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### Organic farming: a necessity for sustenance

Organic farming is not new to India, rather organic farming or holistic farming was prevalent throughout the civilizations that flourished in India. *Vrikhsa Ayurveda* was one such document which was fully devoted to plant health and a holistic attitude towards plants. '*Jib jivan krishi*' was the mantra of Indian farming. Due to the intricate nature of this system, Indian farmers identified and maintained plant varieties (land races) suitable for various types of soil and availability of water and prevailing weather conditions. Farmers were aware of green manuring as well as differential depletion of soil nutrients by various crops; how to do mixed cropping and above all how to restore soil fertility. The famous sayings of '*Ghag*' and others amply explain the ways of farming the Indians were used to. The system of farming changed dramatically with the British colonisation as they used India as a major hub for production of agricultural commodities for overseas markets. Obviously, for better returns, chemical fertilizers and pesticides were brought in use. However, these did not catch up, and majority of the farmers being poor, were hardly able to afford the costly inputs. From 340 millions at the time of independence, India has more than a billion mouths to feed today. It is a gigantic task by any scale. The begging bowl situation of 1960s forced India to boost food grain production at a rapid space. No doubt, India has successfully won the race defying all speculations of doomsday and has become self sufficient in food. This helped to transform India from a poor country looking for aid to a developing nation bustling with energy and booming economy. However, it has come at a great cost. India has over tapped its natural resources and in turn has degraded its precious soil, water and forest reserves badly. It has also increased the level of pollution through the use of toxic pesticides, increasing health concern

of both human beings and animals. The food bowl of green revolution is no longer able to sustain the level of productivity required. The declining factor productivity is bothering the farmers, researchers and policy planners alike. A paradigm shift in the attitude of farming has to come, and today we are mending our ways to the more conserving and sustenance agriculture.

'Organic farming' is a '**Production System**' which avoids or largely excludes the use of synthetically compounded fertilizers, pesticides, growth regulators, and livestock feed additives. To the maximum extent feasible, organic farming systems rely upon crop rotations, crop residues, animal manures, legumes, green manures, off-farm organic wastes, mechanical cultivation, minerals bearing rocks, and aspects of biological pest control to maintain soil productivity and tilth to supply plant nutrients, and to control insects, diseases and weeds.

### Public-Private Partnership Interface

Over the years, IISR has made significant strides in the design and development of workable prototypes of different agricultural implements relating to sugarcane cultivation and on a limited scale, IISR is supplying these implements to various organizations and end users for adoption. To boost up the use of these implements, it was envisaged to have private manufacturers to step into this process to cater the need of farmers. With this aim, a meeting was organised with private entrepreneurs at IISR, Lucknow on February 12, 2007. Dr. N. B. Singh (Agriculture Commissioner, Ministry of Agriculture, Government of India, Krishi Bhavan, New Delhi) inaugurated the interface meeting as Chief Guest. He discussed various topics like tax, excise duty and marketing constraints being faced by the manufacturers of agricultural equipments/implements.



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Technical details of the commercially viable equipments/ implements were presented. Ridger type cutter planter, Raised bed seeder, RBS (raised bed seeder)-cum-cutter planter, Modified two-row cutter planter, Three-row multipurpose cutter planter, Pit digger and RMD (ratoon management device) were identified for promotion through private manufacturers. There were 14 experienced representatives of reputed manufacturers from Tamil Nadu, Maharashtra, Uttar Pradesh and Punjab who took keen interest and actively participated in the discussions. Demonstration of the equipment, ready for commercial exploitation was also organised, to have the actual feel of the equipment. A panel, consisting of IISR engineers/scientists and representatives of manufacturers discussed and recommended the modalities for transfer of these technologies.

It was decided that the identified manufacturers would sign a MOA with this Institute on the terms and conditions, as per ICAR guidelines. Besides resource generation, this step would fill the gap between the researchers and the implement manufacturers, paving the way for public-private partnership to achieve the goal of supplying the commercially viable prototypes to the cane growers/sugar mills for mechanizing sugarcane farming in the country.

