हर कदम, हर डगर
किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद
Agrisearch with a human touch
भाकृअनुप ICAR

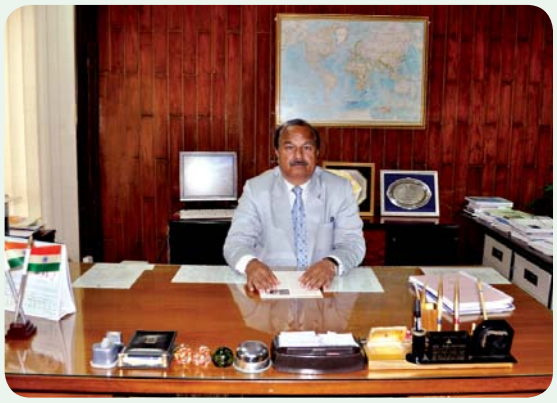
SALINITY News

Vol. 16, No. 2 July-December, 2010

From Directors' Desk

Salt affected soils adversely affect the livelihood security of the people in more than 100 countries, occupying about 831 million ha across the Globe. Of the total 831 million ha, 397 million ha (47.8 %) are saline, while 434 million ha (52.2 %) are sodic in nature. In the Indian context, salt affected soils occupy about 6.73 million ha area affecting production and productivity across a number of states. Saline and brackish groundwater also pose serious threat to land and water productivity as these constitute about 25 per cent of the total ground water resource of the country. Certain states like Rajasthan and Haryana having 84 and 62 per cent of poor quality ground waters are the worst hit on this account. Besides other causes such as lack of drainage in irrigation projects, continuous use of such waters for irrigation is bound to increase the problem of salinity and sodicity in India. Our projections are that by 2025, area affected by salinity and sodicity in India might increase to 11.7 m ha. Central Soil Salinity Research Institute established in 1969 to develop strategies for reclamation and management of salt affected soils and judicious use of poor quality ground water resources has to vigorously work to develop strategies to prevent this expansion as well as to manage the already degraded salt affected soils.

This issue of the salinity newsletter covers significant activities and achievements of the institute from July to December, 2010. The significant research achievements were made in the areas of: development of decision support system for enhancing productivity in irrigated saline environment, utilization of bio-sludge from the fertilizer industry for cultivating vegetables, sustainable land and water management in coastal eco-system and technology of direct seeded rice in reclaimed sodic soils. The institute 41st Foundation day was organized with a lecture on "Advances in Rice and Wheat Research for Food and Nutritional Security" delivered by Dr. B.Mishra, Vice-Chancellor, Sher-e-Kashmir University of Agricultural Sciences & Technology, Jammu. The newly constituted Research Advisory Committee (RAC) under the Chairmanship of Dr. Pratap Narain, Former Vice-Chancellor, Rajasthan Agricultural University and Ex-Director CAZRI, Jodhpur met on October 22 -23, 2010 to review the research programmes of the institute and offered very valuable suggestions for future research needs. The researchable issues identified by RAC included: development of technologies for groundwater recharge under saline environment, bio-remediation and phyto-remediation measures to manage poor quality water including wastewaters, monitoring and evaluation of reclamation technologies in time phases, reclamation and management of waterlogged sodic/saline soils and impact of climate change on crops grown in salt-affected soils. The RAC also suggested that multi-enterprise model studies should be focused on major enterprises in the context of agro-socio-economic conditions. The ICAR also constituted the new QRT under the chairmanship of Dr S.S.Khanna Former Advisor (Agriculture), Planning Commission, Govt. of India, New Delhi to monitor the progress of research made by the institute during 2006-10 and make recommendations on future research agenda. The first meeting of QRT was organized on November 4, 2010 under the chairmanship of Dr. A.K. Singh DDG (NRM) at New Delhi while the second meeting was held from December 22 - 24, 2010. Action taken report of last QRT was presented and research programmes of the institute were reviewed by the QRT. Staff Research Council meeting was organized from December 6-10, 2010. The progress of each project was reviewed during the meeting and recommendations of RAC were considered while formulating and approving new research programmes.



