the Advanced Varietal Trials. About 100 scientists, state cane development officials and sugarcane breeders from various research Institutes, Universities, centres working under All India Coordinated Research Project (AICRP) on Sugarcane participated in the Meet. Sri V.K. Dwivedi, Commissioner, Sugarcane Development and Sugar Industry, UP mentioned that with an average sugar recovery of 10.75 per cent, about 520 million tonnes of sugarcane will have to be produced by 2030. He stressed upon the need of quick seed replacement through high yielding sugarcane varieties to increase cane yield to the tune of 100 to 110 t/ha. He also emphasized on the mechanization for quality and timely operations and to reduce the cost of production as well. Dr. S.K. Shukla, Project Coordinator (Sugarcane) stressed upon the development of short duration and high sugar varieties to increase the sugar productivity per unit area and time. He also emphasized that through effective dissemination of technology, the time gap between development of a sugarcane variety by the breeders and its adoption by the farmers on larger scale could be reduced.

Dr. R.K. Singh, Assistant Director General (Commercial Crops), ICAR, New Delhi emphasized the breeders role in improving the crop productivity. He stressed the need for developing the sugarcane variety through participatory mode particularly under biotic and abiotic stress situations in changing climate scenario. Dr. A.D. Pathak, Director, ICAR-IISR, Lucknow presented the Institute's research and development. Dr. Bakshi Ram Director, ICAR-Sugarcane Breeding Institute, Coimbatore and Principal Investigator (Crop Improvement) presented overview of Breeders Meet and finalized the various entries for AVTs to be taken up by the breeders in ensuing crop season.



उन्नत प्रजातीय परीक्षणों हेतु गन्ने के जीनप्रारूपों को अंतिम रूप देने के लिए संस्थान में 23 जनवरी, 2017 को गन्ने के क्षेत्रीय प्रजनकों की बैठक का आयोजन किया गया जिसमें देश के लगभग 100 वैज्ञानिकों सहित राज्य गन्ना विकास अधिकारियों ने सहभागिता की। इस अवसर पर, मुख्य अतिथि, श्री वी.के. द्विवेदी, आयुक्त, गन्ना विकास तथा चीनी उद्योग ने उष्ण क्षेत्र की तुलना में उपोष्ण क्षेत्र में गन्ने की कम उत्पादकता पर चिंता जताते हुए इसमें सुधार के लिए शोध व विकास की उचित रणनीति बनाने पर जोर दिया तथा गन्ने की उत्पादन लागत में कमी लाने हेतु गन्ना कृषि का यांत्रिकीकरण करने की वकालत की। डॉ. एस.के. शुक्ला,

परियोजना समन्वयक (गन्ना) ने प्रति इकाई क्षेत्र व समय में चीनी की उत्पादकता में वृद्धि करने के लिए अल्प परिपक्वता अवधि व उच्च शर्करा युक्त गन्ने की प्रजातियों के विकास पर बल दिया। डॉ. ए.डी. पाठक, निदेशक, आईआईएसआर ने गन्ने की उत्पादकता, चीनी परता व किसानों की आय में वृद्धि करने हेतु संस्थान की शोध व विकास गतिविधियों की चर्चा की। डॉ. आर.के. सिंह, सहायक महानिदेशक (व्यावसायिक फसलें), भाकृअनुप ने जलवायु परिवर्तन के वर्तमान दौर में जैविक व अजैविक कारकों के प्रति रोधी गन्ने की प्रजातियों के सहभागिता मोड में विकास पर जोर दिया।

INSTITUTE HIGHLIGHTS

IISR Foundation Day celebrated

The 66th Foundation Day of ICAR-IISR was celebrated on 16th February, 2017 with great fervour and enthusiasm. Speaking on the occasion, Padamshree Dr. M.M. Godbole, Professor, Department of Molecular Medicine & Biotechnology, SGPGI, Lucknow gave a brief presentation on importance of iodine in the soil, agricultural products and food. He narrated the story of his journey towards identifying the root cause of goitre. Dr. S.K. Shukla, PC, AICRP on Sugarcane narrated the significant achievements of the Institute. He informed that this year, Uttar Pradesh is likely to emerge as a major sugar producing state of the country.

Chairing the Session, Dr. S. Rajan, Director, ICAR-CISH, Lucknow appreciated the research work done by the Institute during the last six and a half decades for the betterment of sugarcane farmers and sugar industry. More than 500 students and farmers visited the laboratories and research farm of the Institute. During their visit, they were acquainted with newly developed IISR technologies pertaining to various disciplines.



