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## A web-based Farmer's Field Information System developed

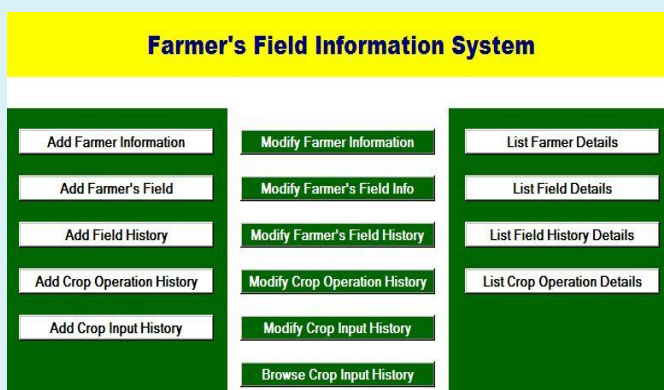
Sugarcane production is a complex process involving many operations viz. land preparation, variety selection, seed cutting & treatment, planting, irrigation, nutrient application, inter-cultural operations, crop protection measures, harvesting, etc. All these operations are to be executed at different crop stages for high cane yield and sugar recovery. While deciding sugarcane harvesting schedule, date of planting, date of ratoon initiation and variety planted are taken into consideration, ultimately, this harvesting schedule influence sugar recovery. To achieve the objective of high cane yield and sugar recovery, efficient scheduling of all operations at various stages of sugarcane cultivation is a must. Further, sugarcane is a major cash crop of both tropical and subtropical India comprising 14 major states with different agro climatic conditions. This leads to cultivation of sugarcane under varied nature of abiotic and biotic stress conditions of growing regions, input resources available/used and farm operations schedule. Moreover, about 50 million farmers are growing sugarcane all over the country and majority of them supply produced cane to more than 500 sugar mills. Management of field data and harvesting schedule of cane grown by the farmers is a gigantic task, which cannot be accomplished with traditional system of data recording.

All above concerns leads to a conclusion that there should be a system for an efficient scheduling of farm operations depending on agro climatic conditions, input resources used, stress conditions, planting & harvesting time, level of mechanization, labour, cost, etc. at farmers' field level. For efficient scheduling of farm operations, the availability of historical data on farm operations/inputs used is a must. In this connection, institute has taken an initiative to adopt Information & Communication Technology (ICT) based database management techniques in sugarcane field management. To attain this objective a software prototype "Farmer's Field Information System" has been developed at the institute.

The software uses five categories of data viz. farmer information, farmer's field, history of field crops, operation performed in crop undertaken and input used during various farm operation schedules. Database of the software stores

these information in various tables and incorporates relationship among them using Entity-Relationship modeling technique. Software provides a number of data management modules to add and update data with user friendly interfaces. Further, to view information about sugarcane farmers, history of field crops, crop operations schedule and input used at various levels, software generate reports in various tabular formats. Viewing of data may be achieved using search engine based approach, which facilitate the user to search on a variety of parameters stored in the database viz. Farmer Name, State/District/Village, Field Area, Crop Undertaken, Variety, Date of Planting, Operations Performed, Duration of Operation, Input Used, Date of Harvesting, Input Rate, Production, Productivity, etc.

The software requires wider availability to ensure its accessibility to users; hence, web-oriented approach has been used in application design, which works in Client-Server



architecture. In web-oriented nature of application, data and programme modules resides on central web and database server and gives accessibility to user with web browser on Internet communication channel. It also provides user-friendly graphical user interface and online remote accessibility to its user. Software is under verification stage of various modules developed and further need addition of scheduling modules. In times to come, implementation of this ICT based data management technique in sugarcane farm/crop scheduling will lead to increasing trend in sugarcane yield and sugar recovery, thus win-win situation for both farmers and mill owners.