To conduct the field experiments on salt-affected soils, 8 ha Panchayat land in village Nain is likely to be transferred to CSSRI on 10 years lease. Farm development activities at this farm would begin very soon. Second Phase of FPARP and HOPP projects were approved by the respective organizations. It would add to our interactions with the farming community. Dr. R.S.Tripathi joined as new Head, Division of Technology Evaluation and Transfer. Several colleagues including scientists, technical,

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administrative and supporting staff retired from service after rendering valuable service to the institute. We wish them happy and healthy retired life. During this period, four scientists of the institute were honoured with fellowship and gold medal. I congratulate them and wish them all the best for their future advancement. A number of distinguished visitors visited the institute. Various extension activities like kisan mela/training programmes were organized. I believe that the information contained in the newsletter would be quite useful to our readers and I welcome suggestions/comments to further improve the contents of the newsletter.

D.K.Sharma
Director

Decision Support System (DSS) for Enhancing Productivity in Irrigated Saline Environment using Remote Sensing, Modelling and GIS

An irri-agro informatics database of the Western Yamuna Canal (WYC) command (Fig.1) was created from the authentic secondary sources maps obtained from various departments/organizations. The command database includes canal network with discharge data, digital elevation model, soils, rainfall, cropping system, groundwater quality, soil salinity and waterlogging, land use and land cover, rail and road networks, socio-economic data and canal water users' information. The database was updated with remotely sensed inputs and was further used for identification and delineation of areas of low productivity in the command. AquaCrop, ClimGen and CROPWAT models were calibrated for wheat crop to estimate the current and future crop water requirement (CWR) under various scenarios to be used in DSS development. The salt budgeting in the crop root zone for the wheat crop was also estimated. Three distributaries- Butana, Gangesar and Kahnaur located within the area of low productivity in Sonipat and Rohtak districts were selected for DSS validation for head, middle and tail reach data.

Eight best management practices (BMPs)-conjunctive use of multiquality irrigation waters, choice of salt tolerant varieties, sowing method (line sowing versus broadcasting), zero tillage, use of alkali water with gypsum bed, optimum irrigation scheduling, water application mode and adoption of low water requirement crops are being demonstrated in farmers' fields in low productivity area located at the mid and tail reaches. A system architecture of DSS interface for the Western Yamuna canal command was developed using Microsoft Visual C#.NET for integrating databases, models, GIS and spatial query logic. The DSS comprises the following

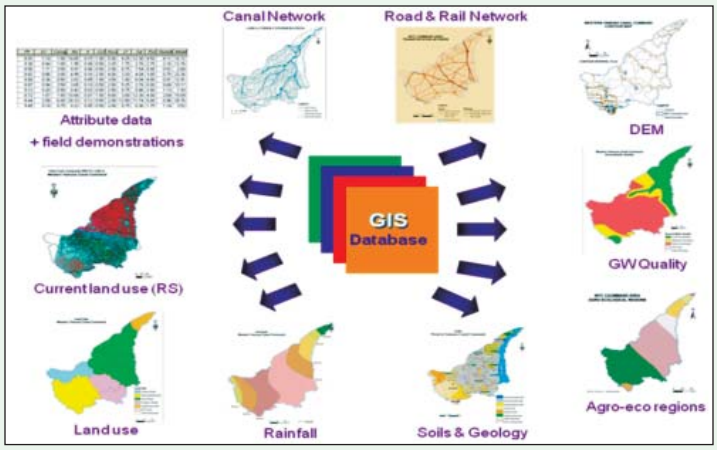


Fig. 1: An irri-agro informatics database of the Western Yamuna Canal Command

modules and sub-modules- canals, crops, soils, ET, rainfall sub-modules under crop water demand module, demand-supply gap, groundwater, Irrigation scheduling, modelling, resource constraints, socio-economic limitations, BMP based strategies, input availability and providers. Three modules- crop water demand, demand-supply gap and groundwater are completed. One hundred twenty stakeholders from state field officers, water users associations' members and farmers were sensitized to DSS generated BMPs under uncertain canal water supply and ongoing soil salinization and waterlogging.