संस्थान का 66वां स्थापना दिवस 16 फरवरी, 2017 को मनाया गया। इस अवसर पर पदमश्री डॉ. एम.एम. गोडबोले, प्रोफेसर, आण्विक औषधि एवं जैवप्रौद्योगिकी विभाग, संजय गाँधी परास्नातक आयुर्विज्ञान संस्थान, लखनऊ ने मिट्टी, कृषि उत्पादों एवं भोजन में आयोडीन की कमी पर प्रस्तुतीकरण दिया। डॉ. गोडबोले ने घेंघा रोग के मूल कारण की पहचान के लिए किए गए प्रयासों का वर्णन करते हुए भोजन में आयोडीन की कमी से होने वाले मानसिक व शारीरिक स्वास्थ्य पर पड़ने वाले प्रभावों की

विस्तार से चर्चा की। कार्यक्रम की अध्यक्षता करते हुए डॉ. एस. राजन, निदेशक, भाकृअनुप-केंद्रीय बागवानी अनुसंधान संस्थान, लखनऊ ने चीनी उद्योग व गन्ना किसानों की समृद्धता के लिए संस्थान की स्थापना से अब तक संस्थान द्वारा विकसित प्रौद्योगिकी के लिए संस्थान के वैज्ञानिकों को बधाई दी।

National Science Day celebrated

National Science Day was Celebrated at ICAR-IISR, Lucknow on February 28, 2017. Speaking as the Chief Guest, Dr. Narayan Prasad, Professor, Department of Nephrology, SGPGI, Lucknow highlighted importance of applications of technologies in life of especially abled person. This could be possible with the combined efforts of the scientists from different fields like Basic Sciences, Engineering and Medical Sciences.



Chairing the session, Dr. A.D. Pathak, Director, ICAR-IISR, Lucknow informed about the innovative sugarcane production technologies developed by the Institute for the upliftment of the status of the sugarcane farmers. He urged the scientists of the Institute to work in unison of other scientific disciplines and try to work more in inter-disciplinary mode for the betterment of the society. An insight of mobile based digital transaction in daily life, and the need to use cashless mode of transaction by using any mobile based platform including BHIM (Bharat Interface for Money) App, launched by the Govt. of India was also highlighted by Dr. P.K. Singh, Principal Scientist of the Institute on this occasion.

Swachhta Workshop on Waste Management organized

Institute organized *Swachhta* Workshop on Waste Management. Dr. P.S. Ojha, State Coordinator/Member Convener of UP State Bioenergy Development Board delivered an elaborated lecture on “Bio-Energy and Climate Resilient Agriculture Based Sustainable Development” on this occasion. He underlined the efforts of UP State Bio energy Development Board in bringing up the change through intervention of various technologies based on holistic



approach of waste utilization. He informed that an industrial level model of CNG and biogas from animal and agricultural waste is functional and running in Pune (Maharashtra). Dr. A.D. Pathak, Director, ICAR-IISR, Lucknow informed that the event was organized to give boost to cleanliness activities going on in the Institute. Dr. A.K. Sharma, Incharge, PME Cell informed about the 11 action points considered under Institute *Swachhta* Action Plan comprising of emphasis on digitization including cashless transaction, basic maintenance of premises, solid waste management, awareness creation at local level and display materials, etc.

Workshop on 'Institute Technology Management' organized

One day Workshop on “Institute Technology Management” was organized at the ICAR-IISR, Lucknow on March 30, 2017. Inaugurating the Workshop, Dr. A.D. Pathak, Director, ICAR-IISR, Lucknow informed that the Institute has developed many technologies and commercialized many through licensing. Dr. Pathak hoped that the deliberations of



the Workshop will certainly be helpful in sensitizing the researchers. Dr. A.K. Sharma, Pr. Scientist & Nodal Officer, ITMU, ICAR- IISR, Lucknow highlighted the theme of the Workshop which is being organized to sensitize the researchers about the various aspects of Institute intellectual property and its management. The workshop was attended by more than 150 personnel including Scientists, Technical Officers, RA/SRFs and students.

विश्व बौद्धिक सम्पदा दिवस का आयोजन

भारतीय गन्ना अनुसंधान संस्थान, लखनऊ में विश्व बौद्धिक सम्पदा दिवस दिनांक 26 अप्रैल, 2017 को समारोहपूर्वक मनाया गया। इस अवसर पर संस्थान के निदेशक, डॉ. अश्विनी दत्त पाठक ने कहा कि भारत में अन्य देशों की तुलना में बहुत ही कम पेटेंट कराये जाते हैं। उन्होंने संस्थान के वैज्ञानिकों से बौद्धिक सम्पदा के अधिकारों के अंतर्गत अपनी उपलब्धियों को सुरक्षित रखने पर बल दिया। डॉ. पाठक ने संस्थान द्वारा अर्जित बौद्धिक सम्पदा के अधिकारों के



व्यवसायीकरण पर जोर देते हुए एक रूप-रेखा तैयार करने पर बल दिया। डॉ. अश्विनी कुमार शर्मा, प्रधान वैज्ञानिक एवं प्रभारी, पी.एम. ई. प्रकोष्ठ ने इस दिवस की महत्ता बताते हुये कहा कि विश्व बौद्धिक सम्पदा दिवस नवोन्मेशी / संरचना तथा सृजनात्मकता को प्रोत्साहन करने हेतु बौद्धिक सम्पदा के अधिकारों (पेटेंट, ट्रेडमार्क, इंडस्ट्रियल डिजाइन, कॉपीराइट, जियोग्राफिकल इंडिकेशन इत्यादि) की भूमिका के महत्व को रेखांकित करने के लिए मनाया जाता है।

Republic Day celebrated

Republic day was celebrated with great fervour and enthusiasm. The national flag was hoisted by Dr. A.D. Pathak,



Director of the Institute. Speaking on the occasion, Dr. Pathak recalled the significance of the day and contributions of freedom fighters for the country. He urged the Scientists to do research which may be beneficial for the five million sugarcane farmers of the country. Children also presented a cultural programme on this occasion. Sweets were distributed among all the staff and the children present on the occasion.