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### Zonal Breeders Meet of AICRP on Sugarcane

A Zonal Breeders Meet was held at the Assam Agricultural University (AAU), Jorhat on February 21-22, 2010 to finalize the technical programme of Crop Improvement discipline of North, North Central and North East Zones. The breeders from all the three zones participated in the meeting chaired by Dr. N. Vijayan Nair, Director, SBI, Coimbatore. Dr. N.N. Sarmah, Director of Research, AAU, Jorhat also attended the meeting. From IISR, Lucknow, Dr. O.K. Sinha, Project Coordinator (Sugarcane) and Dr. Rajesh Kumar, Pr. Scientist participated in the meeting. The participants also visited Sugarcane Research Station, Buralikson to monitor the field experiments.

### Group Meeting on 'Advances in Plant Disease Management'

The Group Meeting was held at IISR, Lucknow on 12<sup>th</sup> March, 2010 under the Chairmanship of Dr. B.L. Jalali, Ex-Director of Research, HAU, Hisar. Dr. A.N. Mukhopadhyay, Ex-Vice Chancellor, AAU, Jorhat was the Chief Guest. Dr. R.L. Yadav, Director, IISR welcomed the participants. Dr. O.K. Sinha, PC (Sugarcane) highlighted the significance of the Group Meeting and expressed his view on the newer disease management practices being adopted in other crops. Dr. A.N. Mukhopadhyay, presented a holistic view of bio-control of plant diseases through *Trichoderma* spp. He elaborated the mechanism with which pathogens are suppressed by *Trichoderma*. Success has been achieved in controlling diseases of tobacco, chickpea, sugarbeet, groundnut and other crops. Dr. B.L. Jalali, Chairman lauded the achievements in bio-control and stressed on the need to do more in this area of disease management.

### RAC meeting held

The XVI meeting of RAC was held on March 26, 2010 under the chairmanship of Dr. H.K. Jain, Ex-Director, IARI, New Delhi. Members of RAC, Dr. D.G. Hapse, Ex-Director, VSI, Pune, Dr. N. Balasundaram, Ex-Director, SBI, Coimbatore, Dr. D.N. Yadav, Ex-Head (Entomology), Anand Agril. University, Anand, Dr. T.C. Thakur, National Professor, GBPUA&T, Pantnagar, Dr. R.L. Yadav, Director, IISR and Heads of Divisions and Incharge, sections participated in the meeting.

Dr. R.L. Yadav, Director of the Institute welcomed the Chairman and all the members of RAC and other participants to the meeting. Dr. Yadav apprised the members of the main issues confronting the sugarcane cultivation in the country. He presented the nature & extent of present sugarcane crisis and the boom & bust cycle of sugar in the country. Dr. Yadav also presented a brief overview of IISR approach and efforts



in containing the sugar cycle through the management of diseases & pests, improving seed cane availability, mechanization of cane cultivation and transfer of technology. The Chairman expressed satisfaction on the research work going on at IISR and was of the opinion that research on sugarcane and the effective communications of its findings to the farmers will continue to be the engine of growth in sugarcane production in the country.

### QRT meeting held

QRT for the period 2005-09 was constituted by the Council with Dr. N.N. Singh, Vice Chancellor, Birs Agricultural University, Kanke, Ranchi as its Chairman, Dr. O.P. Dubey, Ex-ADG (Plant Protection), ICAR, New Delhi, Dr. G.C. Srivastava, Ex- Head, Division of Plant Physiology, IARI, New Delhi, Prof. Narayan Rishi, Director, School of Sciences, Jaipur National University, Jaipur, Dr. M.N. Premchandran, Head, Division of Crop Improvement, SBI, Coimbatore and Prof. P. Kumar, Former Prof. (Ag. Econ.) IARI, New Delhi as its Members. Dr. A.K. Shrivastava, Principal Scientist at this Institute was its Member Secretary. After submitting the Background Information for QRT, and its approval by the Council, the first meeting of the QRT was held at the Institute on June 11, 2010. In the meeting, salient achievements for the period 2005-09 were presented by Heads of Divisions and I/C Sections. The Hon'ble Chairman and Members of QRT gave their valuable inputs.

