भाकृअनुप
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इक्षु समाचार

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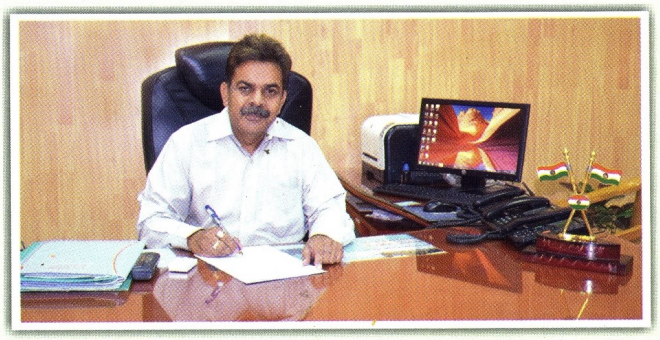
From the Director's Desk



Indian sugar sector has been a focal point for socio-economic development in the rural areas of the country. Cultivated in around 5 million ha of area, it occupies about 3.5 per cent of total cropped area, and provides livelihood to around 6.5 million cane growers. Sugarcane crop also provides raw material to 538 operational sugar mills and thousands of jaggery making units. Most of the new sugar mills are sugar complexes, integrated with an in-built mechanism for cogeneration and distilleries and number of by-products. Sugarcane accounts for 75-80% of the cost of sugar production and if produced more efficiently, it has a vital role to make sugar industry a commercially viable venture. Since the size of the cane farm in India is very small (0.77 ha on average) as compared to major sugar producing countries, it makes the adoption of costly improved sugarcane production technology on individual farms difficult, resulting in high production costs and low profit margins. The main concern for sugarcane in India is increasing cost of cultivation which is eating up margins. The cost of cultivation had to be reduced by encouraging mechanization of labour intensive planting operations, or through custom/contract hiring of the machinery required for such operations. Thus, reduction in production costs of sugarcane cultivation is vital for sustained growth of the sugar sector.

Sugarcane is a labour-intensive crop and most of the operations are carried out manually. The crop remains in the field for almost a year and right from land preparation to harvesting and its timely supply to the mill, there is a heavy demand of labour and machinery. Sugarcane requires about 230 to 325 mandays per ha for its cultivation. Out of which 35-45 mandays are required for sugarcane planting. The human labour costs constitute around 40-50 per cent of operational cost. The use of machinery is limited for field preparation. Sugarcane planting consists of two types of sequentially connected labour intensive operations of sett preparation. Various types of small 35 HP tractor drawn sugarcane cutter planters, developed at ICAR-IISR, Lucknow, perform all these planting operations as one operation and takes only 4 hours/ha. These planters are whole cane planters where whole cane is fed manually and the rest of the operations, such as cutting of setts, opening of furrows, application of fertilizers, insecticides and fungicides, giving a soil cover over the setts and compacting the soil cover, are carried out automatically with the help of the planter. Hence to bring down the cost of production of sugarcane in general, and planting operations in particular, the solution is to intensify the mechanization of cane planting operations.

To intensify mechanization of cane planting operations, ICAR-IISR on its own, has entered into partnerships with a few private manufacturers by signing MoUs to commercially exploit the planting machinery developed at the Institute. Sugarcane planters developed by the Institute or its licensee manufacturers have become popular with the cane growers. About 2.62 lakh farmers belonging to all types of operational holding groups are using sugarcane cutter planters. The use of planting machine results in the reduction of operational cost of cane cultivation per ha by ₹ 10,000 at the prevailing wage rates aggregating to a saving in cost of cultivation of around ₹180 crore per year. These cutter planters (2-rows, 3-rows, paired-row, trench-planters) have generated considerable interest among growers and gained their acceptance. Use of this type of planting machinery has helped in the planting of intercrops like wheat, pulses and potato with sugarcane for increasing cropping intensity, productivity and reducing the cost of cultivation resulting in higher benefit cost ratio.

गन्ने की उत्पादन लागत को कम करने, श्रमिकों की कमी की समस्या से निपटने, उचित समय पर वांछित कृषि क्रिया करने एवं उत्पादकता में वृद्धि करने हेतु संस्थान ने कई उपयोगी कृषि यंत्र विकसित किए हैं तथा इन यंत्रों के व्यवसायीकरण हेतु कई कृषि यंत्र निर्माताओं से समझौते पत्र भी हस्ताक्षरित किए हैं।

Now, time has come to ensure 100% planting of sugarcane by machines. This could be done at least in some selected pockets or villages. The farm machinery developed for sugarcane planting operations, being costly (₹ 0.80-1.25 lakh), is still on custom-hiring basis and that too in a limited area. This weak linkage needs to be addressed on priority. A strong linkage of manufacturers, custom service providers with adequate support from the Government in subsidizing the costly planting equipments is needed. A system for clusters of demonstration and use of sugarcane machinery on hire purchase basis also need to be developed. Sugar mills may adopt some villages under the corporate social responsibility programme. The intensification of cane mechanization will help in generating self-employment in the form of custom hiring services as well as in repair business. This aspect has the potential for skill development of rural artisans as well as for establishing start-ups in developing sugarcane machines. ICAR-IISR is all set for intensifying mechanization of cane planting operations at faster pace and calls for all stakeholders: sugar mills, KVKs, machinery manufacturers, and State cane departments to join in this endeavour.

(A.D. Pathak)

SECTORAL NEWS : SUGARCANE AND SUGAR INDUSTRY

Workshop of AICRP on Sugarcane organized

The 31st Biennial Workshop of All India Coordinated Research Project (Sugarcane) was held at the Vasantdada Sugar Institute, Pune (Maharashtra) on November 16-17, 2016. The inaugural session of the Workshop and the joint session of all the researchers was chaired by Dr. J.S. Sandhu, DDG (Crop Science), ICAR, New Delhi. Dr. S.K. Shukla, Project Coordinator (Sugarcane) presented the Annual Progress Report (2015-16) and highlighted salient achievements. Dr. Shukla narrated the existing and upcoming concerns on sugarcane cultivation across the sugarcane growing areas in the country and research efforts made by it's centres. He informed that two sugarcane clones, CoPb 08212 (early) and CoP 09437 (mid-late) were identified in 2015 for release in the North West Zone and the North Central Zone, respectively. Dr. J.S. Sandhu, applauded the efforts made so far while reviewing the achievements of AICRP on Sugarcane. However, he suggested that rigorous efforts were required to improve the productivity and sugar recovery to meet the demand. He also emphasized on the need of zone-wise standard package of practices and development of climate resilient sugarcane varieties.

Dr. A.D. Pathak, Director, ICAR-IISR, Lucknow stressed the need to switch over to multi-disciplinary research approach for improving the per capita sugar availability. Dr. Bakshi Ram, Director, ICAR-SBI, Coimbatore felt the need of developing early maturing varieties. Dr. R.K. Singh, ADG (CC), ICAR, New Delhi suggested mission oriented programme for improving sugarcane productivity & recovery and expressed the need of development efforts through collaboration of ICAR-IISR, ICAR-SBI and VSI, Pune. He highlighted that the farmers should be made aware about new technologies and key components of the technology should be demonstrated to them for better adoption by the sugarcane growers.