अंतर्राष्ट्रीय योग दिवस का आयोजन

अंतर्राष्ट्रीय योग दिवस के अवसर पर 21 जून, 2017 को संस्थान के आवासीय परिसर में योग अभ्यास कार्यक्रम का आयोजन किया गया। इस योग अभ्यास कार्यक्रम में संस्थान के वैज्ञानिकों, कर्मचारियों तथा उनके परिवार के सदस्यों ने उत्साहपूर्वक भाग लिया तथा योग प्रशिक्षक द्वारा प्रदर्शित योग के विभिन्न आसनों को सहजता से किया। संस्थान के निदेशक, डॉ. अश्विनी दत्त पाठक ने योग अभ्यास कार्यक्रम की अध्यक्षता करते हुए सभी को अंतर्राष्ट्रीय योग दिवस की शुभकामना देते हुए सभी प्रतिभागियों से योग को अपने दैनिक जीवन में नियमित रूप से अपनाने की सलाह दी।

National Seminar on Agriculture Research and Education organized

One day National Seminar on Agriculture Research and Education in Relation to Development of Integrated Agriculture: Challenges & Solutions was jointly organized by UPCAR, ICAR-IISR, Lucknow and UPAAS at IISR, Lucknow on June 14, 2017.

Sh. Ram Naik, Hon'ble Governor of Uttar Pradesh urged the Scientists to take the improved farm technologies to the farmers' fields. He highlighted that the scientists in collaboration with State machinery could play an instrumental role in increasing the farm production of the State. Sh. Surya Pratap Shahi, Hon'ble Minister of Agriculture, Govt. of Uttar Pradesh expressed his satisfaction over the record production

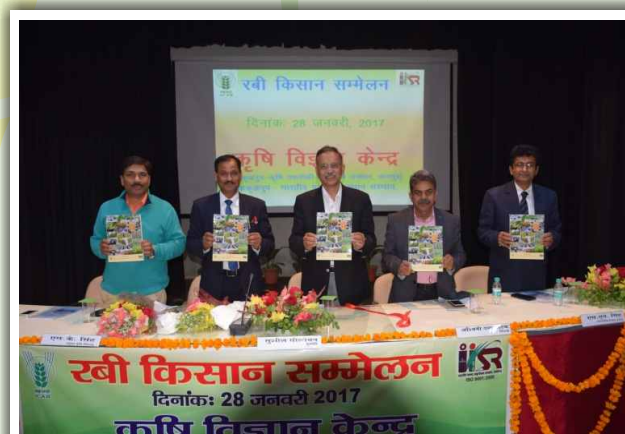


of wheat, paddy, pulses, potato and sugar in Uttar Pradesh. He urged the scientists to help increase the agricultural production by understanding research for reducing the cost of cultivation and post-harvest losses. In the technical session, Prof. R.B. Singh, Ex. Chairman, ASRB, New Delhi delivered a talk on "Agriculture Research & Education for Development". Dr. Mangala Rai, Ex. Secretary, DARE & DG, ICAR gave a presentation on "Agriculture in the waiting-should it wait any more". Dr. A.D. Pathak, Director, ICAR-IISR, Lucknow highlighted the role of IISR in the emergence of UP State as the largest sugar producing state in India by contributing 8.77 million tonnes of sugar. Many distinguished scientists were awarded by the UPAAS under different categories.

श्री राम नाईक, माननीय राज्यपाल, उत्तर प्रदेश ने वैज्ञानिकों से विकसित प्रौद्योगिकी को किसान के खेतों पर ले जाने का आह्वान किया। उन्होंने राज्य में कृषि उत्पादन में वृद्धि करने में वैज्ञानिकों की दृढ़ इच्छाशक्ति के साथ विशेषकर राज्य मशीनरी के समर्थन की अहम भूमिका को रेखांकित किया। श्री सूर्य प्रताप शाही, माननीय कृषि मंत्री, उत्तर प्रदेश ने प्रदेश में गेहूँ, धान, दलहनी फसलों, आलू व चीनी के रिकॉर्ड उत्पादन पर संतोष जताया। डॉ. आर.बी. सिंह, पूर्व अध्यक्ष, कृषि वैज्ञानिक भर्ती मण्डल ने किसान आयोग गठित करने हेतु माननीय प्रधान मंत्री जी का आभार प्रकट किया। डॉ. ए.डी. पाठक, निदेशक, भारतीय गन्ना अनुसंधान संस्थान तथा प्रो. राजेंद्र कुमार, महानिदेशक, उत्तर प्रदेश कृषि अनुसंधान परिषद, लखनऊ ने कृषि एवं कृषि आधारित शोध पर अपनी संस्थाओं की उपलब्धियों पर जानकारी दी। इस अवसर पर कई वैज्ञानिकों को उनके उत्कृष्ट शोध कार्य के लिए पुरस्कृत भी किया गया।

