

Low Sugar Recovery : Points to Ponder



Indian sugar industry has an enviable status in the world sugar scenario, with our sugar production being second only to Brazil. We are also the second largest producer of sugarcane in the world. Despite having the largest sugar consumption base in the world, India is self-sufficient with respect to its sugar requirement and has been able to generate exportable surpluses. The emerging role of sugar industry as a source of renewable energy makes the industry a substantial partner, in bringing about energy security and reducing the foreign exchange outgo.

All said and done, the sugar recovery in the country has been far below the levels achieved by the other major sugar producing countries like Brazil and Australia, where the agro-climatic conditions are comparable with that of India. The average recovery levels have been hovering around 10% at the national level, with a potential recovery level of > 11% in sub-tropics and > 13% in the tropics. Thus we are yet to tap the huge potential in raising the sugar recovery levels.

What ails the sugar scenario in India, leading to this stagnation in sugar recovery? Broadly speaking, in India, the low sugar recovery is governed by factors in the farmers' field—both crop specific as well as policy based— and also by those at the factory level. Without an appropriate varietal balance, harvesting schedule and varietal replacement strategy, combined with scientific management practices, the potential of the crop cannot be exploited to the full. So also, without an effective check on the post-harvest losses at the factory level with proportionate sugar recovery, all efforts for increasing sugar production at the field level becomes futile.

Proper varietal planning to increase the area under early maturing varieties need to be taken up. Ideally, the area under early maturing varieties needs to be 40-50% of the total area under cane. A shift in emphasis from localized varieties to CVRC recommended varieties with better adaptability and resistance to abiotic and biotic stresses will help realize better sugar recovery. Area under autumn planted cane also needs to be increased.

A gradual replacement of rejected/denotified varieties with high yielding early maturing stress tolerant varieties like Co 0238, Co 0239, CoLk 94184, CoLk 9709 etc. should be an inherent component for realising the full potential for sugar recovery. There should be a wider difference in the State Advisory Price (SAP) for notified and rejected varieties as an incentive to sugarcane growers so that the growers are discouraged from growing the denotified varieties.

Strengthening of seed production programme with emphasis on use of healthy seed material and proper varietal replacement is important. The use of MHAT/HWT needs to be promoted for a healthy seed crop stand. Exclusive seed production fields with proper crop management and regular inspection, to ensure healthy seed material should be the norm. The seed production programme taken up by IISR, in collaboration with Government of Bihar, with buy-back arrangements with the sugar mills/sugarcane farmers can show the way in this regard. Tissue culture based seed production coupled with virus indexing is another important strategy.

All critical points from harvest to sugar manufacture, such as use of clean and fresh cane, fibrization, preparatory index and upstream milling process which could impact sugar recovery should be properly controlled and standardized.

Apart from these factors, timely and scientific management practices in the field, along with adequate post harvest management strategies are indispensable for improving the final sugar recovery.

IISR has redefined its research priorities, with an aim to improve the final sugar recovery of the country as a whole, and of the sub-tropics in particular, keeping in mind the inherent complexities of the crop as well as the intricacies in the sugarcane farming system.

As the new year 2014 dawns, the Institute envisages to march ahead with renewed vigour, to make sub-tropical India an indispensable player in the national sugar scenario, with respect to cane productivity and sugar recovery, through its farmer-centric innovations.

- प्रजातियों के चीनी परता क्षमता के भरपूर दोहन के लिए प्रजातियों के चुनाव में संतुलन, प्रजाति बदलाव रणनीति का क्रियान्वयन एवं गन्ना कटाई समय सारिणी का मूल रूप में पालन करने के साथ वैज्ञानिक गन्ना प्रबंधन तकनीक का खेतों पर प्रग्रहण आवश्यक।
- सकल गन्ना क्षेत्रफल के 40–50% हिस्सा में शीघ्र पकने वाली प्रजातियों की खेती तथा शरदकालीन गन्ना क्षेत्रफल बढ़ाने की जरूरत।
- अस्वीकृत/विमुक्त प्रजातियों का बदलाव, तनाव-सहनशील प्रजातियाँ जैसे को. 0238, को. 0239, कोलख 94184, कोलख 9709 की खेती के लिए प्रोत्साहन।
- स्वस्थ बीज गन्ना उत्पादन कार्यक्रम का मिल प्रक्षेत्र तथा किसानों के खेतों पर क्रियान्वयन।
- ताजा एवं साफ गन्ना मिल में सप्लाय करने के लिए कृषक प्रोत्साहन कार्यक्रम का संचालन।

SECTORAL NEWS: SUGARCANE AND SUGAR INDUSTRY

Group Meeting of AICRP on Sugarcane

The Group Meeting of AICRP on Sugarcane was organized by the Regional Agricultural Research Station (RARS), Anakapalle at the campus of Andhra University, Visakhapatnam from October 25-26, 2013. Dr. N. Gopalakrishnan, ADG (CC), ICAR, New Delhi chaired the opening session and Dr. A. Padma Raju, Vice Chancellor, ANGRAU, Hyderabad was the Chief Guest. Dr. O.K. Sinha, Project Coordinator (Sugarcane) presented the Annual Progress Report of AICRP on Sugarcane for the year 2012-13. Dr. S. Solomon, Director, IISR, Lucknow emphasized the role of AICRP in developing varieties for different zones of the country, agro technology, crop protection techniques, and sharing benefits of technology identified through AICRP for different agro-climatic zones.