- अखिल भारतीय समन्वित शोध परियोजना (गन्ना) की 31वीं द्विवार्षिक कार्यशाला वसन्तदादा शर्करा संस्थान, पुणे में 16-17 नवम्बर 2016 को आयोजित की गई।
- डॉ. एस.के. शुक्ला, परियोजना समन्वयक (गन्ना) ने परियोजना के वार्षिक प्रतिवेदन (2015-16) की मुख्य उपलब्धियों पर प्रकाश डाला।
- डॉ. जे.एस. सन्धू, उपमहानिदेशक (फसल विज्ञान), भाकृअनुप ने मांग की पूर्ति के लिए उत्पादकता तथा चीनी परता में वृद्धि करने के लिए गम्भीर प्रयास करने की सलाह दी।
- डॉ. आर.के. सिंह, सहायक महानिदेशक (व्यावसायिक फसलें), भाकृअनुप ने गन्ना उत्पादकता व चीनी परता में वृद्धि करने हेतु भाकृअनुप-भारतीय गन्ना अनुसंधान संस्थान, लखनऊ; भाकृअनुप-गन्ना प्रजनन संस्थान, कोयम्बटूर तथा वसन्तदादा शर्करा संस्थान, पुणे द्वारा समन्वित प्रयास की सलाह दी।
- डॉ. ए.डी. पाठक, निदेशक, भारतीय गन्ना अनुसंधान संस्थान ने चीनी की प्रति व्यक्ति उपलब्धता बढ़ाने हेतु मल्टी-डिसिप्लनरी शोध की आवश्यकता पर बल दिया।
- डॉ. बक्शी राम, निदेशक, गन्ना प्रजनन संस्थान ने शीघ्र परिपक्वता वाली गन्ना की किस्मों के विकास की आवश्यकता बताई।

STEP FORWARD FOR THE WELL-BEING OF SUGARCANE & SUGAR SECTOR

Collaborative efforts to enhance cane productivity in U.P.

A joint meeting of ICAR-Indian Institute of Sugarcane Research, Lucknow, UP Council of Sugarcane Research, Shahjahanpur and Sugarcane and Sugar Department, Govt. of U.P. was held on August 22, 2016 at ICAR-IISR, Lucknow to discuss various issues pertaining to increasing yield of sugarcane in Uttar Pradesh. Apart from Scientists of IISR, Lucknow and UPCSR, Shahjahanpur, the meeting was attended by Cane Commissioner, Additional Cane Commissioner, Joint Cane Commissioner and Deputy Cane Commissioner, Govt. of U. P.

The Scientists of the Institute informed about the latest developments in the field of crop improvement, crop production, crop protection and agricultural engineering.

Dr. V.K. Shukla, Additional Cane Commissioner, U.P. advocated for reduction of area under rejected varieties and maintaining a balance of recommended varieties. The Govt. of U.P. is promoting drip irrigation, organizing village level *Kisan Goshthi*, visit of farmers at the farms of innovative farmers, nursery raising of seed cane, establishment of ideal sugarcane village and *Ganna Kisan* Club in each sugar mill command area.

Dr. B.L. Sharma, Director, UPCSR, Shahjahanpur advocated for development of new varieties of sugarcane, standardizing pathological screening technology, balanced use of N, P, K with secondary and micronutrients and reducing the cost of production.

Dr. A.D. Pathak, Director, ICAR-IISR, Lucknow termed this coordination meeting as a good initiative for utilizing the strength of each other and felt the need for developing a strong roadmap of sugarcane for U.P. He advocated for adoption of sugarcane implements and devices, crop protection techniques and tissue culture plants in addition to varietal replacement and healthy seed production using MHAT.

Sh. Vipin Kumar Dwivedi, Cane and Sugar Commissioner, U.P. expressed satisfaction over emergence of the State as the largest sugar producing state in India. He assured that ICAR-IISR technologies will be disseminated through the state wide network of Cane Department. He termed the meeting as a humble beginning and assured that the Cane Department will meet with ICAR-IISR more frequently.

- उत्तर प्रदेश में गन्ना की उत्पादकता बढ़ाने के लिए भाकृअनुप-भारतीय गन्ना अनुसंधान संस्थान, लखनऊ; उत्तर प्रदेश कृषि अनुसंधान परिषद, शाहजहांपुर तथा गन्ना व चीनी विभाग, उ.प्र. के अधिकारियों की एक बैठक 22 अगस्त 2016 को श्री विपिन कुमार द्विवेदी, गन्ना तथा चीनी आयुक्त, उत्तर प्रदेश की अध्यक्षता में आयोजित की गयी।
- इस अवसर पर डॉ. ए.डी. पाठक, निदेशक, भाकृअनुप-भारतीय गन्ना अनुसंधान संस्थान, लखनऊ; डॉ. बी.एल. शर्मा, निदेशक, उत्तर प्रदेश गन्ना शोध परिषद, शाहजहांपुर; डॉ. वी.के. शुक्ला, अपर गन्ना आयुक्त, उत्तर प्रदेश ने गन्ने की उत्पादकता बढ़ाने के लिए अपने विचार व्यक्त किए।
- श्री विपिन कुमार द्विवेदी, गन्ना व चीनी आयुक्त, उ.प्र. ने उत्तर प्रदेश के भारत के सबसे बड़े चीनी उत्पादक राज्य के रूप में उभरने पर संतोष जताया।

TECHNOLOGY DEVELOPED

1. Sett priming with *Ethrel* @ 100 ppm causes early and higher rate of bud sprouting

गन्ने के बीज की अधिक मात्रा में आवश्यकता (50-60 कु./हे.) तथा धीमे अंकुरण की पृष्ठभूमि में 100 पीपीएम इथ्रेल द्वारा बीजोपचार की प्रौद्योगिकी विकसित की गयी है। इस प्रौद्योगिकी से उपोष्ण क्षेत्र में गन्ना उपज में 20-25% वृद्धि होती है।

In light of huge seed cane requirement (8-10% of crop produce), slow and low germination, a technology has been developed namely seed priming with 100 ppm *Ethrel*. Under this technology, 2-3 bud setts are dipped overnight in 100 ppm (100 mg/litre water). The primed setts are planted as per normal agronomical practices which enhanced germination (55-60%) in 20-25 days. At least one month early germination provide dividend to crop to grow better. This technology claims 20-25% higher cane yield in sub-tropical zone.