D.S.Bundela, S.K.Gupta, Madhurma Sethi, N.P.S.Yaduvanshi, R.L.Meena and R.S.Tripathi

Biosludge from the Fertilizer Plant- A Good Alternate Manurial Source for Vegetables

Field and pot experiments were conducted at Bharuch (Gujarat) with cowpea, cluster bean, amaranth and lady's finger to ascertain the response of biological sludge alone and in combination with organic manures viz; farm yard manure (FYM) and vermicompost (VC) in vegetable crops viz; spinach, amaranth, cowpea and cluster bean. The leaf yield of spinach obtained with two cuts indicated that biological sludge applied along with NPK resulted in enhanced leaf yield, suggesting its efficacy in providing additional nutrient availability to the crop. The plots treated with biological sludge showed significant variation with other treatments except full dose of vermi compost treatment, suggesting biological sludge to be alternative nutrient source for leafy vegetables. However, in amaranth the

biological sludge applied in combination with NPK and/or FYM/Vermi compost gave higher leaf yield suggesting the additive effect of these manure sources. Application of biological sludge in combination with NPK and vermi compost resulted in increased pod number and number of seeds per pod in cowpea, when compared to Control (NPK alone). Field study was conducted on cluster bean with biological sludge and vermi compost given @ 2 t/ha along with NPK. Pod length and pod yield were found to be higher under Biological sludge given in combination with organic manure (vermi compost) and NPK. Cluster bean, being a leguminous crop, responded to nitrogen rich NPK and Vermi compost.

Soil samples collected

at the initiation and completion of experiments indicated enrichment of soils with available N, P and K and with moderate increase in organic carbon suggesting the important role played by the biological sludge in soil enrichment. The studies hitherto conducted indicated that the use of biological sludge from fertilizer industries can be a better option for sustainable management of lands for production of crops like leafy vegetables, lady's finger and cluster bean. Its use will help in improving soil properties vis-à-vis supply nutrients for plant growth and yield in Vertisols.

G. Gururaja Rao, Sanjay Arora, M.K. Khandelwal and Anil R. Chinchmalatpure

Sustainable Land and Water Management for Enhancing Livelihood Security of Farming Communities of Coastal Region

Agriculture in coastal regions of India is mainly rainfed and mono-cropped, mostly with traditional rice during monsoon months. Degraded soil (saline & poorly drained) and saline water, together with climatic adversities, drainage congestion and acute shortage of good quality irrigation water contribute to the poor livelihood security and low agricultural productivity. A research project under NAIP has been implemented in the disadvantaged coastal regions of Sundarbans (West Bengal) and Tsunami affected North-mid & South of Andaman islands to alleviate the ill-effects of degraded land and water for improving productivity, livelihood security and employment opportunities of rural men and women and their capacity building. The project was implemented in a consortia mode involving 5 institutions viz. CSSRI, RRS, Canning Town (lead center), Ramkrishna Ashram Krishi Vigyan Kendra, Nimpith, Central Institute of Brackishwater Aquaculture, Kakdwip Research Centre, Kakdwip, Central Agricultural Research Institute, Port Blair and Bidhan Chandra Krishi Viswavidyalaya, Mohanpur. Various technological interventions of agriculture, animal husbandry and integrated farming systems have been taken up to enhance the productivity of the degraded mono-cropped coastal lands and to improve the livelihood security of the farming communities. A combination of technological actions has been taken up to reduce soil salinity and its further degradation and identification and development of various livelihood options.

Under land management component, land shaping techniques like farm pond, deep furrow & high ridge, shallow furrow & medium ridge and paddy-cum-fish cultivation were implemented at the farmers' field for harvesting of rainwater for diversified crops and integrated crop-fish cultivation. Land shaping techniques improved the drainage congestion of the field locally and reduced salinity build up due to higher elevation of land in relation to stored fresh water. Interventions like paddy and fish cultivation, multiple and salt tolerant crop cultivation, nutrient management, mushroom cultivation, bee keeping and composting, fresh water and brackish water fish cultivation, livestock health management, introduction of improved breeds of goats/sheep/poultry have also been taken in this project. Farmers were empowered through various training programmes on different aspects of land management, crop cultivation and other livelihood opportunities. There has been a greater interest in land shaping technologies, rain-water harvesting for irrigation and integrated cultivation of crop and fisheries among farmers due to higher returns while women have shown great interest in mushroom cultivation for improving their livelihoods.