Dr. N. V. Nair, Director, SBI, Coimbatore remarked that eight varieties identified in 2012 were recommended for all

मुख्य उपलब्धियाँ

- नत्रजन, फॉस्फोरस व पोटेशियम की संस्तुत मात्रा के साथ सल्फर, जिंक, आयरन एवं मैंगनीज के डालने से गन्ने की उत्पादकता बढ़ाई जा सकती है।
- गन्ने के गेरूआ रोग के प्रबन्धन के लिए फफूंद नाशक प्रोपीनेब (0.25 प्रतिशत) या क्लोरोथैलोनील (0.25 प्रतिशत) का छिड़काव गेरूआ दाने पत्ती पर दिखाई देने पर तथा दो बार 15 दिन के अन्तराल पर करना चाहिये।
- नाशी कीट दीमक एवं सफेद ग्रब के जैव कारक, *मेटार्राइजियम एनआइसोप्ली* के बहुगुणन के लिए एक साधारण व लागत-प्रभावी तकनीक का विकास किया गया है।

the five zones of the country through Crop Improvement programme of AICRP. He stressed on the need of management of diseases like yellow leaf disease, development of varieties suited for mechanized harvesting, improving sugar recovery and their productivity. Dr. A. Padma Raju, Vice Chancellor, ANGRAU, Hyderabad, in his inaugural address, focused on the effect of climate change on crops and urged for extensive use of sugarcane germplasm for development of varieties tolerant under drought and waterlogged situations. Dr. N. Gopalakrishnan, ADG (CC), ICAR and Chairman of the session laid emphasis on increasing the sugarcane productivity and sugar production so as to meet the demand of sugar in future. He stressed on developing varieties through conventional breeding with supportive role of biotechnology.

Salient Achievements:

- A total of 72 entries were accepted for zonal varietal trials. Of these, CoLk 13201, CoLk 13202, CoLk 13203 (early) and CoLk 13204 and CoLk 13205 (mid-late) were accepted from IISR Lucknow, for multilocation testing in North-West Zone.
- Application of recommended doses of NPK along with sulphur, zinc, iron and manganese was found effective in increasing cane yield.
- For management of rust disease, Propineb (0.25%) or Chlorothalonil (0.25%) were found effective when sprayed on the appearance of rust pustules on leaves, followed by two sprays at 15-days interval.
- Simple and cost-effective mass multiplication technology has been developed for bioagents like *Metarrhizium anisopliae* against termite and white grub.

Breeder's Meet of Peninsular and East Coast Zones of AICRP on Sugarcane

Breeder's Meet of Peninsular and East Coast Zones of AICRP on Sugarcane was organized on November 26, 2013 at Sugarcane Research Station, Navsari Agricultural University, Navsari. About 20 breeders participated in the

- भविष्य में गन्ने की कटाई मशीन द्वारा की जायेगी जिसके लिये गन्ने की पंक्ति 90 से 100 मीटर के स्थान पर 1.2 या 1.5 मीटर करने की आवश्यकता पड़ेगी। अतः प्रजाति के मूल्यांकन के लिए भी 1.2 मीटर पर पंक्तियाँ रखनी होंगी।
- जलवायु परिवर्तन सहनशील प्रजातियों के विकास हेतु ISH स्टॉक का मूल्यांकन जलप्लावित व सूखा ग्रसित केन्द्रों पर किया जायेगा। प्रत्येक गन्ना क्षेत्रों में कम से कम 6 या 7 प्रजातियों को उत्पादन के लिए संस्तुत करना चाहिये जिससे यदि 1 या 2 प्रजाति किसी कारण नहीं चल पाती है तो दूसरी प्रजातियों उत्पादन में लाई जा सके।

meeting. Dr. O.K. Sinha, Project Coordinator introduced the agenda of the meeting and informed about the new initiatives on research being undertaken. Dr. N. V. Nair, Director, SBI, Coimbatore informed that fluff is supplied to 44 research centres for selection of elite clones. He remarked that sugarcane harvesting would be mechanized in future and for that space between rows of sugarcane would be increased from 90 cm to 1.2 m or 1.5 m. Therefore, under varietal evaluation trials, row spacing has been increased from 90 cm to 1.2 m from this year onwards. Moreover, to develop varieties resilient to climate change, ISH stocks will be sent for evaluation to AICRP centres where waterlogged or drought situation prevails.

He advocated that in each zone at least six or seven varieties should be recommended for cultivation so that in case of failure of one or two varieties, other varieties can replace them. Dr. A.R. Pathak, Hon'ble Vice Chancellor, NAU, Navsari, laid emphasis on the selection of parents for hybridization work in sugarcane. In Technical Session, IVT entries were promoted to AVT on the basis of data on cane yield, sucrose content and red rot reaction. The technical programme of Peninsular and East Coast zones was finalized. Besides, changes were made in zonal crosses after in-depth discussion.

CoLk 07201 an early maturing sugarcane variety proposed for North Western Zone of India

CoLk 07201 derived from bi-parental mating of CoLk 8102 x CoS 96260 has been proposed for identification by the group meeting of AICRP(S) during October 25-26, 2013. CoLk 07201 is an early maturing genotype with excellent ratooning ability. This variety is a rare combination of the two desirable attributes, high sugar yield



and red rot resistance. CoLk 07201 is one of the promising varieties recently identified by ISMA (Indian Sugar Mills Association) for trials in several factory zones in North Central and North Western Zones.

Registration of sugarcane varieties with PPV&FRA

Twenty two varieties of sugarcane have been registered with the Protection of Plant Varieties and Farmers' Rights Authority. It includes one variety CoLk 94184 (Birendera) developed by IISR, Lucknow. Now a total of 33 varieties have been registered with PPV&FRA.