2. Application of *Ethrel* + GA_3 in sugarcane across growth cycle increased cane yield through architectural alterations

Plant growth hormones (*Ethrel* and GA_3) have potential to improve sett vigour, enhanced its ability to sprout and established uniform and robust settlings in spring planted crop (Fig 1). Their usage led to significant alteration in leaf orientation (Fig 2), cane length (Fig 3) and root architecture (Fig 4). Architectural alterations caused faster heterotrophic to autotrophic transitions at planting stage (February). This induced high initial plant population (45 DAP), which was followed by induction of smart canopy with increased source activity, above and below ground sink development at 60 DAP. The formation of smart canopy was due to development of erectophiles (leaf angle 73°) against planophiles (leaf angle 45°) in control (Fig 2). Changes in leaf angle enabled added advantage of enhanced CO_2 utilization and radiation use efficiency. The GA_3 induced leaf orientation formed a smart canopy and improved dry matter partitioning. Further, leaf erectness also reduced the shading effects amongst the leaves present on a stalk, rendering increase in radiation use by lower leaf laminae of the stalk. GA_3 induced branched roots with steep angles (30°), threefold increase in root weight and root hair development, sustained the nutrient requirement of increased shoot population. As a result, net assimilation rates

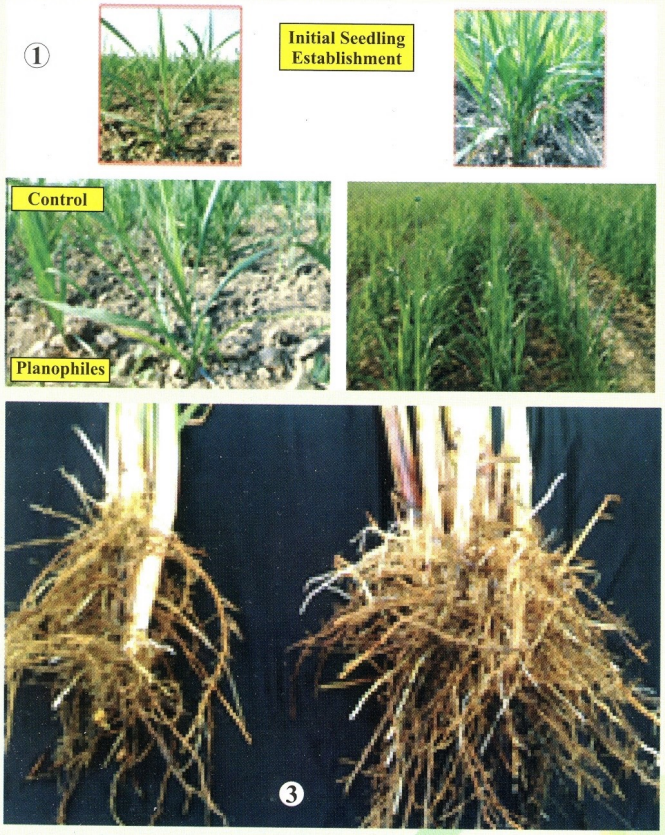


Fig. 1: Uniform and robust settling establishment through *Ethrel* application in spring planted sugarcane, Fig 2: Leaf arrangement alterations, Fig 3: Root architectural alterations (Through *Ethrel* and GA_3 application in spring planted sugarcane), Fig 4: Robust shoot numbers and cane length alterations through *Ethrel* and GA_3 application.

(65 mg/cm$^{2/}$d), leaf area ratio (16 cm$^{2/}$ g) and leaf area duration [55 (cm^2 d)10^4] enhanced, leading to increase in internodal numbers, length and their weight. At grand growth and harvest stage, 5.37 lakh shoots/ha with NMC of 3.01 lakh/ha with *Ethrel* and GA_3 was obtained against T_{max} 2.13 lakh shoots/ha in control with NMC of 1.32 lakh shoots/ha. The PGR application led to significant increase in cane yield of 255 t/ha against a cane yield of 85 t/ha in control. The large accommodation of stalks in limited ground area with *Ethrel* and GA_3 may be distributed to the development of smart canopies supported by a robust root system, where each plant occupied merely 331 cm^2 ground area against 800 cm^2 in control. The architectural alterations through PGR in sugarcane crop increased cane yield from 70-85 t /ha to 255 t/ha in spring planted sugarcane crop.

3. Organics in Nutrient Management under AICRP(S)

In order to reduce the application of inorganic fertilizers, sustenance of soil health for longer period and increasing cane yield, the use of organics in nutrient management schedule for sugarcane has shown its potential. Addition of 20 t FYM/compost/ha along with inorganic fertilizers applied on the basis of soil test crop response for targeted yield or on the basis of general recommendation for the region has shown positive effect on sugarcane growth and yield, both in plant and ratoon crops. Response of bio-fertilizers (*Azotobacter/ Acetobacter/ Azospirillum/* PSB) was more pronounced in the Peninsular Zone.

4. Zonal Varietal Trials under AICRP (Sugarcane)

A total of 25 Zonal Varietal Trials (14 in early and 11 in mid-late) were conducted during the year 2015-16. There were 8 IVT and 17 AVT trials. A total of 66 entries in early group and 68 entries in mid-late group were evaluated. Out of which, 17 early and 11 mid-late entries were found promising.

- पादप वृद्धि हार्मोन (इथ्रेल तथा जिबरेलिक अम्ल) के प्रयोग से बसन्तकालीन गन्ने की फसल में ओज बढ़ा तथा अधिक संख्या में तथा एक समान अंकुरण हुआ। इनके प्रयोग से पत्ती विन्यास, गन्ने की लम्बाई तथा जड़ आर्कीटॅक्चर में सार्थक भिन्नता पायी गयी।
- बावक व पेड़ी फसल में क्षेत्र के लिए सामान्य संस्तुति अथवा लाक्षियक उपज के लिए एसटीसीआर के आधार पर अकार्बनिक उर्वरकों के साथ 20 टन गोबर की खाद/ कम्पोस्ट के प्रयोग का गन्ने की वृद्धि व उपज पर सकारात्मक प्रभाव पड़ा।

INSTITUTE HIGHLIGHTS

Meeting of the Institute Research Council (IRC)-2016

The Institute Research Council (IRC) meeting of the ICAR-Indian Institute of Sugarcane Research, Lucknow was held under the Chairmanship of Dr. A.D. Pathak, Director of the Institute during September 21-23, 2016 to review and discuss the on-going research projects at the Institute. In this meeting, 54 Scientists of the Institute participated and discussed the research findings. Thirteen new research projects were approved in principle.

Organization of World Soil Day

World Soil Day was celebrated on December 5, 2016. Dr. P. N. Singh, was the Chief Guest on the occasion. Dr. Singh expressed his concern over deteriorating quality of soil, water and food due to ignorance. He said that soil is a critical component of the natural eco-system and is a vital contributor to human well-being. He urged that the scientists and extension personnel must work in synchronization to address these challenges.

Dr. A.D. Pathak, Director, ICAR-IISR welcomed the participants and stressed the importance of soil, water and air for the very existence of life. He said that soil is the reservoir for at least a quarter of global biodiversity, and therefore, needs immediate attention. He outlined the progress made by the

Institute in various soil related research projects. He also assured that the distribution of Soil Health Card scheme adopted by the Institute will be intensified in the future.

Dr. S.K. Shukla, Project Coordinator, AICRP (Sugarcane) said that there is an urgent need to ensure healthy soils. Sustainable management systems and practices will unlock the full potential of soils to support food production, store and supply clean water, preserve biodiversity, sequester more carbon and increase resilience to the changing climate. Dr. V.P. Singh, Head, Division of Crop Production highlighted the linkage of soil research work at ICAR-IISR and its significance. He elaborated about various ongoing research projects in the Institute related to soil.