### EST-SSR markers in Sugarcane

Microsatellites or Simple Sequence Repeats (SSRs) are one of the most suitable markers for genome analysis as they have great potential to aid breeders to develop new improved sugarcane varieties. The development of SSR derived from Expressed Sequence Tags (EST) opens new opportunities for genetic investigation at a functional level. Recently 235 EST-SSR markers have been designed and developed from the 4000 ESTs, which are unique in comparison of ESTs developed world-wide. Validation result showed that out of these 235 EST-SSR markers, 225 were amplified in the sugarcane varieties. Thus, these EST-SSRs may be potential marker resources for further investigation in MAS in sugarcane.

### Sugarcane clones accepted for evaluation

Three sugarcane clones i.e. LG 01030, LG 05031 and LG 03702 of early maturity group and three clones of mid late group i.e. LG 04043, LG 05823 and LG 02919 were proposed and accepted for testing in Uttar Pradesh Zonal Varietal Trial (ZVT) during 2010-2011. The 50 Kg seed of each of these 6 clones were supplied to 8 sugar factories in Uttar Pradesh.

### IISR developed a new insect trap

A new insect trap with a combination of light and pheromone has been developed for monitoring and mass trapping of the predominant species of white grub (*Holotrichia consanguinea*) in sugarcane agro-ecosystem. Trapping efficiency of the newly developed insect trap for white grub beetles was tested in village Jakhwala under Deoband Sugar Mill (Saharanpur), Uttar Pradesh. Insect trap with a combination of light and pheromone was found more effective in trapping *H. consanguinea* along with other species of white grubs than the traps with only pheromone or light. Out of the total beetle catch, 44.57% was trapped in the trap having combination of light and pheromone followed by that of light trap (28.06%) and pheromone trap (24.56%). The newly developed trap holds promise in mass trapping of the beetles, if promoted on community basis.



### IISR identified as Nodal Center

ASRB, New Delhi identified IISR, Lucknow as Nodal Center for conducting online examination of ARS/NET. In this connection the institute constituted a committee with Dr. Jaswant Singh, Dr. S. K. Duttamajumder, Dr. Ashok Shrivastava, Dr. P. K. Bajpai, and S. S. Hasan as members. The feasibility of conducting online examination at IISR was discussed in detail by the committee. The committee came out with a document on infrastructure and budgetary



requirements for smooth and hassle less conduction of on line examination and the same was sent to ASRB for its perusal. The ASRB is planning to start online examination from the year 2011 and onwards.

### Farmers' Awareness on Climate Change

Farmers' awareness programme on climate change was organised at the Institute on 9<sup>th</sup> Jan., 2010. A total of 40 sugarcane farmers from eastern Uttar Pradesh participated in the programme. Farmers were given brief background information on climate change in an interactive mode. The farmers' feedback on this aspect was also ascertained with the help of questionnaire. It was amusing to note that farmers were quite aware about climate change and its possible impact on agriculture in general and sugarcane in particular.

### National Seminar on Mechanization of Sugarcane Cultivation

National Seminar on *Mechanization of Sugarcane Cultivation* was organized during 19-20 March, 2010 at the institute. In the seminar about 150 Scientists, Engineers, Manufacturers, Senior Officers of Sugar Mills and Cane development

departments from Tamil Nadu, Karnataka, Madhya Pradesh, Maharashtra, Uttar Pradesh, Bihar and Haryana participated. In inaugural speech, Mr. Sudhir M. Bobde, Cane Commissioner, Govt. of UP, Lucknow emphasized on the need of 4 Ps (public-private-people partnership) for large scale adoption of technologies developed by the research institutes. He also urged the participating delegates to come out with the strategy to involve/engage private entrepreneurs in technology transfer in general and transfer of sugarcane machines to end users in particular.