New Technology

CoLk 9709- an early maturing and excellent ratooning variety

CoLk 9709, an early maturing sugarcane variety has been released for commercial cultivation in Uttar Pradesh. It possesses moderate resistance to red rot and has given good performance in the trials with the sugar and cane yield of 8.92 t/ha and 72.4 t/ha, respectively.

Salient Features of CoLk 9709:

- Commercial Cane Sugar (CCS) averaged over plant and ratoon crops at 8 locations in the North Western Zone was 8.92 t/ha for CoLk 9709 and 8.26 and 7.97 t/ha for the two checks, CoJ 64 and CoPant 84211, respectively.
- In the ratoon crop, CoLk 9709 recorded sugar yield of 8.75 t/ha against 7.47 and 7.01 t/ha of CoJ 64 and CoPant 84211, respectively.
- With respect to cane yield, CoLk 9709 recorded an overall superiority of nearly 10% over the two checks. While in the plant crop, it had a slight edge (2-3%) over

कोलख 9709 : गन्ने की उन्नत व शीघ्र पकने वाली प्रजाति

- औसत उपज : 75 टन प्रति हेक्टेयर
- पेड़ी फसल : 2-3 पेड़ी (सामान्य फसल प्रबन्धन में)
- सुक्रोज प्रतिशत : 18.04 (300 दिन पर कटाई के समय)
- व्यवसायिक चीनी परता : 9.00 टन प्रति हेक्टेयर
- खेती के लिए : उत्तर प्रदेश संस्तुत राज्य



the checks, in the ratoon crop it performed substantially better than the two checks by over 25%. The corresponding overall average values for cane yield were 72.4 t/ha against 66 t/ha in checks.

- In CCS% at harvest (300 days), CoLk 9709 was found at par with the high sugar check i.e. CoJ 64 and nearly 4% better than CoPant

84211.

- In sucrose % in juice at harvest (300 days), CoLk 9709 recorded a value of 18.04% over plant and ratoon crops across 8 locations in the North Western Zone, as compared with 18.13 and 17.60 for CoJ 64 & CoPant 84211, respectively.
- In terms of pol% cane, CoLk 9709 had an average value of 13.26 as against 13.45 and 12.88 of CoJ 64 and CoPant 84211, respectively, indicating its comparable cane quality with the checks.
- In an Agronomy trial of promising varieties conducted at IISR, Lucknow under AICRP (S), CoLk 9709 was found to be the best performing variety among CoLk 9709, CoLk 05202 and CoPant 02217, under three fertility regimes, both in spring and summer planting.

- In the factory zone trials conducted by ISMA in UP and Bihar, CoLk 9709 recorded 18% & 14.6% more cane and sugar yield, respectively over CoJ 64.

CaneDES-Expert System for Disorder Diagnosis in Sugarcane Crop

Indian Institute of Sugarcane Research, Lucknow has developed a computer based expert system i.e. CaneDES. It is a web-based software to assist stakeholders in diagnosing sugarcane crop disorders which occurs due to various biotic and abiotic stresses. The expert system provides all useful knowledge on sugarcane insect-pests, diseases and nutritional disorders and their diagnosis. The system can be used both in Hindi and English languages using registered User-ID and Password. Components of the Software are;

Sugarcane Crop, Sugarcane Advisory, Disorder Diagnosis, Glossary and Login.

Diagnostic Knowledge and its classification:

Rule-based diagnostic approach has been applied where rules are consisting of textual and visual symptoms of disorders. The system consists of 225 textual symptoms and 237 visuals to diagnose disorders of sugarcane caused by 45 insect-pests, diseases and nutrient deficiency factors.

How to become Member?

Accessibility to the software is user-id and password based, for which the user needs to become a member of the system. Necessary online user registration form for membership is available in the software. For further details about membership, one may contact canedes@gmail.com.

गन्ने में विकार निदान के लिए विशेषज्ञ प्रणाली

गन्ने में विभिन्न जैविक और अजैविक तनाव कारकों के कारण उत्पन्न विकारों को पहचानने में सहायता करता है।

गन्ने में शोध, शिक्षा, विकास, विस्तार और उत्पादन से जुड़े सभी लोगों के लिए यह सॉफ्टवेयर अत्यन्त उपयोगी है। इसका उपयोग गन्ने में विकारों को पहचानने और फसल उत्पादन व सुरक्षा के ज्ञान को बढ़ाने के लिए किया जा सकता है।

सॉफ्टवेयर में 225 लिपिबद्ध और 237 चित्रित लक्षणों का प्रयोग किया गया है जो गन्ने के 45 विभिन्न व्याधि कीटों, रोगों और पोषक तत्वों की कमी के लक्षणों को पहचानने में सहायता करता है।

सॉफ्टवेयर को उपयोग करने के लिए ज़रूरी यूज़र आईडी व पासवर्ड इसका सदस्य बनकर ग्रहण किया जा सकता है। अधिक जानकारी के लिए ई-मेल canedes@gmail.com पर सम्पर्क किया जा सकता है।



Genetic stocks submitted to National Hybridization Garden

Twelve genetic stocks; 5 for high sugar (LG 07503, LG 08478, LG 07595, LG 07528 and LG 07433); 2 for red rot resistance (LG 08865 and LG 08866) and five for top borer tolerance (LG 07650, LG 07675, LG 07680, LG 07690 and LG 07692) were submitted to National Hybridization Garden at SBI, Coimbatore.