Further, a farmers' awareness programme towards healthy soil for enhanced and sustained agricultural productivity was organized by the KVK, ICAR-IISR, Lucknow at Village

Ismailnagar, Block-Gosainganj, Lucknow. More than 100 farmers of the area participated in the programme and took keen interest in making their soil more healthy and productive through adoption of carbon sequestration technologies in field crop production. Farmers were told about the Central Govt's serious concern on burning of crop residues particularly of rice and wheat, by the farmers. Farmers were also made aware that if crops residues are retained in the fields, it will certainly boost organic carbon content in the soil and reduce environmental pollution. KVK Scientists delivered their talks stressing the need for adoption of green manuring by *Dhaincha*, application of locally available organic manures in fields, retention of crops residues etc., for making soil healthy and sustainable for use of future generation.

- संस्थान में चल रही शोध परियोजनाओं की समीक्षा हेतु संस्थान शोध परिषद की बैठक 21-23 सितम्बर 2016 को डॉ. ए.डी. पाठक, निदेशक, भाकृअनुप-भारतीय गन्ना अनुसंधान संस्थान, लखनऊ की अध्यक्षता में आयोजित की गई।
- संस्थान द्वारा 5 दिसम्बर 2016 को विश्व मृदा दिवस आयोजित किया गया जिसमें डॉ. पी.एन. सिंह, मुख्य अतिथि थे। डॉ. सिंह ने अज्ञानता में मृदा, जल तथा खाद्य पदार्थों की गिरती गुणवत्ता पर चिंता व्यक्त की।
- डॉ. ए.डी. पाठक, निदेशक ने मृदा को विश्व की चौथाई जैवविविधता का स्रोत बताते हुए संस्थान द्वारा मृदा स्वास्थ्य कार्ड योजना को भविष्य में और सुदृढ़ करने का आश्वासन दिया।
- इस अवसर पर डा. एस.के. शुक्ला, परियोजना समन्वयक (गन्ना); डॉ. वी.पी. सिंह, विभागाध्यक्ष (फसल उत्पादन) तथा डॉ. आर.एस. दोहरे, नोडल अधिकारी, 'मेरा गांव मेरा गौरव' ने मृदा स्वास्थ्य को अक्षुण रखने के लिए सुझाव दिए।
- कृषि विज्ञान केन्द्र, लखनऊ द्वारा भी एक कृषक जागरूकता कार्यक्रम का आयोजन लखनऊ जनपद में गोसाईगंज विकास खण्ड के इस्माइलनगर ग्राम में आयोजित किया गया जिसमें 100 से अधिक कृषकों ने सहभागिता की।

World Students Day celebrated

World Students Day was celebrated on October 15, 2016 at ICAR-Indian Institute of Sugarcane Research, Lucknow on the occasion of birthday of India's former President, Dr. A.P.J. Abdul Kalam. On this occasion, Dr. A.D. Pathak, Director addressed the students and research fellows working in various projects in the Institute. During his address, he urged the students to work hard towards their respective aims. Dr. Pathak also encouraged them to be more focused and open for the innovative ideas and also added that young people are torchbearer of the future. He also asked the students to communicate him any innovative idea to pursued at.

On this occasion, the students shared their views and interacted with each other. Students also gave a brief account of their projects/training where they were involved. Dr. A.K. Sharma, Incharge, PME & Training Coordinator also encouraged the students to give more importance to peace of mind in their student life.

Parthenium eradication awareness programme organized

An awareness programme on *Parthenium* eradication was organized at Krishi Vigyan Kendra, ICAR-IISR, Lucknow on August 19, 2016. Dr. A.D. Pathak, Director highlighted that *Parthenium* is responsible for health problems both in human and animals, besides deteriorating environment and productivity. This weed was first noticed in India during 1955 and has covered more than 35 million hectare area in the country and causing eczema, allergy and fever in human beings.

Dr. S.N. Singh, Head, KVK, ICAR-IISR informed about the identification features of the weed which has the leaves like the carrot and produces hundreds of tiny white flowers. Due to the completion of its life cycle in 3-4 months, 3-4 generations of this weed can be completed in an year. In non-farming areas, it can be controlled by spraying of Glyphosate weedicide @ 10 ml per litre of water or Metribuzyn @ 3.0-3.5 ml per litre of water. This weed can be eradicated only by community efforts. Plants of this weed should be uprooted before the rainy season and its flowering. He also advised to release Mexican beetles (A bioagent) to eradicate this weed.

Another awareness programme was held at village Birura of Sarojani Nagar block of Lucknow. Now-a-days, *Parthenium* has emerged as a burning problem because it is wide spread in agriculture, non agriculture land, cities, roads and railway lines etc., causing very serious diseases in human as well as in animals. Therefore, for eradication of this noxious weed, Krishi Vigyan Kendra, Lucknow organized an awareness campaign for its integrated management.

Training on Roof Top Kitchen Gardening

Krishi Vigyan Kendra, ICAR-IISR, Lucknow organized a training programme on Roof Top Kitchen Gardening on 19th November 2016. Main aim of the training programme was to sensitize urban people about pot cultivation of green vegetables on their roof for availability of pesticide free green vegetables.

The programme was inaugurated by Dr. A.D. Pathak, Director, ICAR-IISR, Lucknow. He said that the fast pace of urbanization in Lucknow causing high level of pollution. We are not getting fresh and pesticides free vegetables that causes a number of health problems. Dr. S.N. Singh, Head, KVK told the importance of roof top kitchen gardening. At the end of programme, seedlings of different vegetables and seeds of leafy vegetables were distributed to urban women.

- भारत के पूर्व राष्ट्रपति, डॉ. ए.पी.जे. अब्दुल कलाम के जन्मदिवस के अवसर पर 15 अक्टूबर 2016 को संस्थान द्वारा विश्व विद्यार्थी दिवस का आयोजन किया गया।
- इस अवसर पर संस्थान के निदेशक, डॉ. ए.डी. पाठक ने शोध छात्रों व शोधवेत्ताओं को अपने लक्ष्य पर केन्द्रित होकर कड़ी मेहनत करने को कहा। उन्होंने नवोन्मेषी विचारों द्वारा नए अनुसंधान करने का आहवान दिया।
- संस्थान के कृषि विज्ञान केन्द्र द्वारा 19 अगस्त 2016 को पार्थीनियम (गाजरघास) उन्मूलन हेतु एक जागरूकता कार्यक्रम का आयोजन किया गया। इस अवसर पर डा. ए.डी. पाठक, संस्थान के निदेशक ने मनुष्यों व पशुओं के स्वास्थ्य पर पड़ने वाले दुष्प्रभाव के साथ-साथ वातावरण पर पड़ने वाले दुष्प्रभाव तथा उत्पादकता में हास के लिए गाजरघास को उत्तरदायी बताया।
- कृषि विज्ञान केन्द्र, लखनऊ द्वारा 19 नवम्बर 2016 को छत के ऊपर गृह वाटिका लगाने हेतु एक प्रशिक्षण कार्यक्रम आयोजन किया गया। इस कार्यक्रम का उद्देश्य कीटनाशी रसायन मुक्त हरी सब्जियों को उगाने के लिए छत पर हरी सब्जियों की खेती गमलों में करना था।

Agriculture Education Day Organised

ICAR-Indian Institute of Sugarcane Research, Lucknow organized Agricultural Education Day on 3rd December, 2016 to commemorate the birth anniversary of first Agriculture Minister and President of Independent India, *Bharat Ratna,* Dr. Rajendra Prasad.