#### Planting techniques in sugarcane

Yield of sugarcane is a function of the number of millable canes at harvest, which in turn depends on germination and tillering. Initial plant population is influenced by planting methods. In tropical south zone, germination is not a limiting factor, whereas in the subtropical north zone, it is the major factor limiting the desired plant population. At the time of harvesting, 60% of millable canes are comprised of tillers in subtropical India, whereas in tropical India most cane population is formed by the main shoots. Realising the importance of planting methods in sugarcane cultivation, the IISR, Lucknow intensified research activities for developing planting methods since its inception. First in the series was the 'IISR 8626' method of planting during 1960s. In this method 'Rayungans' (a Japanese word meaning a single-node piece of cane of which only bud has been encouraged to grow into a shoot) were used as planting material. This method could not take off due to some limitations. During 1970s, STP (spaced planting technique) was developed for quick multiplication of seed. The seed multiplication ratio was increased from 1:10 in conventional method to 1:40 in STP method. This method has crossed the boundary and is popular in neighbouring countries. During 1980s, ring-pit system of planting was developed for yield maximization. During 1990s, a double row planting method, which is now practised as wide row spacing technique, was developed.

A seminar on "Comparative advantages of different methods of sugarcane planting" was organised at IISR on January 23-24, 2007 to discuss in detail various issues for

better adoption of improved planting techniques. It was realised that there is a very low rate of adoption of new planting techniques among the farmers. A need was felt that IISR should initiate interface meetings with sugar industry and sugarcane development staff of each north Indian state twice i.e., before autumn and spring planting seasons to apprise them of the available sugarcane production technology. The ISMA should help in identifying the sugar factories in each state for interface meeting and work out the modalities for financing such meetings to make this venture successful. Ring-pit planting, trench planting, polybag raised settlings for late planting along with STP, hold a great promise. Another important point of the meeting was the effective use of integrated nutrient management (INM) schedule with more emphasis on organics (green manures, crop residues, FYM, farm and factory wastes, bio-fertilizers, vermicompost, etc.) for sustaining sugarcane productivity.

#### Seminars/Symposia/Workshop attended

Dr. S. I. Anwar, Dr. R. D. Singh and Dr. A. K. Singh attended the '41st ISAE Annual Convention and Symposium' held at Junagadh Agricultural University, Junagadh from 29-31 January, 2007.

Dr. (Mrs) A. Suman and Dr. (Ms) P. Singh participated in the International Conference on 'Biofuels' at Winrock International, New Delhi from 1-2 February, 2007.

Dr. R. P. Verma and Shri K. P. Yadav participated in the National Workshop on 'The Right to Information Act, 2005' at Bangalore on 2-3 February, 2007.

Dr. A. K. Sah participated in 'Kisan Goshthi' organised by BCM, Raizagaon (Barabanki) on 5 February, 2007.

Dr. S. I. Anwar attended 'SOLARIS 2007 - the 3rd International Conference on Solar radiation and day lighting' held at IIT, Delhi from 7-9 February, 2007.

Dr. O.K. Sinha and Dr. R. K. Singh attended the National seminar on 'Sugarcane Seed Production and Certification' held at VSI, Pune from 22-23 February, 2007.

Dr. R. P. Verma and Dr. A. K. Sah participated in 'Scientists-Farmers Meeting' organised by BCM, Raizagaon (Barabanki) on 26 February, 2007.

Er. M. P. Sharma attended the All India Seminar on 'Mechanized cultivation of sugarcane and safety-quality management in sugar industry' held at the Institution of Engineers (India), Karnataka State Centre, Bangalore from 10-11 March, 2007.

Dr. R. P. Verma participated in the 'National Farmers Fair and Vegetable Exhibition' at IIVR, Varanasi from 27-28 January, 2007. He also participated in 'Sabji Kisan Mela' at Sargatia, Kushinagar on 25 March, 2007.

Dr. R. P. Verma attended Scientific Advisory Committee meeting of KVK, Hydergarh, Barabanki on 21 May, 2007.

Dr. R. K. Singh attended a workshop on 'Sensitization on DST's Women Scientist Scheme (WOS-A)' held at Gorakhpur from 20-21 June, 2007.



### AICRP Breeders' meet

A meeting was held at IISR on February 5, 2007 under the Chairmanship of Dr. N. Vijayan Nair, Director, SBI, Coimbatore to discuss and finalize the Technical programme from 2007-08. The Chairman expressed satisfaction on the conduct of experiments and urged the centres to ensure timely despatch of seed materials with due receipt.

In the meeting, Dr. R. L. Yadav, Director, IISR, Lucknow, emphasized the need of strengthening partnership of private entrepreneurs in varietal development programme and hoped that ISMA could lend a helping hand in this regard.

Prof. A. Q. Khan (Pantnagar), Dr. D. N. Singh (Seorahi), Dr. S. S. Mathur (Kota), Dr. S. P. Kadian (Uchani), Dr. G. C. Bora (Buralikson), Dr. B. R. Godara (Sriganganagar), Dr. Bakshi Ram (Karnal), Dr. S. S. Pandey (Pusa), Dr. (Mrs.) S. K. Sandhu (Ludhiana) along with other breeders from these centres, attended the meeting.