Organization of Rabi Kisan Sammelan

A Rabi-Kisan Sammelan was organized in the Institute. Addressing the farmers, the Chief Guest, Dr. Sushil Solomon, Vice-Chancellor, CSAUA&T, Kanpur highlighted the immense contribution of KVKs and the farmers in the agricultural development and said that there are still immense possibilities for increasing the agriculture production and income. Dr. U.S. Gautam, Director, ICAR-ATARI, Kanpur informed the farmers about various excellent works done by the KVKs located in UP and Uttarakhand and highlighted the significance and working of KVKs for the farmers welfare and agricultural development. Dr. A.D. Pathak, Director, ICAR-IISR, Lucknow urged the participating farmers to visit the KVK regularly and get acquainted about the schemes for maximizing their profit. Dr. Pathak presented a detailed scenario of the improved varieties of sugarcane along with matching production and protection technologies developed by the Institute along with *gur* production technology.



संस्थान में आयोजित रबी किसान सम्मेलन में किसानों को सम्बोधित करते हुए डॉ. सुशील सोलोमन, कुलपति, चन्द्रशेखर आजाद कृषि एवं प्रौद्योगिकी विश्वविद्यालय, कानपुर ने कृषि विकास में किसानों तथा कृषि विज्ञान केन्द्रों के योगदान को रेखांकित करते हुए कहा कि अभी भी कृषि उत्पादन एवं कृषि आय में वृद्धि की अपार संभावनाएं हैं। डॉ. यू.एस. गौतम, निदेशक, भाकृअनुप-अटारी,

कानपुर ने उत्तर प्रदेश एवं उत्तराखंड के कृषि विज्ञान केन्द्रों के योगदान की सराहना करते हुए किसान कल्याण एवं कृषि विकास में इन केन्द्रों द्वारा चलाये जा रहे कार्यक्रमों के बारे में बताया। डॉ. ए. डी. पाठक, निदेशक, आईआईएसआर ने किसानों से विभिन्न फसलों से अधिकतम उत्पादन प्राप्त करने के लिए कृषि विज्ञान केन्द्रों का नियमित रूप से भ्रमण करते रहने की सलाह दी।

Jaggery Processing Unit inaugurated in East Champaran

To develop entrepreneurial ability of Agri Graduates and progressive farmers in Jaggery Production especially in Bihar and Eastern Pradesh, the Institute has established three Jaggery Processing and Training Centres.

Shri Radha Mohan Singh, Hon'ble Minister of Agriculture and Farmers' Welfare, Govt. of India and Yoga Guru Baba Ramdev inaugurated Jaggery processing unit at KVK, Piprakothi, East Champaran (Bihar) on June 09, 2017. While delivering inaugural speech, Baba Ram Dev said that jaggery produced by organic process and IISR technique is very good for human health. He emphasized that its production and marketing in large scale is important for strengthening farming economy of the Bihar state. Large number of elected representatives and scientists from SAUs, CAUs and KVKs were also present in the function.

At this occasion, a *Kisan Goshthi* was also organized by ICAR-IISR in which more than 5,000 farmers participated. Sugarcane production technology was showcased through live materials, exhibits, banners etc. Dr. A.D. Pathak, Director of the Institute and scientists of ICAR-IISR also provided useful information on quality jaggery making and scientific cultivation of sugarcane to the participating farmers.



मोतिहारी में आयोजित किसान कल्याण मेले में संस्थान की सहभागिता

चम्पारण सत्याग्रह शताब्दी वर्ष के अवसर पर मोतिहारी (बिहार) में 13-19 अप्रैल, 2017 को किसान कल्याण मेला एवं संगोष्ठी का आयोजन किया गया जिसमें लगभग 10,000 किसानों ने भाग लिया। भारतीय गन्ना अनुसंधान संस्थान, लखनऊ तथा क्षेत्रीय केंद्र, मोतीपुर ने प्रमुखता से सहभागिता करते हुए मेले के सफल आयोजन में अपना महत्वपूर्ण योगदान दिया। किसान मेले का उद्घाटन माननीय कृषि एवं किसान कल्याण मंत्री, भारत सरकार, श्री राधा मोहन सिंह द्वारा किया गया तथा उद्घाटन अवसर पर भारतीय कृषि अनुसंधान परिषद, नई दिल्ली के महानिदेशक, डॉ. त्रिलोचन महापात्रा, शोध संस्थानों के निदेशक तथा उच्च