On this occasion, Dr. A.D. Pathak, Director interacted with all researchers working in different research projects and UG/PG and Ph.D. students pursuing their research work in the Institute. He highlighted the importance of agricultural education and its relevance in day to day life. He called upon the young fellows to learn more and think "out-of-the-box" to bring change in the system.

Dr. M.R. Singh, Head, Division of Crop Protection; Dr. Radha Jain, Head, Division of Plant Physiology and Biochemistry; Dr. S.I. Anwar, I/c, Jaggery Unit; Dr. A.K. Sah, I/c, Extension & Training; Dr. Rajesh Kumar, I/c, AKMU; Dr. L.S. Gangwar, I/c, Library and Dr. R.D. Singh, Pr. Scientist (Ag. Engineering) shared their valuable thoughts on this occasion. Dr. A.K. Sharma, Principal Scientist and I/c, PME Cell proposed the vote of thanks.

Additional Secretary, DARE and Financial Advisor, ICAR reviewed financial system of 34 ICAR Institutes

The third interactive meeting on financial matters for ICAR Institutes of the North Zone was held at ICAR-IISR, Lucknow under the Chairmanship of Sh. S.K. Singh, Additional Secretary, Department of Agriculture Research and Education, Govt. of India and Financial Advisor, ICAR on September 30, 2016. The meeting was attended by Sh. Devendra Kumar, Director (Finance), ICAR, Dr. A.K. Vasishta, Assistant Director General (PIM), Dr. A.D. Pathak, Director, ICAR-IISR; Dr. S. Rajan, Director, ICAR-CISH; Dr. K.K. Lal, Director, ICAR-NBFGR and the Finance and Accounts Officers and the Administrative Officers of 34 ICAR Institutes. Sh. S.K. Singh called upon the Accounts Officers of these Institutes to make the financial system more transparent in their respective Institutes by strictly adhering to the guidelines issued from time to time by the Govt. of India and ICAR. The financial progress on pending audit para, outstanding advances, Bank reconciliation, percentage expenditure of sanctioned budget and implementation of Management Information System (MIS) including Financial Management System (FMS) was also reviewed in the meeting. The Additional Secretary, DARE and Financial Advisor, ICAR took note of pending financial matters of each ICAR Institute one by one and admonished them to settle the matter within a time frame.

Dr. A.D. Pathak, Director, ICAR-IISR welcomed the guests and informed about the major research and developmental activities carried out at the Institute. He also thanked the Chairman for choosing ICAR-IISR, Lucknow as venue for organizing this meet.

Showcasing of IISR technologies to the Hon'ble Governor of Uttar Pradesh

Sh. Ram Naik, Hon'ble Governor of Uttar Pradesh visited the ICAR-IISR, Lucknow on December 18, 2016. The technologies developed by the Institute including new varieties developed, crop production technology, bio-control of insect pests and diseases, agricultural machineries developed for mechanization of sugarcane farming and jaggery manufacturing was showcased to the Hon'ble Governor. Sh. Naik took keen interest in sugarcane equipment, production and protection technologies and advancements made in jaggery manufacturing and appreciated the efforts of the ICAR-IISR Scientists in developing the improved technology of sugarcane cultivation.

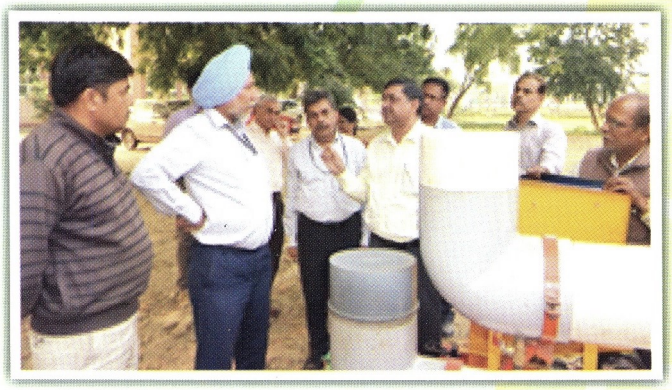
- स्वतंत्र भारत के प्रथम राष्ट्रपति, भारत रत्न डॉ. राजेन्द्र प्रसाद के जन्म दिन के अवसर पर 3 दिसम्बर 2016 को संस्थान ने कृषि शिक्षा दिवस का आयोजन किया। इस अवसर पर संस्थान के निदेशक, डॉ. ए.डी. पाठक ने दैनिक जीवन में कृषि शिक्षा के महत्व को रेखांकित किया।
- श्री एस.के. सिंह, अपर सचिव, डेयर व वित्त सलाहकार, भाकृअनुप ने 30 सितम्बर 2016 को 34 संस्थानों की वित्तीय प्रणाली की समीक्षा की। श्री देवेन्द्र कुमार, निदेशक (वित्त), भाकृअनुप; डॉ. ए.के. वशिष्ठ, सहायक महानिदेशक (योजना क्रियान्वयन एवं निगरानी); डा. ए.डी. पाठक, निदेशक, भाकृअनुप- भारतीय गन्ना अनुसंधान संस्थान; डॉ. एस. राजन, निदेशक, भाकृअनुप- केन्द्रीय उपोष्ण बागवानी संस्थान तथा डॉ. के.के. लाल, निदेशक, राष्ट्रीय मत्स्य आनुवांशिक संसाधन ब्यूरो तथा भाकुअनुप के संस्थानों के 34 वित्त एवं लेखा अधिकारी व प्रशासनिक अधिकारी उपस्थित थे।
- श्री राम नाईक, माननीय राज्यपाल, उत्तर प्रदेश ने 18 दिसम्बर 2016 को संस्थान का भ्रमण किया। उनको संस्थान द्वारा विकसित नवीनतम प्रजातियाँ, फसल उत्पादन प्रौद्योगिकी, समेकित कीट व रोग प्रबन्धन तथा गन्ने की खेती के यंत्रीकरण हेतु विकसित कृषि यंत्र दिखाए गए। राज्यपाल महोदय ने गन्ना खेती के यंत्रों, गन्ना उत्पादन व सुरक्षा प्रौद्योगिकी तथा गुड़ उत्पादन प्रौद्योगिकी में किए जाने वाले कार्यों के लिए संस्थान के वैज्ञानिकों की सराहना की।

Sh. Naik also inaugurated the one day Seminar on "Improving productivity and quality of hybrid rice and sugarcane in Uttar Pradesh" jointly organized by *Krishi Evam Gramin Vikas Sewa Samiti,* Lucknow and ICAR-IISR, Lucknow. Sh. Naik urged the Scientists to discuss how the technology developed by them can be beneficial for the farmers and asked to disseminate the technology developed in the laboratory to the farmers' fields. Sh. Naik urged the scientists to discuss how the consumption of improved jaggery can be increased among the masses. He also emphasized that Scientists should also work on diversified uses of sugarcane to make sugarcane cultivation more profitable.