Technology Commercialised : IISR Combo Trap

Indian Institute of Sugarcane Research, Lucknow has designed and developed an eco-friendly combo trap (light & pheromone) for the management of sugarcane insect-pests. The institute has issued a license of this combo-trap for its commercial manufacturing & distribution to M/s Fine Traps (India), Yavatmal, Maharashtra for a period of six years in public-private partnership mode.

White grub and borers, major insect-pests of sugarcane, affects yield adversely. The installation of this combo trap in the field effectively control white grub & borers pests. The commercialisation of this low-cost IISR combo trap will help sugarcane growers all over the country in management

of insect-pests in environment friendly manner and economising the production of sugarcane.

- पर्यावरण अनुकूल आई.आई.एस.आर. काम्बो-ट्रैप (प्रकाश एवं गन्धपास) के व्यवसायिक उत्पादन एवं वितरण के लिए छह वर्षों का अनुज्ञापत्र M/s Fine Traps (India), Yavatmal, Maharashtra को संस्थान द्वारा दिया गया।
- इस पब्लिक-प्राइवेट पार्टनरशिप पहल से गन्ना किसानों को सफेद लट एवं बेधक कीटों के किफायती प्रबंधन तकनीक वृहत् स्तर पर उपलब्ध हो जायेगा।



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

Bihar Sugarcane Seed Production Scheme

The Bihar Sugarcane Seed Production Scheme was launched with a budget of Rs.185.10 lakh provided by Sugar Industries Department, Government of Bihar. In this scheme, seed crop was raised in 5 ha area at IISR Regional Centre, Motipur and in 20 ha area at Harinagar Sugar Mill farm, Harinagar. Varieties viz., CoLk 94184, Co 0232, Co 0233 and BO 133 were grown at Motipur, while, varieties viz., CoP 9301, CoLk 94184, BO 139, Co 0238, Co 0239, Co 0118, CoS 767, CoS 8432 and Co 0232 were grown at

- भारतीय गन्ना अनुसंधान संस्थान क्षेत्रीय केन्द्र, मोतीपुर (बिहार) के 5.0 हे० क्षेत्रफल में उन्नत गन्ना प्रजातियों की बीज गन्ना फसल बोयी गयी।
- हरिनगर चीनी मिल, हरिनगर (बिहार) के 20 हे० क्षेत्रफल में उन्नत गन्ना प्रजातियों की बीज गन्ना फसल बोयी गयी।

Harinagar. 12500 qt of breeder seed is proposed to be distributed to all sugar factories of Bihar for further multiplication. It is expected to cover the entire sugarcane area with improved varieties in the next five years.



Quality Seed Production

- Diseases free plantlets of Co 05011, CoLk 94184, CoLk 9709, Co1148, CoS767, Co0238 varieties were produced through tissue culture. Tissue culture plantlets of Co 05011 variety were supplied to sugar mills for rapid multiplication of quality seed cane.
- उन्नत गन्ना प्रजातियों जैसे को. 05011, कोलख 94184, कोलख 9709, को. 1148, कोशा 767, को. 0238 का ऊतक सम्बर्धन तकनीक से रोग मुक्त पौध तैयार किया गया तथा को. 05011 का रोग मुक्त पौध चीनी मिल को शीघ्र सम्बर्धन के लिये वितरित किया गया।
- संस्तुत गन्ना प्रजातियों का 6500 क्विन्टल बीज वितरित किया गया।
- 6500 q of quality seed cane was produced and distributed to sugar mills and progressive farmers.

- Sugarbeet- 52 kg of sugarbeet seed of varieties/germplasm/breeding lines was produced and seed of indigenous varieties was distributed.

IISR- Sugar mill joint ToT effort : A success story

It was a pleasant surprise for cane officers of sugar mills to see sugarcane of 10-12 feet height and 1-2 kg weight in the farmer's field in the month of July, when the cane was still in the grand growth phase. Sixteen cane officers of different sugar mills visited fields of Shri Shailendra Verma, Tikra village (Biswan) and other progressive farmers in the mill zone area. The visit of cane officers to Biswan sugar mill was organised for learning the techniques and methods of Technology Transfer in sugarcane through "Seeing is believing".



IISR and Biswan sugar mill are jointly implementing Transfer of Technology (ToT) project under which sugarcane techniques have been demonstrated at farmers' fields in mill zone area. As a result, Shailendra Verma a farmer in the mill area produced record 2519 quintals cane in one ha area, which is about four times the state average, and stood first in cane production competition in the state (2013). Farmers in the area are engaged in healthy competition for high cane yield with the help of techniques as demonstrated and explained by scientists of IISR and mill officials. IISR and Biswan sugar mill now jointly plan a

- उत्तर प्रदेश में 2519 कुन्तल प्रति हेक्टेयर गन्ने का रिकार्ड उत्पादन करने वाले श्री शैलेन्द्र वर्मा का गन्ना फसल देखकर चीनी मिलों के अधिकारी गद्गद हो गये।
- संस्थान एवं बिसवाँ चीनी मिल के संयुक्त प्रयास से चीनी मिल क्षेत्र में गन्ना तकनीकों पर तकनीकी हस्तांतरण कार्यक्रम चलाया जा रहा है।
- आने वाले समय में 200 टन/हे० या इससे अधिक उपज लेने वाले किसानों का क्लब बनाया जायेगा।

club of farmers producing 150-200 t/ha or more in mill zone and efforts will be to add as many farmers as possible to this club.