Dr. O.K. Sinha, Dr. D.V. Yadav, Dr. Raman Kapur, Dr. A.N. Singh and other breeders from IISR also participated in the meeting.

### Group meeting on red rot management

A group meeting was organised at IISR, Lucknow on May 5, 2007 to discuss the management of red rot in relation to the use of *Trichoderma* as the key agent of biological control. Prof. U. S. Singh, GBPAU&T, Pantnagar and Dr. Pratibha Sharma, Principal Scientist, IARI, New Delhi were invited to share their rich experience in this regard. The meeting was attended by sixteen scientists. Dr. S. K. Duttamajumder presented a brief outline of red rot disease cycle and Dr. Vijay Singh presented the progress of ongoing experiments on bio-control of red rot. In depth discussion ensued to improve upon the management strategy and how to increase the efficiency of bicontrol system. It was proposed to follow a consortium approach using *Trichoderma* as the main constituent and other antagonistic microorganisms against red rot like *Pseudomonas*, *Bacillus*, etc. to increase the overall efficiency. Similarly, it was also suggested that a mass multiplication and delivery system of *Trichoderma* and *Pseudomonas* should be developed and evaluated, taking due account of the available resources at the disposal of a marginal farmer.

### Trainings

During this period, 15 students (11 in Biotechnology and 4 in Microbiology) from different Institutes and Universities like BIT, Ranchi; DG and DAV College, Kanpur; ABC of Engg. and Management, AMITY University, Rai Foundation, Lucknow; Allahabad Agricultural Institute Deemed University, Allahabad and B. R. Ambedkar University, Agra were trained.

Dr. K. Ponmurugan under an IASc-INSNA-NASI summer fellowship programme worked on 'Enhancing sugarcane trash decomposition using combined approach of chemical N, SPMC and bio-agent' under Dr. R. L. Yadav and Dr. A. Suman for two months.

### Distinguished Visitors

Dr. Mangala Rai, DG, ICAR and Secretary, DARE visited the Institute on 23.06.2007. He critically observed the ongoing trials in the field and other research activities. He stressed the need of organic recycling, vermicompost, in-situ decomposition of sugarcane trash and to ban any form of burning of sugarcane residues. He also reviewed the ongoing renovation works and was satisfied with the progress made so far. He made suggestions for further improvement.

A two-member Japanese team from Agriculture and Animal Husbandry Corporation (A. L. I.C.), headed by Mr. Hirashi Kawahara, Sr. Councillor and Mr. Ukihero Tanigaki, Councillor, visited the Institute from 6-7 February, 2007 to discuss areas of common interest in sugarcane agriculture and possible cooperation.

A three-member Australian team of scientists headed by Dr. Nils Berding of Crop Improvement Division, BSES Limited, Meringa, Dr. Philip Jackson, Plant Industry, CSIRO and Dr. Prakash Lakshmanan, BSES Limited visited IISR from 19-20 April, 2007. They were on a study visit to explore the opportunities of a joint venture in sugarcane breeding and other areas of collaborative research.

### Outbreak of *Pyrilla*

A rapid roving survey was conducted during April, 2007 in command areas of K.M. Sugar Mills Ltd., Faizabad, Bajaj Hindusthan Ltd., Gola and Balrampur Chini Mill, Haidergarh to assess the incidence and damage done by *Pyrilla*. It was observed that nymphs and adults of *Pyrilla* varied from 40 to 150/leaf in mature standing crop. Along with *Pyrilla*, the different stages of ecto-parasitoid *Epiricania melanoleuca* was also recorded (upto 5/leaf). In the crop planted during autumn, spring and recently initiated ratoon, the population of *Pyrilla* varied from 20-60/leaf. Conservation and augmented release of *Epiricania* was advocated to contain *Pyrilla* flare up.

### Krishi Vigyan Kendra & Kisan Call Centre

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 16 trainings were organized on various aspects like Agronomical practices in spring planted sugarcane, Improved method of mentha cultivation, Control of aphids in mustard, Management of tuber and soil-borne diseases of potato,





Breeding, feeding and management of dairy animals, Reclamation and management of sodic soil, Cutting and stitching of clothes, Preparation of mango pickles, etc. During this period, a total of 371 participants got enrolled in various training programmes. KVK has also organised Front Line Demonstrations on different crops.

Kisan Call Centre, a part of the KVK, is very active in responding to various farmers queries relating to sugarcane cultivation.

#### **Exhibition**

On the occasion of 'Science Day', an exhibition on 'Sugarcane Production Technology' was organised at CIMAP, Lucknow on 28 February, 2007.