### Training Organised

Three National level trainings on *Mechanization in Sugarcane*, *Integrated Nutrient Management Including Bio-Fertilizers in Sugarcane* and *Intercropping with Sugarcane* were organised from 10-12, February, 2010, 15-17, February, 2010 and 24-26, February, 2010, respectively, at the Institute. In these trainings a total of 44 sugarcane development personnel from Uttar Pradesh and other states participated.

Eight days Model training course sponsored by Directorate of Extension, Ministry of Agriculture, Govt. of India, New Delhi on *Sugarcane and its Ratoon Management* was organised from 4-11 March, 2010. In this training 17 development/extension personnel from different states of India participated.

A five days farmers' training sponsored by ATMA, Samastipur, Bihar was organised at the Institute from 18-22 May, 2010. In this training, latest know-how in sugarcane cultivation was imparted to 20 participating farmers of Bihar with the help of class room and practical learning experiences.



### Kisan Mela

A two days *Kisan Mela* was organized from 19-20 March, 2010 at the Institute campus. About 1000 farmers from different districts of Uttar Pradesh and other states visited the *Mela*. In the *Kisan Mela* different agricultural research organizations, agricultural implement manufacturers, Krishi Vigyan Kendras (KVKs), state development departments, agricultural input supply agencies and nationalized banks

showcased their technologies/ products/services through exhibition stalls for benefit of the visiting farmers. The live demonstrations of sugarcane cultivation machines were the main attraction of the event. The farmers were also taken round of demonstration plots on different crops maintained at IISR experimental farm. Farmers-Scientists interface was organized to suggest practical and workable solutions of different problems/constraints faced by farmers in cultivation of sugarcane and other crops.

### Exhibition on sugarcane technology

An exhibition of sugarcane production technology was organized at CISH Residential Complex, Rae Bareilly Road, Lucknow on 24-25 February, 2010. The major objective of exhibition was to showcase the remunerative sugarcane production technologies through meaningful display of exhibits and sugarcane machines. About 1000 farmers and development personnel visited the exhibition site and got benefited by interacting with the scientists.

An Exhibition of sugarcane production technology was organised at the occasion of National Seminar on *Mechanization of sugarcane cultivation* held at IISR from 19-20 March, 2010. Elaborate display of sugarcane technologies with the help of posters, live materials, specimen etc., were done for the benefit of 1000 farmers, development personnel and officials visited.

### Extension Brochures Published

A total of 8 numbers of extension brochures prepared by D.V. Yadav, R.P. Verma, Kamta Prasad, A.K. Sah, Rajendra Gupta and K.P. Singh were published on following topics:

1. Ring Pit method of sugarcane planting for saving irrigation water.
2. Irrigation Scheduling at Critical Growth Stages of sugarcane to save water.
3. Skip-furrow method of irrigation for saving water in sugarcane.
4. Trash mulching for saving irrigation water in sugarcane ratoon.
5.  $\text{M} \leftarrow \text{k} \text{ q} \text{ k} \text{ z} \text{ f} \text{ o} \text{ f} / \text{k} \text{ v} \text{ i} \text{ u} \text{ d} \text{ j} \text{ f} \text{ l} \text{ a} \text{ p} \text{ k} \text{ z} \text{ t} \text{ y} \text{ d} \text{ h} \text{ q} \text{ r} \text{ d} \text{ j} \text{ s} \text{ a}$
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7.  $\text{, k} \text{ u} \text{ r} \text{ j} \text{ u} \text{ s} \text{ h} \text{ f} \text{ l} \text{ a} \text{ p} \text{ k} \text{ z} \text{ f} \text{ o} \text{ f} / \text{k} \text{ v} \text{ i} \text{ u} \text{ d} \text{ j} \text{ x} \text{ u} \text{ s} \text{ e} \text{ s} \text{ a} \text{ i} \text{ k} \text{ u} \text{ h} \text{ q} \text{ k} \text{ , i} \text{ a}$
8.  $\text{x} \text{ u} \text{ s} \text{ c} \text{ h} \text{ i} \text{ s} \text{ m} \text{ h} \text{ e} \text{ s} \text{ a} \text{ i} \text{ r} \text{ k} \text{ z} \text{ f} \text{ o} \text{ f} \text{ k} \text{ v} \text{ k} \text{ z} \text{ t} \text{ y} \text{ d} \text{ h} \text{ q} \text{ r} \text{ d} \text{ j} \text{ s} \text{ a}$

