

The cover image shows a large, multi-story brick building with a central entrance, likely the IISR building in Lucknow. The text "IISR NEWSLETTER" is overlaid in large, bold, blue letters with a white outline. Below the title, there is a dark blue banner with white text for volume and date information.

IISR NEWSLETTER

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Water management in sugarcane

Sugarcane is a round year crop and experiences all the seasons. In the formative phase, when the crop is young and tender, it withstands dry and hot summer especially in the Indo-Gangetic plains. For this reason, optimum soil moisture for quick germination and establishment of cane is of utmost importance to have good crop stand and yield. In this region, sugarcane is planted in February-March (spring planting). In recent times, late planting of sugarcane after wheat harvesting has become popular in certain areas.

Water requirement of sugarcane is around 1500 mm/year and it varies depending upon soil, climate and crop conditions. Due to high water requirement, 90 per cent of sugarcane crop is grown with assured irrigation. Farmers growing sugarcane usually adopt surface irrigation and that too most inefficient flooding method. In this condition, irrigation efficiency hardly exceeds 35-45 per cent. Over the years, due to erratic monsoon, excessive drawal of ground water, global warming and gradual drying of perennial Himalayan rivers, water has become a major limiting factor even in the Indo-Gangetic plains. In the present scenario, there is an utmost need to conserve soil moisture and increase irrigation efficiency to reduce the quantity of water required through irrigation.

Scientists at IISR, Lucknow and elsewhere have worked to enhance the irrigation efficiency by modifying the existing irrigation techniques and by introducing advance irrigation methods in sugarcane cropping system. It has been demonstrated that by using simple skip-furrow/alternate furrow method of irrigation in sugarcane 36 per cent of irrigation water could be saved. With the use of advance irrigation method (drip irrigation), the water saving goes up to the tune of 40-60 per cent.

Like in other crops, irrigation at critical growth stages of crop growth also needs to be adopted in sugarcane especially in areas of limited water supply.

The critical stages identified for sugarcane crop are germination (emergence), first order of tillering, second order of tillering and third order of tillering. Incidentally, these four phases occur during the dry hot summer in subtropical India. Water requirement at grand growth phase is usually met up by the monsoon rains. Depending on the availability of water, sugarcane may be irrigated in the following manner. If only one irrigation is available, it is provided at the third order of tillering. In case of availability of two irrigations, it is given at emergence and at the third order of tillering. In the availability of three irrigations, emergence, first and third orders of tillering gets the irrigation. If adequate irrigation is available, sugarcane is irrigated at all the four stages.

Moisture conservation is pivotal in decreasing irrigation requirement of the crop. In sugarcane system, it saves 33-40% water. Sugarcane trash is a waste material available at harvest of the crop. Usually trash is destroyed through fire to clean the field at one go. Due to the pollution hazards, now-a-days burning of trash has been discarded in favour of composting/ *in situ* decomposition. Spreading of trash (10 tonnes/ha) in the open spaces between the cane rows (trash mulch) reduces the evaporative moisture loss from the soil surface and thereby increases the water use efficiency. Trash mulch has other benefits too. It increases soil microbial activities, sequestration of organic carbon in soil as well as release of locked in nutrients through *in situ* degradation.

In a Farmers' Participatory Action Research Project funded by Ministry of Water Resources, Govt. of India, IISR has taken a major initiative to demonstrate these irrigation technologies in the fields of actual farmers. For this 100 demonstrations (1 ha each), covering two Districts of Uttar Pradesh (Barabanki and Sitapur), four Blocks, four Sugar Mills and eight villages will be organised in three years.



INDIAN INSTITUTE OF SUGARCANE RESEARCH, LUCKNOW

e-mail : iisrko@sancharnet.in Website: www.iisr.nic.in Intranet: iisr.ernet.local

Biennial Workshop of AICRP (Sugarcane)

The 27th AICRP(S) Workshop was hosted by the A.N.G. Ranga Agricultural University, Hyderabad and organized at the Andhra University Campus, Visakhapatnam from 17-19 October, 2008. Technical Sessions on Crop Improvement, Crop Production, and Crop Protection were held on 17 October. The annual progress of research work was reviewed and technical programmes for 2009-10 were finalized. The workshop was inaugurated by Prof. B. Satyanaryana, Vice Chancellor, Andhra University. Dr. K.C. Jain, ADG(CC), ICAR, New Delhi Chaired the session. Dr. O.K. Sinha, Project Coordinator (Sugar cane) presented the annual progress report. Dr. R.L. Yadav, Director, IISR, Lucknow and Dr. N. V. Nair, Director, SBI, Coimbatore presented the research achievements of respective institutes.