District Cane Officers' role is Important to Strengthen Sugarcane & Sugar Sector in UP

There is a wide gap in cane yield between tropical (80-90 t/ha) and subtropical (55-60 t/ha) regions in the country. Uttar Pradesh is lagging behind in yield with 60 t/ha as compared to the national average of 70 t/ha. The sugar recovery in UP is 9.25% which is 1% lower than the national average (10.25%). By the year 2030, the country needs to produce about 33 m tonne sugar out of 52 m tonne sweetener from 550 m tonne sugarcane with 11% sugar recovery, to fulfil the sweetener and energy requirement of the country. Since 50% of the cane area is in UP, the State has to play a greater role in achieving this target of

- वर्ष 2030 तक गन्ना एवं चीनी उत्पादन के लक्ष्य को प्राप्त करने में उत्तर प्रदेश को महत्वपूर्ण भूमिका निभानी होगी।
- वर्तमान में उत्तर प्रदेश में औसत गन्ना उपज 60 टन/हे० है जो राष्ट्रीय औसत (70 टन/हे०) तथा दक्षिण भारत के राज्यों के औसत उपज (80-90 टन/हे०) से बहुत कम है तथा यहाँ चीनी परता भी 9.25 प्रतिशत है जो काफी कम है।
- राज्य में गन्ना तथा चीनी उत्पादन को बेहतर करने में जिला गन्ना अधिकारियों की जिम्मेदारी एवं योगदान बहुत अहम है।

sugarcane and sugar production by the year 2030. This needs revamping of entire sugarcane production and sugar processing systems in UP. In this aspect, each district is a nodal point of cane development and District Cane Officers (DCOs) are responsible for realization of bigger target in their respective districts. To empower the DCOs of UP Government in latest sugarcane production technology, a three day training on Sugarcane Production Technology from September 03-05, 2013 was organised at IISR, Lucknow. Dr. S. Solomon, Director, IISR appealed to



the participating DCOs to accept the challenge of improving sugarcane and sugar productivity in UP for prosperity of agricultural economy in the state.

INTERNATIONAL COLLABORATION

Innovative Research attracted many countries for joint collaboration

Innovative research being carried out at the Institute during last few decades has been attracting many countries of the world for collaborative work on several aspects of sugarcane research. National and International programmes are being implemented in joint collaboration with different agencies of India and other countries of the world. Several cane growing countries like Sri Lanka, Bangladesh, Vietnam, China, Brazil, Indonesia, Ethiopia, Iraq and others are interested to take technical help from IISR for strengthening sugarcane & sugar industry in their respective countries.

Theme lecture delivered

Dr. S. Solomon, Director, IISR visited TTC Group of Sugar

Company at TayNinh, Vietnam and delivered a theme lecture in the First Workshop on "Improving productivity and quality of sugarcane in Vietnam" held from July 19-20, 2013.

Indo-Sri Lankan Cooperation

Government of Sri Lanka invited Dr. S. Solomon, Director, IISR for visit and on-site review of sugar industry in Sri Lanka. Dr. Solomon visited Sugarcane Research Institute, UdaWalawe, Sri Lanka from September 09-11, 2013. During his visit, Dr. Solomon reviewed the on-going work of Sugarcane Research Institute and also visited the sugar mill at Pelwatte, Sri Lanka. Discussions with Hon'ble Minister, Mr. Lakshman Senewiratne, Ministry of Sugar Industry Development, Government of Sri Lanka were held to work out collaborative programme in water management to improve sugarcane productivity.



INSTITUTE HIGHLIGHTS

National Conference on “Women in Sugarcane Agriculture and Industry”

A three day National Conference on “Women in Sugarcane Agriculture and Industry” was held at Indian Institute of Sugarcane Research, Lucknow during August 29-31, 2013. Dr. Roop Rekha Verma, Former Vice Chancellor, University of Lucknow, Lucknow was the Chief Guest.

More than 300 delegates including researchers, industrialists, administrators, academicians, sugarcane farmers and labourers attended the Conference and deliberated on the role of women in sugarcane agriculture, research and industry under various capacities. The issues and concerns of women workers in these areas and the possible solutions were thoroughly discussed.



Microbial Consortia Production (IKSHUBAK) Unit at IISR inaugurated

Dr Swapan K Datta, DDG (Crop Science), ICAR, inaugurated the Microbial Consortia (IKSHUBAK) Production Unit at IISR, Lucknow during his visit to the Institute on December 28, 2013. IISR is producing microbial consortia of *Gluconacetobacter diazotrophicus*, *Azotobacter chroococcum*, *Pseudomonas spp* and others for supply of nitrogen and phosphorus in agricultural soils. Integration of biofertilizers with chemical fertilizers reduces the inorganic fertilizer requirement by 25-30%, thus aiding in judicious use of resources and reduction in cost. The decline in soil fertility is also checked. Dr Datta, in his address, emphasized the need for mass production of microbial consortia as well as research on antagonistic/synergistic/other effects of microbes on crop growth, as well as on the native microbes in different regions. Dr S. Solomon Director of the Institute told that, more than 120 tonnes solid based Microbial Consortia has been produced at the Institute during last year and has been distributed in various districts of Uttar Pradesh and Uttarakhand, in collaboration with State Sugarcane and Agriculture Departments. Dr S K Shukla, Principal Scientist and Incharge, Soil-Water-Plant Analysis and Microbiology Laboratory at the institute told that in future, liquid based microbial consortia will be produced to increase shelf life of microbes and for further reduction in cost.