B. K. Bandyopadhyay, D. Burman, S. K. Sarangi, S. Mandal, K. K. Mahanta, B. Maji and D. K. Sharma

Direct Seeded Rice in Sodic soil

Rice is one of the important staple cereal crops in Uttar Pradesh. Traditionally, rice is grown by transplanting (TPR) of 4-5 week old seedlings in puddled soil. The puddling operation helps to reduce the soil water percolation and weed infestation in the field and also facilitates the transplanting of rice seedling. On the other hand, puddling destroys soil aggregates, disperses clay and reduces water transmission pores. In sodic soil, puddling deteriorates the physical condition of the soil and also requires lot of water to saturate the soil. This is one of the reason that late onset of monsoon affect the area under rice cultivation. Also, puddling and transplanting often make the farmers difficult to complete their operation in time because of labour shortage. In view of these problems, Direct Seeded Rice (DSR) is emerging as a promising method of rice cultivation where seeding of rice is done directly by seed drill or manually in furrow at a depth of 2-3 cm in dry condition or surface seeding after puddling of field under wet condition. Dry method of seeding is preferred to minimize the adverse effect of puddling on soil structure, dispersion of clay and hydraulic properties of soil.

For weed control, the field needs two ploughing in the last week of May and or the spray of weedicide Glyphosate @ 0.05 % in the second or third week of June. Rice can be sown in last week of June and first week of

July under dry condition with a seed rate of 125 kg/ha. Pre emergence weedicide pendamethalene @1000 g a.i /ha within 3 days after sowing (DAS) is also applied. In upland fields, seasonal weeds may be noticed after 20 DAS even after application of pre-.emergence weedicide. Further, Almix (4g a.i. /ha) can be applied at 25 DAS. Recommended dose of 100: 60: 40 kg NPK/ha was applied to the crop. Three to four irrigations may be applied in DSR.

In a field experiment conducted at Lucknow, crop yields under DSR was at par (4.2t/ha) with the traditional method. In DSR, substantial amount of reduction in irrigation water (250- 425 mm/ha) was recorded. Adoption of DSR also saved the time and labourer to sow the crop. Besides, 12-15 days advance maturity was observed in DSR which helped in timely sowing of wheat. Although extra expenditure of Rs 850 was incurred to control the weed in DSR, there was substantial reduction in cost of laborers, irrigation water and puddling. In terms of net saving, Rs1900-2300/ha was recorded under DSR over TPR.

V.K.Mishra, D.K.Sharma and C.L.Verma

Celebration of Foundation Day

41st Foundation day of the Institute was celebrated on August 18, 2010. Dr. B. Mishra, Vice-Chancellor, Sher-e-Kashmir University of Agricultural Sciences and Technology, Jammu was the Chief Guest. He emphasized that the scientists should conduct the research to sustain the socio-economic conditions of the farmers and to conserve natural resources for getting higher productivity of crops. He also apprised the house that this institute has evolved the number of salt resistant varieties of rice, wheat and mustard. Variety CSR 30 of rice developed by this institute has made a significant contribution to improve the economic status of the farming community. Dr. Mishra delivered a foundation day lecture on Advances in Rice and Wheat Research for food and Nutritional Security. He also shared his experiences in converting saline soil into fertile land of this institute. He stressed that the farmers should use organic manure for getting higher and quality produce.

Research Advisory Committee Meeting

The first meeting of the newly constituted Research Advisory Committee (RAC) of the Institute was held under the chairmanship of Dr. Pratap Narain at CSSRI, Karnal from October 22-23, 2010. The other members who attended the meeting included Dr. T.N. Chaudhary, Dr. P.K. Joshi, Dr. K.V.G.K. Rao, Dr. P.S. Pathak, Dr. D.K. Sharma, Sh. M.S. Mehla (Progressive farmer) and Dr. P. Dey. Dr. S.K. Gupta, PC (SSW), Dr. S.K. Sharma, HDCI, Dr. J.C. Dagar, HDSCM, Dr. S.K. Kamra, HDIDE and Dr. R.S. Tripathi, HDTET were also present.