During the meeting, Dr. K. Lakshminarayana, I.A.S., Cane Commissioner, Govt. of A.P. expressed his concern on the less share of funds in Research & Development of Sugarcane. He urged for substantial increase in funds to hasten agricultural growth through network of Agricultural Universities and ICAR institutes. Prof. B. Satyanaryana, Chief Guest pointed out the dearth of trained manpower in sugar industry. He opined that the Universities can play a significant role in imparting training as per the requirement of the sugar industries. Dr. K.C. Jain, ADG(CC) remarked that cane and sugar production are affected by fluctuations in weather and therefore, farmers should have options to overcome these situations. He opined that cane diversion for ethanol production should be restricted except when cane production is in excess. Appropriate technology is still awaited to meet the drought and flood situations, particularly in Bihar.

A sugar industry-scientists interface meeting was also held under the Chairmanship of Dr. K. Lakshminarayana, I.A.S., Cane Commissioner, Govt. of A.P. Dr. N. V. Nair, Director, SBI, Coimbatore acted as the Co-Chairman. Representatives of various sugar mills and participants of the Workshop took part in the discussion.

The Varietal Identification Committee meeting was held under the Chairmanship of Dr. K.C. Jain, ADG(CC). Six varieties, viz., Co 0118 (Karan-2) and Co 0238 (Karan-4) in early group for North West Zone; Co 0232 (Kamal) in early group and Co 0233 (Kosi) in midlate group for North Central and North East Zones; Co 2001-13 (Sulabh) and Co 2001-15 (Mangal) in midlate group for Peninsular zone were identified.

Dr. K.C. Jain, ADG (CC), ICAR, New Delhi chaired the plenary session. He laid emphasis on developing early maturing cane varieties and stressed the need of sugarcane varieties high in sugar as well as in fibre.

Dr. Om Prakash and Dr. Rajesh Kumar from AICRP(S) unit attended the workshop.

Dr. D.V. Yadav, Dr. R.S. Chauhan, Dr. R.P. Verma, Dr. Todi Singh, Dr. S.K. Shukla, Dr. A.K. Singh from Div. of Crop Production; Dr. Vijay Singh, Dr. Ramji Lal, Mrs. Sunita Lal, Dr. M.R. Singh from Div. of Crop Protection; Dr. Raman Kapur, Dr. D.K. Pandey from Div. of Crop Improvement of IISR, Lucknow and Dr. Devendra Kumar, from IISR Regional Centre, Motipur attended the Workshop.

Sugarbeet seed production

IISR Sugarbeet breeding outpost at IVRI, Mukteswar is active in producing sugarbeet seed of IISR bred sugarbeet varieties and supplying the seed to the end users. This year over 50 kg seed was produced and supplied to different growers/factories for local evaluation/feasibility trials for various end uses like cattle feed, bio-fuel, etc. The feedback from the Animal Breeding Farm, Salon, Rae Bareilly district of Uttar Pradesh and from the NGO based in Bhuj area of Kutch district in Gujarat is quite encouraging. In the Bhuj area sugarbeet is growing quite well in the problem soil (high salinity) and is able to meet the cattle feed demand for green fodder.



Hindi Diwas Samaroh

To promote Hindi in daily use in office various competitions viz., writing of essay, perception and interpretation of a given picture, maximum work done in Hindi, etc. were organised on 14 September, 2008 under the Chairmanship of Dr. D.V. Yadav. The concluding session was held on 30 September, 2008 under the Chairmanship of the Director, IISR, Lucknow. On this occasion, the noted Hasya Kavi Shri Narayan Agnihotri "Sanki" was the Chief Guest.

Meeting of IRC

The IRC meeting of the Institute was held from 21-23 August, 2008. In the meeting 101 on-going research programmes were reviewed and a mid-term correction was made wherever such necessity arose. Chairman, IRC emphasized that the ultimate objective of the meeting is to fine-tune the raw research results into deliverables to the stakeholders and end users. He felt a need to carry out research work on climate change and its implications for sugarcane cultivation in India. He desired that the institute activities need to be reflected in ICAR news/ ICAR reporter.