अधिकारीगण उपस्थित थे। गोष्ठी में किसानों को संबोधित करते हुए माननीय कृषि मंत्री ने मोतिहारी तथा आस-पास के जनपदों में, जहाँ चीनी मिलें बंद हो गई हैं, गुड़ उत्पादन के व्यवसाय को तेजी से विकसित करने के महत्व पर प्रकाश डाला तथा उन्होंने इस ओर ध्यान आकर्षित करते हुए बताया कि पिछले कुछ महीनों में बिहार तथा उत्तर प्रदेश में कई स्थानों पर संस्थान द्वारा गुड़ प्रसंस्करण तथा प्रशिक्षण इकाई की शुरुआत की गई है जहाँ उन्नत गुड़ उत्पादन हेतु किसानों को प्रशिक्षण दिया जा रहा है। इस गोष्ठी में संस्थान के निदेशक, डॉ. ए.डी. पाठक ने बिहार राज्य के लिए संस्तुत किस्मों तथा गन्ना उत्पादन तकनीकों तथा बिहार में गन्ना विकास के लिए संस्थान द्वारा चलाए जा रहे कार्यक्रमों पर विस्तारपूर्वक चर्चा की। भारतीय गन्ना अनुसंधान संस्थान, लखनऊ द्वारा गन्ना उत्पादन तकनीकों पर आधारित एक प्रदर्शनी का भी आयोजन किया गया जिसमें उन्नत गन्ना किस्मों, गन्ना खेती यंत्रों, उत्पादन तकनीकों, नाशी कीटों एवं बीमारियों का समेकित प्रबंधन, उत्तम गुड़ उत्पादन तकनीक इत्यादि विषयों पर जानकारी प्रदान की गयी।

Grid Connected Roof Top Solar Energy System installed

A Grid Connected Roof Top Solar Energy System for power generation capacity of 250 kw installed at ICAR-IISR, Lucknow was inaugurated by Dr. J.S. Sandhu, DDG (Crop Science), ICAR, New Delhi on June 24, 2017. Speaking on the occasion, Dr. Sandhu appreciated the installation of solar energy system at the Institute and said that this source of green energy will go a long way in reducing the power load on the grid. The Institute has signed a MoU with M/s Genus Innovations Limited, Jaipur for erection, testing and



commissioning of grid connected roof top solar power system. The firm will also be responsible for its operation and maintenance for the next 25 years. Speaking on the occasion, Dr. A.D. Pathak, Director, IISR informed that the installation of this roof top solar power system is expected to save the power bill to the tune of ₹ 24 lakh per year.

MAU, Solan signs MoU with the Institute

Maharaja Agrasen University (MAU), Solan (HP) has signed a memorandum of understanding to pursue fundamental and technology research collaboration with the ICAR-IISR, Lucknow. The agreement will enable the university and IISR to work together in areas of common interest. The MoU also opens the prospect of mutual exchanges of scholars and internships for students registered at both the institutions.



Head-R&D, Bayer Crop Science visited IISR

Mr. R. Sakhalkar, Head-Research & Product Development, Asia Pacific Countries-2, Bayer Crop Science visited the Institute on June 30, 2017 and delivered a talk on “Innovation in Agriculture for Sustainable Development and Improvement of Farm Income”. He indicated that yield reduction due to climate change, loss of produce in the food chain, ever increasing demand for high quality food as major global challenges for future food supply. Apart from it, limited arable land, reducing number of innovators, depletion of groundwater, weed and pest resistance are also aggravating the present challenges. Dr. S.K. Shukla, PC (Sugarcane) assured Mr. Sakhalkar that the Scientists of the Institute are ready to collaborate in any R & D activity which will ultimately lead to increasing the income of the sugarcane farmer and sugar industry.



श्री आर. सखालकर, अध्यक्ष-शोध एवं उत्पाद विकास, एशिया प्रशांत देश-2, बायर क्रॉप साइन्स ने संस्थान में “जलवायु परिवर्तन के कारण उपज में आ रही कमी, खाद्य श्रृंखला में उत्पादन की क्षति तथा उच्च गुणवत्ता वाले खाद्य पदार्थों की लगातार बढ़ती मांग को भविष्य में खाद्य पदार्थों की आपूर्ति में प्रमुख वैश्विक चुनौती बताया। इसके अतिरिक्त, खेती योग्य सीमित भूमि, नवोन्मेषकों की संख्या में कमी, भूमिजल, खरपतवारों व कीटों के प्रति अवरोधिता कम होने से वर्तमान चुनौतियाँ और भी प्रबल होती जा रही हैं।

चिकित्साधिकारी एवं पशुधन प्रसार अधिकारियों का सेवाकालीन प्रशिक्षण कार्यक्रम

कृषि विज्ञान केन्द्र, भाकृअनुप- भारतीय गन्ना अनुसंधान संस्थान, लखनऊ में 03 फरवरी, 2017 को जनपद लखनऊ में सेवारत पशु चिकित्साधिकारियों एवं पशुधन प्रसार अधिकारियों हेतु वर्ष भर हरा चारा एवं चारा बीज उत्पादन विषय पर एक दिवसीय प्रशिक्षण कार्यक्रम का आयोजन किया गया। कार्यक्रम का उद्घाटन करते हुए संस्थान के निदेशक, डा. ए.डी. पाठक ने कहा कि यदि वर्ष भर हरे चारे की उपलब्धता सुनिश्चित हो तो दुधारु पशुओं का दुग्ध उत्पादन दोगुना किया जा सकता है। इस प्रशिक्षण कार्यक्रम में डा. तेज सिंह यादव, मुख्य पशु चिकित्साधिकारी ने भी प्रशिक्षणार्थियों को संबोधित किया। डा. डी.आर. मालवीय, प्रधान वैज्ञानिक ने प्रशिक्षणार्थियों को चारा उत्पादन की विभिन्न नवीनतम तकनीकियों के बारे में विस्तार से बताते हुए कहा कि लोबिया, ग्वार, जई, बरसीम आदि का चारा उत्पादन के साथ-साथ बीज उत्पादन भी