During his visit to the Institute farm and research laboratories, Dr Datta emphasized on tropicalized

sugarbeet production for enhancement of sugar recovery, reduction in cost of production and extension of crushing



economic condition of farmers may be strengthened by integrating animal husbandry with crop cultivation in a larger way.

In *Kisan-Vigyan Sangam* and *Agri-Fest*, programmes like

पिछले 61 वर्षों में गन्ना उत्पादन के विभिन्न विषयों पर उन्नत एवं उत्कृष्ट शोध कार्य करते हुए भारतीय गन्ना अनुसंधान संस्थान, लखनऊ ने गन्ना शोध व विकास के क्षेत्र में महत्वपूर्ण योगदान दिया है। परिणामस्वरूप यह संस्थान आज **गन्ना शोध का उत्कृष्ट केन्द्र** बनकर उभरा है। इस मुकाम को प्राप्त करने में संस्थान के वैज्ञानिकों व कर्मचारियों का सतत प्रयास एवं अथक परिश्रम प्रशंसनीय तथा बधाई योग्य है।

.....माननीय श्री तारिक अनवर जी,
केन्द्रीय कृषि एवं खाद्य प्रसंस्करण उद्योग राज्य मंत्री, भारत सरकार

discussion, demonstration, exhibition, brain storming, farmers' visit etc. were organized. Manufacturers of irrigation equipments, silo structure for grain storage in fields, processing equipments, rural banks, NABARD, manufacturers of organic fertilizers etc. displayed their products and services. From all over UP, about 500-1000 development officials/scientists and 2000 farmers



participated in the event. In the *Agri-Fest*, Agri-manufacturing companies from Japan, Taiwan, Libya, Belgium and India participated and showcased their products.

Researchers-Sugar Industry-Manufactures Meet

To commemorate ICAR-Industry day, a one-day researchers-sugar industry-manufactures meet was organized at IISR Lucknow on October 30, 2013 to address the issues related to mechanization of sugarcane harvesting. Simbhaoli Sugars and Mawana Sugars from Sugar Industry, John Deere, TAFE Chennai, Mahindra Group and Shrijee Group of Companies from manufacturers and research organizations viz., IISR, Lucknow, VSI, Pune, NSI, Kanpur and UPCSR, Shahjahanpur participated in the meet. The sugar mill associations were represented by Dr. G.S.C. Rao, President STAI, Mr. Vinay Kumar, Ex. MD, NFCSF and Dr B.K. Yadav, MD, UPCSF. The meet emphasized the need for

- गन्ना व अन्य फसलों की खेती के साथ पशु-पालन करने पर महत्व तथा सरकार द्वारा पशु-पालन में चलाये जा रहे विभिन्न योजनाओं पर प्रकाश डाला गया।
- कृषि प्रदर्शनी, किसान मेला, प्रश्नोत्तरी कार्यक्रम, कृषि के ज्वलंत विषयों पर चिंतन, कृषक भ्रमण एवं विचार-विमर्श इत्यादि का आयोजन किया गया।
- प्रदेश के विभिन्न हिस्सों से कृषि विभाग, कृषि शोध संस्थाओं, गन्ना विकास विभाग, कृषि निवेश निर्माताओं तथा चीनी मिलों के लगभग 500-1000 अधिकारी/वैज्ञानिक तथा 2000 किसान इस संगम में भाग लिये।

joint collaborative efforts of researchers, industry and manufactures for providing a solution to the problem of mechanization in sugarcane harvesting.

IISR Regional Centre, Motipur (Bihar) celebrated Silver jubilee

The Silver Jubilee of Indian Institute of Sugarcane Research Regional Centre, Motipur (Bihar) was celebrated on November 29-30, 2013. A National Seminar on "*IISR Initiatives for the Development of Sugarcane and Sugar Industry in Indian Subtropics*" and a farmers' training on "Quality Sugarcane Seed Production" was also organised during this occasion. The National Seminar and farmers' training were inaugurated by Dr. S. Solomon, Director, IISR, Lucknow. He congratulated everyone on completion of twenty five years of the Regional Centre and commended the



achievements. Future road map to transform this centre into a Mini Institute was highlighted.

Dr. A.D. Pathak, Nodal Officer presented the achievements of the Regional Centre during the last twenty five years. In the National Seminar more than 25 lectures were

- गन्ना कटाई के लिए मशीन विकसित करना आवश्यक।
- गन्ना कटाई मशीन विकसित करने के लिए SDF द्वारा शोध परियोजनाओं को धन उपलब्ध कराना आवश्यक।

presented. The seminar was attended by scientists, sugar mill representatives, sugarcane development personnel and farmers. Training on Quality Seed Production in Sugarcane was conducted in which more than 200 farmers participated.

Important Meetings

भारतीय गन्ना अनुसंधान संस्थान क्षेत्रीय केन्द्र, मोतीपुर (बिहार) की स्थापना वर्ष 1988 में गन्ना प्रजनन संस्थान, कोयम्बटूर के द्वारा गन्ना जनन द्रव्य तथा अग्रिम प्रतिरूप मूल्यांकन के लिए शोध केन्द्र के रूप में की गयी थी। वर्ष 2005 में यह केन्द्र भारतीय गन्ना अनुसंधान संस्थान, लखनऊ को स्थान्तरित किया गया और इसे प्रोन्नत कर क्षेत्रीय केन्द्र बना दिया गया। इस क्षेत्रीय केन्द्र का मुख्य लक्ष्य उत्तर मध्य क्षेत्र में गन्ना उपज बढ़ाना है। केन्द्र की स्थापना के 25 वर्ष पूरा होने पर रजत जयंती समारोह का आयोजन हुआ तथा इस उपलक्ष्य में “भारत के उपोष्ण जलवायु क्षेत्र में गन्ना एवं चीनी उद्योग विकास के लिए भारतीय गन्ना अनुसंधान संस्थान की पहल” विषय पर राष्ट्रीय संगोष्ठी एवं कृषक प्रशिक्षण का आयोजन किया गया।