Dr. D.K.Sharma, Director welcomed the Chairman and the members of the committee and presented the progress report of the Institute. After reviewing the Action Taken Report, a discussion was held with all the Heads of the Divisions. Following important researchable issues were crystallized.

- Mapping and characterization of salt affected soils should aim towards identification of researchable issues and setting up of priorities and change detection in spatial context.
- Guidelines should be established for management of salt affected soils in eco-regional context and for allocating resources for research and development
- Multi-enterprise model studies should be focused on major enterprises in the context of agro-social conditions.
- Monitoring and evaluation of reclamation technologies needs to be carried out in time phases
- Research should focus on development of technologies for ground water recharge under saline environment and for transfer of technologies to state agencies for large scale adoption.
- Drainage research particularly with respect to sub-surface drainage should be included in core area, keeping in view the drainage requirement of various states including Maharashtra, Haryana and Punjab.
- Water management particularly with respect to poor quality waters (saline water, sewerage and industrial effluents) needs strengthening. Bioremediation and Phyto-remediation measures for managing poor quality water are to be developed.

- The research performance of the institute continues to be above board, despite the dwarfing of scientific strength. However, as the research agenda has been expanded to address the emerging issues of critical significance, the institute will be constrained in performance, unless the staff strength is enhanced.
- Field and laboratory facilities seem to be adequate for the research agenda in hand. However, the strengthening of research facilities will be a continuing call for the institute.

Training Programme on Water Management and Drainage in Irrigation Command Areas

Two days training programme on Water Management and Drainage was organized on August 17-18, 2010 in which 20 Chief Executive Engineers, Executive Engineers and Sub Divisional Officers of Command Area Development Authority (CADA) of Kaithal, Rohtak and Hisar circles participated. Dr. S.K.Gupta, Director informed that there is a shortage of water and we should make efficient use of irrigation water in the command areas. The good quality water could be saved with the re-use of water and get more economic return. He informed that water is a natural resource and urged the farmers that whatever water is available in the rainy season, we should conserve it. He cautioned the farmers that water table is declining day by day, we should save it by all means. He also stressed for participation of farmers in these camps and be aware about the problems being faced in irrigation command areas

Training on Advances in Reclamation and Management of Salt Affected Soils for Forest Extension Officers of Tamil Nadu

A training on 'Advances in Reclamation and Management of Salt Affected Soils' for Officers of Forestry Extension Wing of Tamil Nadu was organized from November 8-14, 2010. The major objective of the training was to train the officers by providing lectures and practical/field visits on various aspects of reclamation and management of salt affected soils. The eight days training was designed in such a way that it could cover various aspects of sodic and saline water reclamation and use of saline water in agriculture and forestry, management of fisheries and nutrient stress management for sustainable crop production in salt affected lands.

Model Training Course on Integrated Water Resources Management and Use of Poor Quality Water in Agriculture

A Model Training Course on `Integrated Water Resources Management and Use of Poor Quality Water in Agriculture' for Subject-Matter-Specialist/ Officers of State Development Departments was organized from November 23-30, 2010. The training was sponsored by the DAC, Ministry of Agriculture, Govt.of India, New Delhi. Major objective of the training was to familiarize the SMS with various problems associated with water resource management and use of poor quality waters in agriculture and to make them acquainted with various technological options for improving and managing waterlogged salt affected soils for sustainable agriculture. In this training programme 21 officers from 10 states viz. Haryana, West Bengal,Gujarat, Orissa, Himachal Pradesh, Punjab, Andhra Pradesh, Kerala, Chhattisgarh and Assam participated.