### Krishi Vigyan Kendra

The KVK, IISR, Lucknow, organized as many as 20 On and Off campus vocational trainings for farmers, farm families, farm women & rural youths and in-service training for



development personnel. A total of 439 participants were trained in diverse areas, such as soil sampling & testing, green manuring & balanced fertilizer application, ratoon management, late sown wheat production, vermi compost production, clean milk production & their marketing, cow rearing, safe grain storage, balanced ration for dairy animals, techniques for preparation of aonla pickle, tomato sauce, bags etc., scientific goat farming and symptoms, prevention & treatment of mastitis disease in animals.

A total of 566 farmers in 18 groups from different states under ATMA, National Horticulture Mission, National Food Security Mission etc, visited KVK. During visits farmers were provided with latest know-how in diverse areas of agricultural technologies. They have also learnt technical skills by 'seeing is believing' experience while visiting institute farm, jaggery and khandsari processing unit, vermicompost unit and sugarcane implements demonstration unit. A total of 122 FLDs on 16.5 ha areas were laid out on sorghum and *ararh*. About 1000 dairy animals were vaccinated for protection against H.S. and FMD diseases. To disseminate technologies of improved farming and animal rearing through mass media, as many as 11 TV/Radio talks were delivered by subject matter specialists of KVK.

#### Awards/Honour

Dr. S. Solomon was reappointed as a Secretary of International Association of Professionals in Sugar and Integrated Technologies (IAPSIT) for a period of three years (2010-2013).

Dr. S. Solomon was nominated as President and Coordinator of the 4<sup>th</sup> IAPSIT International Sugar Conference (IS-2011) to be held at New Delhi in November 2011.

Dr. S.K. Duttamajumder was nominated to act as a member in the Review Committee on Genetic Manipulation (RCGM) under the department of Biotechnology, Govt. of India. He was also nominated to act as a Central Committee member for monitoring Bt brinjal trials.

#### Book Published

The Book on *Ganna: Utpadan and Upyog*, in Hindi written by Dr. A.K. Shrivastava was published by National Book Trust, New Delhi.

#### Human Resource Development

Sri Mahendra Singh and Dr. S.K. Awasthi attended a *Knowledge Management Training* at ISTM, New Delhi from 3-4 March, 2010.

Dr. A. K. Sharma and Sri Mahendra Singh attended the National level training on *Fundamentals in Intellectual Property Rights* organised by UPCAR, Lucknow from 5-6 March, 2010.

Sri A.K. Singh (T-5) attended the Model Training Course on *Sugarcane and its Ratoon Management* held at IISR, from 4-11 March, 2010.

Dr. Om Prakash and Dr. Rakesh Kumar Singh attended the training programme on *Initiatives for Rural Prosperity* at BIRD, Lucknow from 16-19 March, 2010.

#### Participation in Seminars/symposia/meetings

Drs. Jaswant Singh, R.D. Singh and S. I. Anwar attended *44<sup>th</sup> Annual ISAE Convention* at IARI, New Delhi from 28-30 Jan., 2010.

Dr. A.K. Sharma attended the workshop on *Agricultural productivity challenges in Eastern India*, at BIRD, Lucknow from 24-26 Feb., 2010.