Institute Research Council (IRC) Meeting	September 24, 2013
Agriculture Education Day	October 26, 2013
Institute Management Committee Meeting	November 08, 2013
Institutional Bio-safety Committee (IBSC) Meeting	December 21, 2013
Hindi Fortnight	September 14-29, 2013



TRANSFER OF TECHNOLOGY

Punjab farmers learned IISR technique of jaggery making

A three day training-cum-workshop on “Technique of Jaggery making” for farmers of Punjab from November 19-21, 2013 was organised at IISR. Jaggery is the traditional sweetener since ancient times in India and remains the main source of sweetener for a large mass of rural folk. In the

present era of rapid and fast modernisation, many developed states like Punjab lost its presence in the traditional and rural cottage industry i.e. jaggery manufacturing. During the last few years, Government and cane growers of Punjab took note of this situation and moved forward to revive this industry in their state. So,

- पंजाब के किसान उत्तर प्रदेश के गुड़ बनाने की पारंपरिक व्यवसाय से अच्छे-खासे प्रभावित हैं तथा अपने राज्य में संस्थान द्वारा विकसित बर्फ़ीनुमा गुड़ बनाने के तकनीक अपनाकर गुड़ उत्पादन वृहत स्तर पर करना चाहते हैं।
- भविष्य में भारतीय गन्ना अनुसंधान संस्थान पंजाब के किसानों को गुड़ उत्पादन के क्षेत्र में आगे ले जाने में भरपूर सहायता करेगा।

ATMA, Hoshiarpur (Punjab) sponsored this training-cum-workshop at IISR in which 17 cane growers of Self Help Group from Hoshiarpur district participated. Knowledge in advanced technique of jaggery making and packaging was imparted through theoretical and practical sessions. Participating farmers were impressed with the technique of cube shape jaggery and its packaging in small and air tight poly packets developed at IISR and they expressed the desire to adopt this technique to manufacture jaggery at large scale.



Sugarcane cultivation with advanced techniques is the need of hour

To achieve the target of 550 million tonnes sugarcane and 32 million tonnes sugar production by the year 2030, the country has to produce sugarcane @ 100 t/ ha, said Dr. S. Solomon, Director, IISR, Lucknow in an interactive session with project personnel of an NGO, Peoples' Action for National Integration (PANI), Ambedkarnager (U.P.) on November 05, 2013. The average cane productivity in India is about 70 t/ ha which is 4-5 t/ha less than that of Brazil. Average yield in South India is 80-85 t/ha in contrast to North India's average yield of 60-65 t/ha. The present level of yield especially in Uttar Pradesh (60 t/ha) need to be enhanced in the next few years by applying advance techniques of sugarcane cultivation in the farmers' fields. Sugarcane growers, community leaders and cane

development staff need to be educated & trained in latest techniques of sugarcane, where training can play much bigger role.



Entrepreneurship Developed

Entrepreneurship for sugarcane seed production and intercropping with sugarcane was developed in Sitapur district of Uttar Pradesh. As a result the healthy seed cane material of improved varieties viz., CoLk 94184 (developed by IISR), Co 0238, Co 0239, Co 0232 are being produced by the farmers with an income to the tune of Rs 150000 to Rs

बिसवां चीनी मिल क्षेत्र में गन्ना किसानों का उद्यमिता विकास कार्यक्रम संचालित किया गया। परिणामस्वरूप, किसान बीज गन्ना उत्पादन कर प्रति हेक्टेयर डेढ़ से दो लाख रुपये शुद्ध लाभ प्राप्त कर रहे हैं।

200000 per hectare, there-by generating employment for landless labourers. The variety CoLk 94184 has now spread in more than 1000 hectares in Biswan Sugar mill command



area alone. The farmers are cultivating potato, rajma, mustard, beans, and vegetables as intercrops with autumn sugarcane and earning attractive income as a result of entrepreneurship programme implemented in the mill zone areas.



राजभाषा प्रकोष्ठ

- संस्थान की राजभाषा पत्रिका 'इक्षु' को गृह पत्रिका पुरस्कार योजना के अंतर्गत 'क' क्षेत्र के लिए इन्दिरा गांधी पुरस्कार 2012-13 का 'द्वितीय' पुरस्कार दिया गया। यह पुरस्कार 14 सितम्बर 2013 को नई दिल्ली में माननीय राष्ट्रपति महोदय द्वारा विज्ञान भवन, नई दिल्ली में संस्थान के निदेशक डा० सुशील सोलोमन को दिया गया।
- जुलाई माह में नगर राजभाषा कार्यान्वयन समिति, लखनऊ द्वारा संस्थान की राजभाषा पत्रिका 'इक्षु' को तृतीय पुरस्कार दिया गया। यह पुरस्कार हिन्दुस्तान एरोनॉटिक्स लिमिटेड, उपसाधन प्रभाग, लखनऊ में दिया गया।
- दिनांक 14-30 सितम्बर 2013 को हिन्दी पखवाड़े के रूप में मनाया गया। दिनांक 09 दिसम्बर 2013 को एक दिवसीय हिन्दी कार्यशाला का आयोजन किया गया जिसमें संस्थान के 50 कर्मिकों ने भाग लिया।



Two international trainings for scientists from BSRI, Bangladesh and four national trainings for sugar mill development officers (for 21 days), DCOs, farmers, cane growers of self help groups, NGOs etc. were organized during the period.