Staff Research Council Meeting

The Staff Research Council (SRC) meeting was held from December 6-10, 2010 to review the progress of the ongoing research programme and to take up new research project proposals at the main institute, and its three regional research stations at Canning Town (West Bengal), Bharuch (Gujarat) and Lucknow (U.P.). At the start of the proceedings, the house observed two minutes silence in the memory of Late Dr. (Mrs.) Lalita Batra, Ex-Principal Scientist at Karnal who had expired on 29.10.2010. In his opening remarks, the Chairman Dr. D.K Sharma highlighted several important issues related to soil salinity, water quality and climate change. The Chairman also highlighted the achievements of CSSRI and congratulated all staff members for their contribution in securing Sardar Patel Outstanding Institution Award of ICAR.

The Chairman urged that the Scientists should formulate new projects at the newly acquired Nain Farm keeping the recommendation of Research Advisory Committee in mind. The scientists were advised to strictly follow the time schedule of various research projects. The progress of externally funded research projects was also presented during the meeting for appraisal of the House. Each new research project proposal was critically reviewed keeping in view the recommendation of RAC, relevance to client and technical suitability.

International Training Programme on Use of Poor Quality Water in Agriculture

International Training Programme on "Use of Poor Quality Water in Agriculture" for AARDO (Afro-Asian Rural Development Organization) was organized from December 1-14, 2010. The programme was sponsored by Afro-Asian Rural Development Organization (AARDO) Seven delegates from Malaysia, Yemen, Syria, Iraq, Oman, Mauritius, and Bangladesh participated in the programme. The training programme covered the basic aspects of poor quality waters such as saline, high RSC and waste water, their characterization, issues related with their use and strategies developed by CSSRI, Karnal, field experiences and modern technologies for efficient and sustainable management of poor quality water in agriculture. This training includes the practical aspects like extent and quality of ground water, impact of long-term usage of poor quality water comprising saline, sodic and waste water on crop yield and soil health and best management practices for mitigating the deleterious effects.

Institute Joint Staff Council Meeting

The Institute Joint Staff Council Meeting was held at RRS, Bharuch on December 18, 2010. The meeting was chaired by Dr. D.K. Sharma, Director and attended by Shri Ratnesh Yadav, Sr. Admn. Officer, Shri Vishal Acharya, AF&AO, Drs. S.K. Choudhary and R.K. Yadav, Sh. Roshan Lal, Sh. Tilak Raj Sharma, Sh. Tarun Kumar, Sh. Subhash Chand, Sh. Ramesh, Sh. Narendra Sharma, Dr. G. Gururaja Rao, Sh. Randhir Singh, RRS, Lucknow and Sh. C.R. Taviyad, RRS, Bharuch. The members discussed the various agenda items and other related issues for the welfare of the staff of the Institute and Regional Research Stations at length and settled these issues amicably.

Farmers Training and Awareness Programme on Protection of Plant Varieties and Farmers Right

A farmers training and awareness programme on the 'Protection of Plant Varieties and Farmers Right' was organized on December 28, 2010 which was attended by about 100 farmers and scientists. Dr. P.K. Singh, Registrar, Protection of Plant Varieties and Farmer Right Authority (PPV& FRA), New Delhi informed about the rules and regulation with respect to the right of farmers, researchers and other stakeholders. Dr. Rakesh Seth from IARI Regional Station, Karnal provided the information on seed production techniques. Dr. S.K. Sharma, Head, Division of Crop Improvement and Coordinator of the training gave a brief view of the salt tolerant varieties of rice, wheat, mustard and other crops. The farmers interacted with the scientists with respect to their problems and appreciated the contributions and role of these salt tolerant varieties in increasing the productivity of their fields and improving their livelihood. Most of them appreciated the role of CSR 30, the first salt tolerant Basmati variety of rice and its impact in terms of its profitability and spread in the state of Haryana. They were assured that efforts for getting it renamed as a Basmati variety were underway with the concerned Authorities of Government of India. Dr. S.K Gupta, Director (A), CSSRI, Karnal emphasized the importance of these rules and regulations with respect to the plants varieties protection. He suggested that farmers should also educate other farmers in their villages with respect to these developments and hoped that farmers will think about registering their genetic material.