Welcoming the Chief Guest and other dignitaries, Dr. A.D. Pathak, Director, ICAR-IISR also advocated for more blending of ethanol in petrol in future and accruing its benefits to the sugarcane farmers, sugar industry and the economy of the country. Sh. Gyan Singh, Director (Agriculture), U.P. and Sh. B.K. Yadav, Managing Director, U.P. Cooperative Sugar Mill Federation also expressed their views on increasing production and productivity of rice and sugarcane.

Visit of Dr. J.S. Sandhu, DDG (Crop Science), ICAR

Dr. J.S. Sandhu, Deputy Director General (Crop Science), ICAR visited ICAR-IISR, Lucknow on November 11, 2016. Dr. Sandhu visited laboratories, engineering workshop and Technology Park of the Institute and got acquainted with various research and developmental activities of the Institute. He also visited newly developed Kharika Block. Later, he interacted with all the staff of the Institute. In his address, Dr. Sandhu appreciated the efforts of



the Scientists of the Institute. He urged the scientists to conduct research in the direction of increasing the yield, sugar content and sugar recovery of sugarcane. On this occasion, Dr. A.D. Pathak, Director explained about the technologies developed by IISR for the benefit of farmers including improved sugarcane varieties, production technologies, integrated insect-pests and disease management practices, post-harvest technologies and improved sugarcane machineries. Dr. Pathak also informed about the technology developed for quality jaggery manufacturing and its commercialization. Dr. S.K. Shukla, Project Coordinator (Sugarcane) made a presentation on salient achievements of AICRP on Sugarcane and genetic gains in yield of sugarcane crop improvement trials in last three decades.

During the event, the winners of the Slogan Writing Competition organized on the occasion of Vigilance Awareness Week were also awarded by the Chief Guest.

Visit of Dr. A.K. Singh, DDG (Agril. Extension & Horticulture)

Dr. A.K. Singh, DDG (Agril. Extension & Horticulture), ICAR, New Delhi visited ICAR-IISR Lucknow. Dr. A.K. Singh also visited KVK of ICAR-IISR, Lucknow and highly appreciated the work being done by the *Kendra* for the benefit of farmers in addition to demonstration units *viz.,* mushroom production, nutrition garden, forage production, medicinal garden, seed production etc., established at the KVK for boosting the agricultural production. Later on, Dr. A.K. Singh stressed upon the need of establishing various demonstration units *viz.,* planting of CISH developed latest varieties of fruit crops, drip irrigation and plastic mulching in garden and vegetable crops, preparation of value added products from fruits, bee-keeping at large scale, short duration varieties of pigeonpea, inclusion of food crops in nutritional garden etc., at KVK crop cafeteria, besides, developing leaflets on latest agricultural information to upgrade farmers' knowledge so that the Hon'ble Prime Minister's dream of doubling farmers' income and generation of employment opportunities to rural youths could be realized for making farmers socio-economically prosperous.

- डॉ. जे.एस. सन्धू, उपमहानिदेशक (फसल विज्ञान), भाकृअनुप ने 11 नवम्बर 2016 को संस्थान का भ्रमण किया तथा प्रयोगशालाओं, कृषि अभियांत्रिकी कार्यशाला तथा प्रौद्योगिकी पार्क का भ्रमण कर संस्थान में शोध एवं विकास के क्रिया-कलापों की समीक्षा की।
- डॉ. ए.के. सिंह, उपमहानिदेशक (कृषि प्रसार एवं बागवानी), भाकृअनुप ने संस्थान में नोनी पर आयोजित एक संगोष्ठी का उद्घाटन करने के पश्चात संस्थान तथा कृषि विज्ञान केन्द्र का भ्रमण किया। उन्होंने कृषि विज्ञान केन्द्र में मशरूम उत्पादन, पोषण वाटिका, चारा उत्पादन, औषधि वाटिका व बीज उत्पादन पर आयोजित प्रदर्शनों की सराहना की।

Participation of IISR, Lucknow in inaugural function of KVK, Gorakhpur and *Purvanchal Krishi Pradarshni*

A new *Krishi Vigyan Kendra* at Chaukmafi (Peepiganj) in Gorakhpur district was inaugurated by Shri Radha Mohan Singh, Hon'ble Minister of Agriculture and Farmers Welfare, Govt. of India on October 23, 2016. ICAR-IISR, Lucknow and its KVK participated in the above programme and put a stall of IISR developed sugarcane technologies for the benefit of farmers of eastern Uttar Pradesh. While inaugurating the KVK and *Purvanchal Krishi Pradarshini Evam Gosthi* (23rd and 24th October, 2016), Sh. Singh elaborated about several farmer oriented schemes of the Government of India and urged upon the farmers to take the benefit of these schemes. He emphasized on organic farming and animal based farming to reduce the cost of cultivation and enhancing the productivity of crops. He further stated the Government's commitment for improvement of soil health at farmers' fields which has been

reflected through the distribution of soil health cards. Shri Yogi Adityanath, Hon'ble Member of Parliament, Gorakhpur focused on importance of *Krishi Vigyan Kendra* for upliftment of farmers livelihood, reducing production cost of field and horticultural crops, developing various agricultural technologies for self employment and increasing farmers income.

Dr. A.D. Pathak, Director, ICAR-IISR addressed the farmers and elaborated about the improved varieties of sugarcane and production technologies for the benefit of farmers. Dr. Pathak apprised the farmers and extension personnel of eastern Uttar Pradesh about the seed cane production programme of newly released varieties of sugarcane using single cane bud, STP, bud chips etc., for rapid multiplication in a short span of time. He also briefed about the jaggery production for enhanced income particularly in the areas where sugar mills are not in a position to lift their sugarcane. Dr. U.S. Gautam, Director, ICAR-ATARI, Kanpur highlighted the activities of KVKs and also apprised about the programmes of ICAR for the benefit of farmers.

National Level Training for Cane Managers

A 15 days training on Sugarcane Management and Development for cane development personnel of sugar mills was organized during July 1-15, 2016. Twenty Cane Managers/Officers from U.P., Bihar and Haryana participated in this training. In an ice-breaking session organized at the beginning, the training need of participants and their expectations from this training were assessed and training module was reoriented and implemented in true-spirit of participants' expectation. The major objective of this training was to accelerate large-scale adoption of sugarcane technologies in sugar mill zone areas by grooming & developing cane managers/officers of sugar mills into "torch-bearer" of IISR technologies and to spread the technologies with expected dividends of high sugarcane and sugar productivity.