An exhibition on 'Sugarcane Production Technology' was organised at Northern Regional Agriculture Fair-cum-regional Mango show at CISH, Lucknow during 16-17 June, 2007.

#### **Awards/Honour**

Dr. Jaswant Singh, Head, Agril. Engineering has been awarded the Er. Hari Mohan Memorial Prize by the Institution of Engineers (India) Uttar Pradesh State Centre, Lucknow on 11 February, 2007.

Dr. Rajesh Kumar and Dr. R. K. Singh have been nominated as the members of the International Board of Consulting Editors of Sugar Tech for 2007, the official journal of Society for Sugar Research and Promotion, Kunraghat, Gorakhpur.

Dr. Ishwar Singh (Plant Physiology) has been elected as Zonal Secretary of the Indian Society of Plant Physiology, New Delhi for 2007-2009.

Dr. Menhi Lal continues to serve as a member of the Editorial Board, Indian Society of Agronomy, New Delhi.

#### **Meeting of RAC**

The 13<sup>th</sup> Research Advisory Committee (RAC) meeting under the Chairmanship of Dr. S. S. Baghel, Vice Chancellor, AAU, Jorhat was held from February 1-2, 2007. Members of the RAC, Dr. S. B. Jadhav, Dr. D. P. Misra, Dr. Rakesh Tuli, Dr. A. N. Mukhopadhyay, Dr. D.V. Yadav (Member Secretary), Dr. K. C. Jain, ADG (CC), ICAR, Dr. R. L. Yadav, Director, IISR and all the Heads of Divisions and scientists took part in the meeting. The RAC appreciated the progress made by the Institute in the past, and gave the nod of satisfaction to the current work. The committee submitted the final recommendations for the approval of the Council.

#### **Pustak Lekhan Paricharcha**

A discussion on how to write a scientific book was organised at IISR, Lucknow on 15 March, 2007. Prof. A. N. Mukhopadhyay, Ex., V.C., AAU, Assam chaired the meeting and Prof. C.P.S. Yadav, DG, UPCAR, Lucknow was the Chief Guest. Scientists from IISR and other Institutes based in Lucknow participated in the discussion.

On this occasion, a book written in Hindi entitled '*Vaigannik vidhi se ganne ki kheti*' by Dr. R. L. Yadav, published by ICAR, New Delhi was also released. This book deals with scientific method of sugarcane farming in a lucid way and in the common language of the farmer. This book is divided into seven chapters dealing with the importance of sugarcane farming in society, improved techniques of sugarcane farming, post harvest management, cane quality, cane purchase system, including the system of cane pricing, future policies and management.

#### **Superannuation**

Dr. S. K. Chaudhary, Sr. Scientist (Plant Breeding), retired on 31.01.2007.

#### **Transfer/Relieving**

Shri Aparesh Mukherjee, Assistant was relieved on 28.02.2007 to take up the post of AAO at NRCWS, Jabalpur, M.P., on deputation.

#### **Career advancement**

During this period, following scientists got promotion in their respective service careers :

Dr. Ishwar Singh (Agronomy) was promoted to the grade of Sr. Scientist w.e.f. 21.05.2005

Shri Dilip Kumar was promoted to Scientist (Sr. Scale) w.e.f. 01.11.2005.

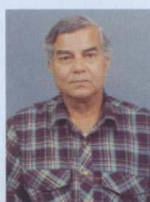
#### **Human resource development**

Shri R. Gupta, Scientist (Selection Grade) participated in the training programme in 'Micro-irrigation System and Water Conservation Technology' at Water Technology Centre, IARI, New Delhi from 2-9 January, 2007.

Dr. A. K. Sah, Scientist (Selection Grade) attended the training on 'Advances in Extension Research' at IARI, New Delhi from 6-26 March, 2007.

Shri K. P. Yadav, AAO participated in the training course 'Improving Administrative Efficiency & Financial Management' at NAARM, Hyderabad from 12-19 June, 2007.

#### **Necrology**



Dr. Shyama Charan Srivastava, ex Director, IISR, Lucknow left for his heavenly abode on 30.05.2007. He had joined IISR on 14 August, 1962 as Soil Scientist. He was appointed the first Project Co-ordinator (Sugarcane) on 21 October, 1971. He became Director of this Institute on 7 June, 1989. He was a soil science expert of International fame. He devoted his entire career for the betterment of sugarcane and its culture. He was known for his wit, comprehension and razor sharp analytical mind.

Shri Suraj Singh Yadav, T-5, working in the Division of Crop Protection passed away on 13.05.2007 after prolonged illness.

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