KVK (कृषि विज्ञान केन्द्र)

Front Line Demonstrations (FLDS) were conducted at farmers' fields in total of 59 ha area on different crops covering cereals, pulses, vegetables and fodders. On Farm Trials conducted (खेत पर प्रयोग) were:

- Intercropping of elephant foot yam and turmeric in mango orchard (हल्दी एवं जिमीकंद की आम के बाग में सहफसली खेती)
- IPM module in tomato (टमाटर में समेकित नाशी कीट प्रबंधन)
- Intercropping of vegetable pea and cauliflower in banana cultivation (सब्जी मटर एवं फूल गोभी की केला के साथ सहफसली खेती)

HUMAN RESOURCE DEVELOPMENT

New Infrastructure: On-line Examination Centre

Online Examination Centre has been established at IISR under the NAIP project entitled "Developing, Commissioning, Operating and Managing an On-line System for NET/ARS-Prelim Examination in ASRB, ICAR" with a seating capacity of 100. The objective of this project is to change over existing on-site examination to on-line examination system for a revised examination pattern.



Award/Fellowship/Recognition

- The Hon'ble President of India, Shri Pranab Mukherjee, on the occasion of Hindi Diwas – 2013, conferred the coveted Indira Gandhi Rajbhasha

Puraskar 2012-13 (Second Prize) for the Government Magazines to "Ikshu", the Rajbhasha magazine from IISR, Lucknow. Dr. S. Solomon, Director, IISR received the Award at a function of Ministry of Home, (Department of Official Languages), Govt. of India, New Delhi held at Vigyan Bhavan, New Delhi on September 14, 2013.

- Dr. Sangeeta Srivastava visited Oklahoma State University, USA as DBT-CREST Fellow from May 08, 2013 to October 30, 2013.
- Dr. Ram Kewal Singh was awarded the DBT-CREST Fellowship 2012-'13 and was deputed to Plant Genome Mapping Laboratory, University of Georgia, USA for one year (November 2013 to October 2014).
- Dr. A. K. Sah received Best Extension Activities Award from Key2 Green Pvt. Ltd. New Delhi in Agri-Fest 2013 organised at IISR Lucknow from October 25-27, 2013.

Staff welfare activities

- Health camps, Dussehra celebrations, opening of fast food joint and a general store at Ikshupuri residential colony were some of the staff welfare activities organised during this period.

Visit of dignitaries

- Dr. Kamal Humayun Kabir, DG, BSRI, Bangladesh visited IISR along with five other members during June 27-July 03, 2013. They visited the laboratories/fields and interacted with the scientists.
- Dr. Swapan K. Datta, DDG (Crop Science) ICAR, visited IISR and interacted with the scientists and staff of the Institute.
- Dr. Sreenivasan, Project Director, NRCPB, New Delhi, visited IISR on August 24, 2013.
- Shri Shivaji Rao Deshmukh, IAS (Retd.), DG, VSI, Pune visited IISR and participated in "National Conference on Women in Sugarcane Agriculture" held during August 29-31, 2013.
- Dr. Islam A. Siddiqui, Chief Agricultural Negotiator with the rank of Ambassador at the office of the U.S.

Trade Representative visited IISR on September 23, 2013. He interacted with the scientists and staff of the Institute

- Sh. Tariq Anwar, Hon'ble Minister of State for Agriculture and Food Processing, Govt. of India visited the Institute on October 6, 2013 He appreciated the research efforts of the Institute.



UPCOMING EVENTS

National Training on Sugarcane Management & Development (July 1-21, 2014)

With the objective to groom and train the cane development personnel of sugar mills in latest technology of sugarcane cultivation and development, IISR will organise a 21 days National training from July 1-21, 2014

Training fee and tariff : Rs.10,000 per participant.

Lodging and Boarding fee : Rs.450 (Non-AC) & Rs.550 (AC) per day per participant (on twin sharing basis) in addition to training fee.

Nomination: The nomination for one or two cane development staff from a sugar mill should reach to the Director, IISR, Lucknow by June 10, 2014 along with requisite training fee (i.e. Rs. 10,000). Since the seats are limited, the officers will be selected on first-come, first-serve basis.

Contact:

Director, or Dr A K Sah, Training Coordinator & Sr Scientist, IISR, Lucknow

Email: iisrlko@sancharnet.in, ajay_kumar29@rediffmail.com

National Seminar on Sugarcane Based Cottage Industry - Jaggery and Other Value Added Products November 1-2, 2014



Organized by:
Indian Institute of Sugarcane Research, Lucknow

Organising Secretary
Dr. S.I. Anwar
Jaggery Unit
E-mail: jagseminar2014@gmail.com



International Conclave on Sugar Crops & SugarFest - 2014

15 - 17 February, 2014

Venue : Indian Institute of Sugarcane Research, Lucknow - 226 002, India

Organized and Sponsored by
Society for Sugar Research and Promotion
For details visit www.iisr.nic.in



Published by : Dr. S. Solomon, Director
Compilation & Editing : Dr. A.K. Sah and Dr. Swapana M.
Indian Institute of Sugarcane Research
Raebareli Road, P.O. Dilkusha, Lucknow-226 002
Website: www.iisr.nic.in, E-mail: iisrlko@sancharnet.in
☎ +91-522-2480726, Fax: +91-522-2480738