बहुत ही आवश्यक है। उन्होंने बीज उत्पादन की तकनीकी की जानकारी भी दी, जिससे पशुचिकित्साधिकारी अपने प्रक्षेत्र पर विभिन्न प्रकार के चारों का बीज उत्पादन करने हेतु पशुपालकों को प्रोत्साहित कर सकने में सक्षम हो सकेंगे। इस अवसर पर डा. मेंही लाल, पूर्व विभागाध्यक्ष, सस्य विज्ञान; डा. एस.एन. सिंह, प्रधान वैज्ञानिक एवं प्रमुख, केवीके, लखनऊ तथा डा. राकेश कुमार सिंह, विषय वस्तु विशेषज्ञ (पशुपालन), केवीके, लखनऊ ने भी अपने व्याख्यानो द्वारा तकनीकी जानकारी दी।

ग्राम विकास अधिकारियों एवं किसान सहायकों का सेवाकालीन प्रशिक्षण कार्यक्रम

कृषि विज्ञान केन्द्र, भाकृअनुप- भारतीय गन्ना अनुसंधान संस्थान,

लखनऊ में 04 फरवरी 2017 को लखनऊ जनपद में कार्यरत् ग्राम विकास अधिकारियों एवं किसान सहायकों हेतु ग्राम विकास अधिकारियों की कार्य दक्षता में वृद्धि विषय पर एक दिवसीय प्रशिक्षण कार्यक्रम का आयोजन किया गया। कार्यक्रम का उद्घाटन करते हुए संस्थान के निदेशक, डा. ए.डी. पाठक ने बताया कि यदि ग्राम विकास अधिकारी एवं किसान सहायक, पशुपालकों एवं किसानों को उन्नत उत्पादन तकनीक को किसानों तक पहुँचा दें तो किसानों की आय आसानी से दोगुनी की जा सकती है। इस प्रशिक्षण कार्यक्रम में डा. ए.के. साह, प्रधान वैज्ञानिक; डा. एस.एन. सिंह, प्रधान वैज्ञानिक एवं प्रमुख, केवीके, लखनऊ एवं डा. कामता प्रसाद, वरिष्ठ वैज्ञानिक ने प्रतिभागियों को उपयोगी जानकारी प्रदान की।

TECHNOLOGY DEVELOPED

Sugarcane variety identified for cultivation

CoLk 09204 (Ikshu-3) a mid-late maturing sugarcane variety has been identified in AICRP(S) Workshop for cultivation in North Western Zone. CoLk 09204 is the result of concerted efforts at breeding for high sugar and high yielding mid-late maturing sugarcane varieties. The additional strength of 'CoLk 09204' lies in its good ratoonability. Some key features of CoLk 09204 and other attributes are given below:

Parentage	Cane yield (t/ha)	CCS (t/ha)	Sucrose (%) at 12 month	Pol % cane at 12 month
CoLk 8102 × CoJ 64	82.8	9.3	17.0	13.2



Minimizing post-harvest deterioration

Real-time PCR analysis using SAI gene revealed its significant suppression in benzalkonium chloride (BKC) treated canes over control establishes its role in minimizing post-harvest cane quality deterioration.

Increase in cane sink strength

Higher expression of SAI and modified expression of other genes in GA₃ treated plants was consequence of increased sink strength, which caused better assimilate uptake and this affirmed the role of GA₃ in facilitating better cane growth and sucrose accumulation.

Impact of Ethrel + GA₃ spray for increasing ratoon sugarcane yield

Foliar applications of Ethrel @ 100 ppm at 60 DAP and GA₃ at 90, 120 and 150 DAP in I ratoon crop reduces tiller cessation induced through dense tiller population and increased stalk extension rates. This leads to an increase in cane yield by 66.5 t/ha against control. Along with, *in situ* decomposition of sugarcane trash (dispersed in field after harvest of plant crop @ 12 t/ha) with PUSA compost inoculant (@ 300 gm/t of trash) increases Tmax (6.73 L/ha), reduces tiller mortality (54.5%) and sustains NMC and cane yield to 3.06 L/ha and 183.2 t/ha



(per cane weight of 598 g), respectively. *In situ* decomposition of trash along with foliar application of GA₃ increases ratoon cane yield by about 16.9 t/ha.