Drs. O.K. Sinha, Raman Kapur, A. Chandra, Rajesh Kumar & all Scientists of Crop Protection Division attended group meeting on *Advances in Plant Disease Management* organized on the occasion of 70<sup>th</sup> Birthday celebration of Prof. A.N. Mukhopadhyay at IISR, Lucknow on 12 March, 2010.

Dr P.K. Bajpai, attended the National Workshop on *Sensitization of ARIS Incharges about the uniformity guidelines*

for web sites at NBPGR, New Delhi on 19 March, 2010 and the workshop on *Designs of Experiments* at IASRI, New Delhi on 29 April, 2010.

Dr. D.V. Yadav and Dr. A.K. Sharma attended the National conference on *Managing Agri-Food supply chain* at IIM, Lucknow from 9-11 April, 2010.

Drs. J. Singh, D.K. Pandey, R.K. Singh and Sanjeev Kumar attended the seminar on *Biodiversity for development and alleviation of poverty* organized by U.P. Biodiversity Board, Lucknow on 22 May, 2010.

Dr. A. Baitha attended XIX Biocontrol workers group meeting at SKUA&T, Srinagar from 28-29 May, 2010.

Sri S.S. Hasan, attended the workshop on *Strengthening statistical computing for NARS* at IASRI, New Delhi from 7-8 June, 2010.

#### Career advancement

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

##### Promoted to Principal Scientist

Dr. D.K. Pandey	w.e.f. 07.04.2007
Dr. R.K. Singh	w.e.f. 14.02.2008
Dr. A.K. Sharma	w.e.f. 01.04.2008
Dr. Pushpa Singh	w.e.f. 11.06.2008
Dr. G.M. Tripathi	w.e.f. 27.07.2008
Dr. K.P. Singh	w.e.f. 29.11.2008

##### Promoted T-6

Shri V.K. Saxena	w.e.f. 01.07.2008
Shri Adil Zubair	w.e.f. 01.01.2009

##### Promoted to T-5

Dr. Bandana Gupta	w.e.f. 29.06.2006
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##### Promoted to T-4

Shri Dullu	w.e.f. 01.01.2008
Shri Bishwanath	w.e.f. 23.03.2009
Shri J.S. Bisht	w.e.f. 03.02.2005
Shri Ashrit Kr. Singh	w.e.f. 03.02.2005

##### Promoted to T-I

Shri Makrand Singh	w.e.f. 01.06.2010
Shri Dasha Ram	w.e.f. 01.06.2010
Shri Suresh Chandra	w.e.f. 01.06.2010

##### Promoted to A.A.O.

Smt. S.L. Barjoo	w.e.f. 01.06.2010
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##### Promoted to L.D.C.

Shri L.P. Singh	w.e.f. 30.06.2010
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#### Superannuation

Shri Sartaj Ali, AAO retired on 31.05.2010.

Dr. R. P. Verma, Principal Scientist (Agril. Extension ) retired on 30.06.2010.

#### Sports Activities

The following employees of the Institute won the Medals in different categories in the Inter Institutional Zonal Sports Meet (North Zone) held at IIPR, Kanpur during 06-09 April, 2010. The details are as under:-

1.	Carom Board (Men)	Shri. A.M. Srivastava	Winner
	Carom Board (Women)	Smt. Neelam Singh	Runner
2.	Table Tennis (Men)	Shri A.M. Srivastava	Runner
		Shri R.K. Yadav	
		Shri Sartaj Ali	
		Shri Pankaj Arora	
		Shri V.P. Tewari	
3.	Table Tennis (Women)	Smt. Manju Srivastava	Winner
4.	Table Tennis (Women)	Smt. Manju Srivastava	Winner
	Double	Smt. U.K. Sharma	
5.	Athletic –	Shri Sudhir Yadav	Runner
	Relay Race 4 x 100 Meters	Shri Inder Singh	
		Shri Taruk Nath	
		Shri Dharmendra	