In this meeting, 13 new project proposals were discussed threadbare for their suitability and finally nine proposals were found suitable.

Visit of CWC monitoring team

A monitoring team from Central Water Commission, Lucknow comprising of Dr. Naresh Kumar, Director and Shri Rakesh Verma, Asstt. Director, M&A Directorate visited FPARP demonstration sites in Sitapur district on 16 October, 2008. On 18 December, 2008 they also visited the demonstration sites in Barabanki district. They interacted with the participating farmers to have a feedback. The team members were highly satisfied with the progress in this Farmers' participatory project.

The KVK, housed at IISR, regularly imparts both on-campus and off-campus trainings to farmers, farm families and rural youth in diverse areas of agriculture, animal husbandry and home science. During this period, 18 trainings were organized on various aspects, like use of bio-fertilizers, production and conservation of green fodders, nursery management in horticultural crops, technique of soil sampling and fertilizer recommendations, organic farming, kitchen gardening, etc. During this period, a total of 500 participants got enrolled in various training programmes. Apart from these, 10 sponsored trainings were also organized (seven under Horticulture mission and three under UPCAR, Lucknow).

In this period, 76 farmers (4 groups) from different states under ATMA scheme visited IISR. These farmers got a first hand feel of the various sugarcane production and protection technologies including different implements developed for sugarcane cultivation and the process of jaggery making.

KVK has also organised 114 Front-Line Demonstrations on different crops and two exhibitions (at CSAUA&T & KVK, Unnao) to show case the activities.

Interactive meeting

An interactive meeting with Mr. Harsharan Das, Cane Commissioner, U.P. and scientists of IISR was held on 29.08.2008. In the meeting, Mr. S.P. Singh, Additional Cane Commissioner, U.P., Mr. R.L. Tamak, Vice-President, Jairampur Chini Mills, Dr. O.K. Sinha, Project Coordinator (Sugarcane) and Heads of Divisions were present. In the meeting, it was felt that like other crops, in sugarcane also, there should be a meeting before the planting of sugarcane in autumn and spring to finalize the recommendations for sugarcane cultivation in Uttar Pradesh. The farmers, factory personnel, cane development and research organizations on sugarcane located in the state should be involved in such meetings. In the meeting, Cane Commissioner expressed his concern on mechanization of sugarcane cultivation and has assured appropriate measures to expedite the mechanization of sugarcane cultivation in Uttar Pradesh.

Trainings

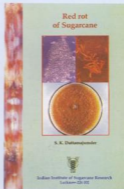
A week-long sponsored training was organised on Crop diversification in sugarcane production system from 16-23 October, 2009. In this training, 20 sugarcane development officers from different sugar mills and State Cane Departments of Uttar Pradesh, Bihar, Haryana, Maharashtra, Karnataka, Gujarat, Madhya Pradesh, Andhra Pradesh, Jharkhand, Orissa and Nagaland participated. In depth training was provided in the area of remunerative technologies of intercropping with sugarcane and mechanization of cane cultivation.

A two-day training was also held on "Sugarcane production technology" for the farmers from Bihar on 25-26 September, 2008. In the training, 28 farmers participated.

The mechanization of sugarcane cultivation is most viable option to overcome multiple problems of labour scarcity, drudgery, increasing cost and delayed (untimely) operations. A Field day on "Mechanization of sugarcane cultivation" was organized on 6 October, 2008 at the Institute premises. About 100 officials from different sugar mills, progressive farmers, scientists from UPCSAR, Shahjahanpur, GBPAU&T, Pantnagar, manufacturers of different IISR designed equipments participated. Dr. Nawab Ali, DD (Engineering), ICAR, New Delhi was the Chief Guest on the occasion. Live demonstrations on use of machines, namely Ridger type sugarcane cutter planter (PTO operated), Raised bed seeder (RBS) cum cane planter and Ratoon management device (RMD) in sugarcane cultivation were also conducted at the IISR farm.

Book on Red rot

Red rot is the key menace of sugarcane in India, and the onus of devising strategies for its containment also squarely rests on us. In spite of the best efforts, red rot is still posing challenges in stabilizing sugarcane and sugar production. In recent years, through the concerted efforts of breeders and pathologists, the disease has been contained to a manageable level and thus, the frequency and magnitude of red rot epidemic has been reduced to a great extent. In fact, entire sugarcane breeding in India is now geared around red rot and no sugarcane variety is released for general cultivation without resistance to the prevalent pathotypes/raaces of red rot. In spite of its immense importance in sugarcane agriculture, hardly any book has been written so far exclusively on this disease except some odd reviews. This book is a modest effort to bridge this longstanding gap. It is written more as a photo essay on red rot covering many facets of the host, disease and the pathogen. It has 172 pages including 39 colour plates.