TRANSFER OF TECHNOLOGIES / DEMONSTRATIONS

Sponsored training programmes organised

- DAC, Ministry of Agriculture and Farmers' Welfare, Govt. of India sponsored five training programmes for two days duration for 125 participants were organized in the month of January 2017 and one training programme for one day duration for 700 participants was organized during March 2017.
- Two students training programmes for the students of IAS, BHU, Varanasi and Mewar University, Rajasthan were organized during May and June 2017 for 37 and 17 students, respectively.
- Under Pandit Deen Dayal Upadhyaya Unnat Krishi Shiksha Yojana launched by Ministry of Agriculture and Farmers Welfare, Govt. of India, ten training programmes of five days duration were organized in Mullahikheda village of Lucknow and Hariharpur village of Amethi. Total 300 farmers were imparted training in natural and cow based zero budget farming.

Kisan Mela organised

- One day *Kisan Mela* was organized at IISR, Lucknow on the occasion of IISR Foundation Day on February 16, 2017. During this *Mela*, the farmers were acquainted about the latest sugarcane production technology. They also visited Institute Technology Park and agricultural machineries were also demonstrated. Dr. S. Rajan, Director, CISH, Lucknow were also present at the occasion. More than 500 farmers participated in the *Mela*.
- A *Kisan Mela* was organized on March 26, 2017 at Manpur Village of Biswan Block in Sitapur District of



U.P. The *Mela* was inaugurated by Dr. J.S. Sandhu, DDG (Crop Science), ICAR and Dr. R.K. Singh, ADG (CC), ICAR was special guest in the event. Large number of farmers (more than 650), cane development officials, KVK officials and sugar mill personnel participated in the *Mela*. At the occasion an Exhibition on cane production technology, agri chemicals, agri equipments was organized in which research institute, development department, manufacturers, KVKs and sugar mills showcased their products and services. *Vaigyanik-Krishak Paricharcha* was also organized for the benefit of the participating farmers.

- Technology & Machinery Demonstration *Mela* was organized at ICAR- IISR, Lucknow on February 10, 2017. It was jointly organized by IISR, Lucknow Centre of AICRP on Farm Implements & Machinery and Post Harvest Engineering and Technology. Total participants were 400 mainly farmers from U.P., Madhya Pradesh and Punjab. Dr. R.P. Singh, Honourable Member, Governing Body, ICAR New Delhi visited the *Mela*. The exhibition was organized and IISR developed machineries and post-harvest equipments were displayed. The live field demonstration of sugarcane machinery was conducted along with improved jaggery making technology.



Participation in the exhibitions

The Institute participated in *Krishi Samridhi-Rashtriya Krishi Mela* by Chhattisgarh Government at Raipur, Chhattisgarh during January 27-31, 2017 and National Fair (*Unnati Krishi Mela*) held at ICAR-IARI, New Delhi during March 15-17, 2017.

Model Farm established

Model farm Approach of Transfer of Technology, Extension and Training Unit of the Institute established model farms in Khambapur and Bakhariya villages of Sitapur district. Model farm focussed on showcasing of entrepreneurship in seed cane production and intercropping with sugarcane to enhance farm productivity and income. Many interventions like trench planting, seed cane production techniques, scientific practices



for raising intercrops, ratoon management, water saving irrigation techniques etc were introduced in model farms. Many groups from different states have visited these model farms and learned techniques of “More income - Per crop” in true sense of Farmer-to-Farmer Extension.

Seed cane production in farmers' fields

About 1600 tonne of healthy seed cane was produced in farmers' fields; out of which 60-80% was utilized as seed material to raise seed cane crop in order to multiply the quantity of seed cane of new varieties and rest of the harvested cane was supplied by farmers to sugar mill for crushing.

Demonstration at Regional Centre, ICAR-IISR, Lucknow, Motipur, Bihar

Phasic application of Ethrel + GA₃: Increased T_{max} to 5.64 L/ha, with tiller mortality of 46.5%, NMC of 3.02 L/ha and cane yield of 258 t/ha (per cane weight of 853 g).

Demonstration at Biswan Sugar Mill Area, Biswan

Bud chip technology for seed saving & higher seed multiplication rate.



Technology with stakeholders (farmers and sugar mill)

Bud chip material provided to sugarcane farmers from Sonbhadra District, UP for commercial sugarcane cultivation.

Technology demonstrated

- For fast spread of newly released cane varieties, demonstration on seed cane production technology was conducted in farmers' fields in U.P. and Bihar. Cane seed crop of varieties CoLk 94184, CoPk 05191, Co 05011, CoH 128, Co 0118 and CoLk 9709 was raised on 15 ha area. Demonstrations on Ratoon Promoter were conducted at farmers' fields in command area of Biswan Sugar Mill, Biswan, Sitapur (U.P.) covering 10 villages, 20 cane growers and 10 ha area.
- Demonstration on intercropping with sugarcane was conducted in farmers' fields in Sitapur and Lakhimpur districts of U.P. covering 15 ha area. This activity was funded by Ministry of Agriculture and Farmers Welfare, Govt. of India under NFSM.