- श्री राधा मोहन सिंह, माननीय कृषि एवं किसान कल्याण मंत्री, भारत सरकार ने 23 अक्टूबर 2016 को गोरखपुर जिले के चॉकमाफी (पीपरीगंज) में कृषि विज्ञान केन्द्र का उद्घाटन किया। इस अवसर पर पूर्वी उत्तर प्रदेश के किसानों के लाभार्थ संस्थान द्वारा विकसित गन्ना उत्पादन प्रौद्योगिकी के प्रदर्शन हेतु संस्थान द्वारा एक स्टॉल भी लगाया गया। इस अवसर पर आयोजित द्विदिवसीय पूर्वांचल कृषि प्रदर्शनी एवं गोष्ठी का उद्घाटन करते हुए माननीय मंत्री महोदय ने किसानों के कल्याण हेतु भारत सरकार द्वारा संचालित कई योजनाओं की जानकारी दी तथा किसानों को इन योजनाओं का लाभ उठाने के लिए कहा। इस अवसर पर संस्थान के निदेशक, डा. ए.डी. पाठक तथा भाकृअनुप-अटारी, कानपुर के निदेशक, डा. यू.एस. गौतम ने भी अपने विचार व्यक्त किए।
- संस्थान में गन्ना प्रबन्धन एवं विकास विषय पर एक 15 दिवसीय प्रशिक्षण कार्यक्रम का आयोजन 1-15 जुलाई 2016 के मध्य किया गया जिसमें उत्तर प्रदेश, बिहार व हरियाणा के 20 गन्ना प्रबन्धकों/अधिकारियों ने भाग लिया। इस कार्यक्रम के आयोजन का उद्देश्य संस्थान द्वारा विकसित उन्नत गन्ना प्रौद्योगिकी का प्रचार- प्रसार था जिससे गन्ने तथा चीनी की उत्पादकता में वृद्धि की जा सके।

Skill Development Training

Name of Training	Topic	Duration	Sponsoring Agency	No. of Participants
15 days National Training	Sugarcane Management and Development	July 01-15, 2016	Sugar mills	20
3 days Farmers' Training	Integrated Crop Management in Sugarcane	July 26-28, 2016	ATMA Vellore, Tamil Nadu	20
3 days Farmers' Training	Integrated Crop Management in Sugarcane	July 26-28, 2016	ATMA Tirunelveli, Tamil Nadu	20
3 days Farmers' Training	Integrated Crop Management in Sugarcane	August 10-12, 2016	Assistant Director of Agriculture, Sathankulam, Tuticorin, Tamil Nadu	20
3 days Farmers' Training	Improved Production Technology of Sugarcane	November 2-4, 2016	ATMA, Narsinghpur, M.P.	27
1 day training	Jaggery production	November 07, 2016 at Piprakothi, Bihar	IISR, Lucknow	500
1 day training	Jaggery production	December 21, 2016 at Gorakhpur	IISR, Lucknow	500
5 Days officers and staff training	Improved Production Technology of Sugarcane	December 12-16, 2016	Department of Agriculture, Govt. of U.P.	35

Technology Demonstrated

For fast spread of newly released cane varieties, demonstration on seed cane production technology was conducted on farmers' fields in U.P. and Bihar. Cane seed 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 on 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 programme.

On-station Demonstration

To showcase the cane production technology to dignitaries and visitors, on-station demonstration in one ha area was laid out in Technology Park of Institute Farm. Planting methods, Intercropping with sugarcane, IPM, Cane node technique and cane varieties were demonstrated.

Entrepreneurship Training conducted

To develop entrepreneurial ability of growers in cane seed production, multiplication and its marketing, entrepreneurship trainings were organized in the months of September, October and December in cane growing areas of Uttar Pradesh and Bihar.

To develop entrepreneurial ability of Agri Graduates and progressive farmers in jaggery production especially in Bihar and Eastern Uttar Pradesh, the Institute has established three jaggery processing units and training centres.

Exhibitions

The Institute participated in seven exhibitions and exhibited Institute technologies at New Delhi, Pune, Mau, Lucknow, Motihari (Bihar), Gorakhpur and Raipur.

राजभाषा के कार्यक्रम

- संस्थान में 14-30 सितम्बर 2016 को हिंदी पखवाड़े का आयोजन किया गया जिसमें संस्थान के अधिकारियों व कर्मचारियों ने बढ़-चढ़कर विभिन्न प्रतियोगिताओं में भाग लिया।
- संस्थान की राजभाषा कार्यान्वयन समिति की त्रैमासिक बैठक दिनांक 20 अगस्त व 25 अक्टूबर 2016 को आयोजित की गयी।
- संस्थान में दिनांक 23 अगस्त व 20 दिसम्बर 2016 को हिंदी कार्यशाला का आयोजन किया गया।
- 16 दिसम्बर 2016 को नराकास (कार्यालय 3), लखनऊ की बैठक का आयोजन किया गया।

Global Agriculture Leadership Award to ICAR-IISR

ICAR-Indian Institute of Sugarcane Research, Lucknow received Research Leadership Award during 9th Global Agriculture Leadership Summit-2016 at Hotel Taj Palace, New Delhi on September 8, 2016. Hon'ble Governor of Uttar Pradesh, Shri Ram Naik gave away the Award to Dr. A.D. Pathak, Director of the Institute in the presence of Hon'ble Governor of Haryana; Prof. K.S. Solanki, Deputy Chairman of Rajya Sabha; Prof. P.J. Kurien, Chairman and Director General of Indian Council of Food and Agriculture and other dignitaries from India and abroad.

- नई दिल्ली में 8 सितम्बर 2016 को आयोजित नवें *ग्लोबल एग्रीकल्चर लीडरशिप समिट*-2016 में संस्थान को शोध नेतृत्व पुरस्कार से सम्मानित किया गया। यह पुरस्कार संस्थान के निदेशक, डॉ. ए.डी. पाठक को श्री राम नाईक, माननीय राज्यपाल, उत्तर प्रदेश के कर-कमलों द्वारा प्रदान किया गया।
- डॉ. ए.डी. पाठक, को कृषि उत्पादन में उल्लेखनीय शोध कार्य हेतु डॉ. एम.एस. स्वामीनाथन पुरस्कार से भी सम्मानित किया गया।

Dr. M.S. Swaminathan Award conferred to Dr. A.D. Pathak

Dr. A.D. Pathak, Director, ICAR-IISR also received Dr. M.S. Swaminathan Award for outstanding performance in enhancing agriculture production. The award was presented by Shri. Ram Naik, Hon'ble Governor of Uttar Pradesh in the Inaugural function of One Day Seminar on "Improving Productivity and Quality of Hybrid Rice and Sugarcane in Uttar Pradesh" held at ICAR-IISR, Lucknow on December 18, 2016.