It is available on cash payment of Rs. 400/- or by the advance payment through Bank draft in favour of the Director, IISR, Lucknow. (for International readers it will cost \$ 60)

Awards/Honours

Dr. R. L. Yadav, Director, IISR, Lucknow has been awarded ISA Gold Medal 2006 by the Indian Society of Agronomy, New Delhi for his outstanding contribution to Agronomy.



Dr. S. Solomon, Principal Scientist (Biochemistry) has received the Sinai University Peace Award -2008 and IAPSIT Global Award 2008 at the IS-2008 organized at Sama Al Arish, Egypt.

Dr. S. Solomon, Principal Scientist (Biochemistry) Co-chaired the International symposium on "Meeting the Challenges of Sugar Crops and Integrated Industries in Developing Countries IS-2008" held from 11-14 September, 2008 at Sama Al Arish and Sinai University, Egypt.

Dr. A. D. Pathak has been nominated to act as DBT representative on the Institute Bio-safety Committee of UPCR, Shahjahanpur for a period of three years.

Externally funded Project

During this period, IISR has received a Contract Research Project on "Evaluation of Sugarbeet Hybrids" from J K Agri Genetics Ltd., Hyderabad with a budget of Rs. 5.0 lakh.

Career advancement

In this period, following persons got promotion in their respective service career :

Promoted to T-1-3		
Shri Gopal Singh	w.e.f.	13.06.2006
Promoted to T-2		
Shri Pyare Lal	w.e.f.	20.10.2006
Shri Omkar Nath	w.e.f.	20.10.2006
Promoted to T-3		
Shri R. K. Singh	w.e.f.	27.05.2006
Shri Jagjeet Singh	w.e.f.	14.06.2006
Shri Saheb Din	w.e.f.	10.07.2006
Shri Som Nath Singh	w.e.f.	17.03.2007

Superannuation

Dr. Sukhraj Prasad, Principal Scientist (Agronomy) retired on 31.07.2008.

Dr. S. K. Gangwar, Principal Scientist (Entomology), retired on 31.07.2008.

Shri Ram Khelawan, S.S. Gd. II retired on 31.07.2008.

Smt. Bimla Devi, S.S. Gd. II retired on 31.08.2008.

Dr. S. N. Singh, Principal Scientist (Agronomy) retired on 31.10.2008

Dr. Arjun Prasad, Principal Scientist (Agronomy) retired on 31.12.2008.

Dr. Pranay Kumar, Principal Scientist (Plant Breeding) retired on 31.12.2008.

Human resource development

Shri Dilip Kumar, Scientist (Sr. Scale) was granted study leave to pursue the Ph.D. programme in Processing and food engineering at the Punjab Agricultural University, Ludhiana for a period of three years w.e.f. 24.12.2008.

Participation in seminars/symposia/meetings

Dr. A.K. Shrivastava and Dr. S. Solomon participated at the International Symposium on "Meeting the Challenges of Sugar Crops and Integrated Industries in Developing countries IS-2008" at Sama Al Arish and Sinai University, Egypt from 11-14 September, 2008. They also participated in the National symposium "Sugar Asia-2008" held in New Delhi from 25-27 July, 2008.

Dr. D. V. Yadav attended RAC meeting of UPCR, Shahjahanpur from 18-19 September, 2008 as nominee of the Director, IISR, Lucknow.

Dr. R. K. Singh and Dr. V. K. Singh participated in the Zonal Workshop of KVK-zone IV from 8-10 November, 2008 at CSAU&T, Kanpur.

Dr. R.K. Singh attended Global Potato Conference from 9-12 December, 2008 held at NASC complex, New Delhi.

Dr. Jaswant Singh attended the 27th Biennial Workshop of the AICRP on PHT held at UAS, Bangalore from 17-20 December, 2008.

Dr. R. K. Singh attended National Conference on KVKs from 27-29 December held at Patnagar.

Necrology

Shri Mangal Prasad Verma, T-3, IISR, Lucknow left for his heavenly abode on 2 November, 2008.