ARS-2017 & NET 2017 Examination conducted

Agricultural Scientists Recruitment Board (ASRB), New Delhi in search of talent in agricultural research services regularly conducts various examinations all over India. An online examination of Agricultural Research Service (ARS) - 2017 (Preliminary) & National Eligibility Test (NET-I) - 2017 Examination was held at the Institute during May 16-21, 2017. Out of 1670 candidates allotted to the centre for 56 disciplines, 1384 candidates appeared in the examination.



Visit of foreign delegates

Thirty three delegates from 13 countries of Africa and Asia visited the Institute on March 07, 2017. An interactive session of foreign delegates with IISR Scientists was organized in which information on “R & D efforts of IISR for inclusive growth in agriculture and rural development” was delivered. Live demonstrations of sugarcane machine were also conducted for visiting delegates.



Visit of FA, DARE, Govt. of India

Shri S.K. Singh, Addl. Secretary, DARE, Govt. of India and Financial Adviser, ICAR visited KVK, ICAR-IISR, Lucknow on February 24, 2017. During the visit, Shri Singh highly



appreciated the ongoing activities of KVK for the benefit of farmers. He interacted with the scientists of KVK and some farmers of the Lucknow district. Dr. A.D. Pathak, Director of the Institute welcomed Shri Singh and Dr. S.N. Singh, Principal Scientist and Head, KVK briefed about the activities of KVK.

Awards and Honours

- Dr. Rajesh Kumar, Principal Scientist & I/c, AKMU was conferred upon following awards:
 - Dr. Jamuna Prasad Yadav Vishisht Krishi Vaigyanik Puraskar of UPAAS for his outstanding contribution in the field of Statistics and Sugarcane Improvement on June 14, 2017 at ICAR-IISR, Lucknow.
 - Award for Excellence in Research by the Education Expo TV's Research Wing for Excellence in Professional Education & EET CRS, 5th Industry Science & Technology Awards-2017 for his contribution in the field of Sugarcane Research, Science and Technology, on June 11, 2017 at Four Points by Sheraton, Whitefield, Bangalore, Karnataka.
 - Industry Excellence Award for contribution in the field of Sugarcane Research, Science and Technology and Application of Statistics in Agriculture by NISSTA during Annual Convention and Technical Expo (2017) on May 12-13, 2017.
- The paper entitled "Upscaling bio-ethanol production - Research efforts and future plans" by Pushpa Singh, A.D. Pathak, Ramakant Rai and Rajesh Kumar was awarded the Best Paper in Annual Convention and Technical Expo (2017) of NISSTA during May 12-13, 2017 at ICAR-IISR, Lucknow.
- Dr. A.K. Mall, Senior Scientist, Division of Crop Improvement was conferred Dr. Vasant Ram Vishisht Yuva Vaigyanik Puraskar by UPAAS on June 14, 2017 at ICAR-IISR, Lucknow.
- Dr. A.K. Singh, Principal Scientist, Division of Crop Production was elected as Fellow of UPAAS for his outstanding contribution in the field of Natural Resource Management on June 14, 2017 at ICAR-IISR, Lucknow.
- The ICAR-IISR received 1st prize (*Sarvottam Puraskar*) for IISR Exhibition stall in *Unnati Krishi Mela* of Ministry of Agriculture and Farmers Welfare, Govt. of India organized from March 15-17, 2017 at ICAR-IARI, Pusa, New Delhi. The Award was received by Dr. A.K. Sah, Principal Scientist and Team Leader of IISR in *Unnati Krishi Mela* from Secretary, Agriculture, Govt. of India in the august presence of Secretary, DARE and DG, ICAR on March 17, 2018.



- Dr. A.K. Mall was conferred "Excellence in Research Award" for outstanding contribution in field of Agriculture in International Seminar on Agriculture & Food for Inclusive Growth and Development at CSIR-NBRI, Lucknow by Samagra Vikas Welfare Society on January 14-15, 2017.

कृषक सम्राट सम्मान से पुरस्कृत

कृषि विज्ञान केन्द्र, भाकृअनुप-भारतीय गन्ना अनुसंधान संस्थान, लखनऊ से प्रशिक्षित एक कृषक श्री रमेश वर्मा निवासी ग्राम कासिमपुर विरुहा, ब्लॉक गोसाईगंज, जनपद लखनऊ को दिनांक 02 फरवरी, 2017 को महिन्द्रा एण्ड महिन्द्रा द्वारा दिल्ली के अशोका होटल में आयोजित कृषक एवं कृषि संस्थानों के सम्मान समारोह में महिन्द्रा समृद्धि इंडिया एग्री पुरस्कार-2017 के अन्तर्गत कृषक सम्राट पुरस्कार-नार्थ जोन से सम्मानित किया गया। इस कार्यक्रम के मुख्य अतिथि श्री राधा मोहन सिंह जी, माननीय कृषि एवं किसान कल्याण मंत्री, भारत सरकार द्वारा देश के चार प्रगतिशील कृषकों को यह सम्मान एवं पुरस्कार प्रदान किया गया। श्री वर्मा को सम्मान के रूप में एक स्मृति चिन्ह, प्रशस्ति पत्र एवं ₹ 51,000/- का चेक प्राप्त हुआ।



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