Other Awards and Recognition

- Dr. S.P. Singh received the Best Scientist Award by the Society for Science and Nature during International Seminar on "Recent Trends and Experimental Approaches in Science, Technology and Nature", held at ICAR- IISR, Lucknow on December 23-24, 2016.
- Drs. S.P. Singh, Radha Jain, Anshu Singh, Smita Singh, R.K. Singh, C.P. Singh, A. Chandra and A.D. Pathak received the Best Poster Award for their research paper entitled "Nutrient hormone combination influencing growth and yield contributing attributes of sugarcane" at International Congress on "Post-Harvest Technologies of Agricultural Procedure for Sustainable Food and Nutritional Security", held at Integral University, Lucknow on November 10-12, 2016.
- Dr. A.K. Sah received ISEE Fellow Award from Indian Society of Extension Education, New Delhi in ISEE National Seminar on November 28, 2016 at Gwalior.

- Drs. S.P. Singh, Radha Jain, Smita Singh, Anshu Singh, Nalini Pandey, A. Chandra and A.D. Pathak received the Best Poster Award for their paper entitled "An assessment of waterlogging induced morpho-physiological changes in sugarcane genotypes and its association with waterlogging tolerance", during International Seminar on Recent Trends and Experimental Approaches in Science, Technology and Nature", organized by Society for Science and Nature at ICAR-IISR, Lucknow on December 23-24, 2016.

Training Organised

Dr. A. Chandra, Course Director organized a 21 Days Winter School, on "Improving Physiological Efficiency for Quality Cane *vis a vis* Managing Post-harvest Sucrose Losses in Sugarcane" at ICAR-IISR Lucknow on November 08-28, 2016, sponsored by Education Division of ICAR, New Delhi. Sh. C.P. Singh, Sh. Devendra Singh, Dr. Ram Kishor, Mrs. Asha Gaur, Mrs. Mithilesh Tiwari and Mrs Pramila Lal, Technical Officers of the Institute also participated in the Winter School.

संस्थान में 8-28 नवम्बर 2016 को भाकृअनुप, नई दिल्ली के शिक्षा संभाग द्वारा प्रायोजित गुणवत्तापूर्ण गन्नों के लिए दाहिकी कुशलता में सुधार तथा गन्ने में कटाई-उपरान्त सुक्रोज ह्रास ''विषय पर एक शीतकालीन प्रशिक्षण कार्यक्रम आयोजित किया गया। इस कार्यक्रम के पाठ्यक्रम निदेशक, डा. अमरेश चन्द्रा, प्रधान वैज्ञानिक (जैवरसायन) थे।

Dr. A.D. Pathak assumed the Charge of Director, ICAR-IISR

An Eminent Plant Breeder, Dr. A.D. Pathak assumed the Charge of Director, ICAR-IISR, Lucknow on August 4, 2016. Born on January 1, 1962, Dr. Pathak obtained Ph.D. degree in Genetics and Plant Breeding from NDUA&T, Faizabad. Dr. Pathak started his professional career in ICAR as the Scientist S-1 (Pl. Breeding) at SBI, Coimbatore on January 21, 1985. He also worked at Karnal (Haryana) and Motipur (Bihar) centres of SBI, Coimbatore. He joined ICAR-IISR, Lucknow as Scientist (SG) on October 6, 1994 and was later on selected as Head, Division of Crop Improvement in 2011. Dr. Pathak was associated with development of large number of sugarcane varieties including CoLk 07201, CoLk 9709 and Co 89029 and sugarbeet variety LS 6. He was instrumental in initiating identification of CVRC released varieties of sugarcane as recommended ones in the states of UP and Bihar which transformed sugar industries is Sub-Tropical India. Dr. Pathak is pioneer researcher in sugarbeet research for adaptation to Indian conditions and diverse use which led to establishment of sugarbeet based industries in India. He has more than 180 research papers published in journals of national and international repute/papers presented during Seminars/ Symposia/Conferences/Technical Bulletin/Book Chapters/ Popular articles to his credit. He is a Member of many professional scientific societies and currently presiding ASTI. Dr. Pathak has been conferred with several prestigious awards including Dr. Panjab Singh *Vishisht Vaigyanik* Award by UPAAS, Excellence in Science Award by NISSTA and Global Agriculture Leadership Award for Research by ICF&A. Dr. Pathak is a Member of several important committees including ICAR Governing Body; ICAR Society, IMC of ICAR-NRCIF, Piprakothi, Bihar; ICAR Society, Advisory Committee of NSI, Kanpur; UPCSR, Shahjahanpur; *Ganna Kisan Sansthan* and Principal Member of Sugar Industry Sectional Committee (FAD 2).

Dr. S.K. Shukla joined as Project Coordinator (Sugarcane)

Dr. S.K. Shukla joined as PC (Sugarcane) on August 27, 2016. Born on July 10, 1966 in Kanpur, Dr. Shukla obtained M.Sc. (Ag) and Ph.D. from NDUA&T, Faizabad. He started his career as Scientist in 1993 after passing ARS in 1991 and is serving at ICAR-IISR, Lucknow for more than 23 years. He has made outstanding contributions in the field of sugarcane based cropping system research. His major research work is focused on improving carbon sequestration in sugarcane based system, role of bio agents viz., *Trichoderma* and *Gluconacetobacter* in modulating rhizospheric environment and improving crop productivity, optimizing soil moisture regime, deep tillage in plant-ratoon system and its effect on soil carbon, water, nutrient use efficiencies and crop yield. His pioneering contribution on sugarcane trash management and improving sprouting of winter initiated ratoon through K fertilization has ample scope for improving crop productivity *vis-à-vis* reducing cost of production and sustaining soil health. He has published 56 research papers, 2 books, 10 book chapters, 8 technical bulletins and 22 reports. Dr Shukla guided/trained 17 students of B Tech., M.Sc., M. Phil and Ph.D. Recipient of Noel Deerr Gold Medal, *Pt. Ram Ratan Smrati Samman* and Dr. M.S. Swaminathan Award for his outstanding contributions, he has presented over 60 papers in national and international forum.

Dr. Radha Jain assumed the charge of Head, Division of Plant Physiology and Biochemistry

Dr. Radha Jain assumed the charge of Head, Plant Physiology and Biochemistry Division at ICAR-IISR on July 22, 2016. Dr. Jain did her post graduation and Ph.D from Botany Department, Lucknow University, Lucknow. She joined ARS in the year 1994 in the discipline of Plant Physiology. She has over 24 years of association with the sugarcane crop and have worked on sugarcane nutrition, germination, bud chip technology, abiotic stresses, improving physiological efficiency and sucrose content using PGR and enzyme effectors. She is a fellow of Indian Society of Agricultural Biochemist (FISAB) and life member of various scientific societies. She has published more than 50 research articles in National and International journal, book chapters, and books and represented the Institute in National and International Conferences.

प्रसिद्ध पादप प्रजनक, डॉ. अश्विनी दत्त पाठक ने 4 अगस्त 2017 को भाकृअनुप-भारतीय गन्ना अनुसंधान संस्थान, लखनऊ के निदेशक; डॉ. सुधीर कुमार शुक्ला ने 10 जुलाई 2017 को अखिल भारतीय समान्वित शोध परियोजना (गन्ना) के परियोजना समन्वयक तथा डॉ. (श्रीमती) राधा जैन ने 22 जुलाई 2017 को पादप दाहिकी एवं जैव रसायन विभाग के अध्यक्ष का पदभार ग्रहण किया।

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