Visits abroad

Dr. R.L.Meena, Scientist (Selection Scale) visited USA from 15.7.2010 to 13.10.2010 for attending training on Bio-remediation

Dr. N.P.S. Yaduvanshi, Principal Scientist visited Australia from 31.7.2010 to 12.8.2010 for participation in 9th World Congress of Soil Science

Dr. R.K.Yadav, Principal Scientist visited Australia from 2.8.2010 to 10.9.2010 for attending training under Public Sector Linkage Programme under AusAid Project

Dr. Y.P.Singh visiting Tanzania from 1.9.2010 to 31.8.2011 as consultant in the IRRI- East & South Africa Region Office (ESARO)

Dr. Pradip Dey, Principal Scientist visited Washington DC. USA from September 27-30, 2010 for participation in the Evoke Summit.

Dr. S.K.Kamra, Head, Division of Irrigation and Drainage Engineering visited Brazil from Oct. 12-15, 2010 and presented two lead papers in Brazilian symposium on salinity

Dr. J.C. Dagar, Head, Soil and Crop Management Division visited Valencia, Spain from October 25-29,2010 for participation in Global Forum on Salinization and Climate Change (GFSCC)-2010

Dr. Chhedi Lal, Sr. Scientist, visited University of Bochum, Germany from Nov., 14-26, 2010 for attending International German Academic Exchange Sevice (DAAD) Alumni Summer School "Water & Energy"

Notable Publications

Dey, P. and Sikka, A. K. 2010. Water conservation through rainwater harvesting. *The IUP Journal of Soil and Water Sciences*, 3 (1): 61-71.

Jat, H.S., Mann, J.S., Sharma, S.C. and Chand Roop. 2010. Identification of best performing ardu (*Ailanthus excelsa*) genotypes in semi-arid ecosysatems of Rajasthan. *Indian Journal of Agricultural Sciences*, 80(3): 229-232.

Mandal, A. K. and Sharma, R. C. 2010. Computerized database of salt affected soils in Peninsular India using Geographic Information System. *Journal of the Indian Society of Soil Science*, 58 (1) : 105-16

Sarangi, S. K., Saikia, U. S. and Lama, T. D. 2010. Effect of rice (*Oryza sativa*) straw mulching on the performance of rapeseed (*Brassica campestris*) varieties in rice-rapeseed cropping system. *Indian Journal of Agricultural Sciences*, 80(7): 603-605.

Tomar, O.S., Dagar J.C and Minhas, P.S. 2010. Evaluation of sowing methods, irrigation schedules, chemical fertilizer doses and varieties of *Plantago ovata* Forsk to rehabilitate degraded calcareous lands irrigated with saline water in dry regions of northwestern India. *Arid Land Research & Management,* 24: 133-151

Chaudhari, S.K., Sahu, S.C. and Khot, A.B. 2010. Response of French bean (*Phaseolus vulgaris*) to irrigation schedules, phosphorus levels and phosphorus solublizer in Vertisols. *Environment and Ecology*, 28 (3B): 2141-2143.

Pandey, C.B. and Chaudhari, S.K. 2010. Soil and nutrient losses for different land uses and vegetative methods for their control on hilly terrain of South Andaman. *Indian Journal of Agricultural Sciences*, 80:399-404.

Bulletin / Book

Sharma, S.K., Dagar, J.C. and Singh, Gurbachan. 2010. Biosafar-biosaline(Agro) Forestry: Remidiation of Saline wastelands through production of renewable energy, biomaterials and fodder. Technical bulletin : CSSRI/Karnal/2010/4, Central Soil Salinity Research Institute, Karnal, pp 26.

Krishi Kiran-2010 (Eds Sharma, D.K., Tripathi, S.K., Singh, S.K., Yadav, R.K. Meena, R.L. and Gautam, R.K.), Central Soil Salinity Research Institute, Karnal, pp158

Awards and Recognitions

Dr. S. K. Gupta, Project Coordinator, AICRP on Management of Salt Affected Soils and Use of Saline Water in Agriculture was awarded the Fellowship by the Indian Society of Coastal Agricultural Research at the Annual Convention and National Seminar organized by the society in Goa on 27.10.2010. The Fellowship of the Society was conferred upon Dr. Gupta for his life time achievements and dedicated efforts of the team led by him to reclaim tsunami affected saline soils of the coastal and island ecology in the Andaman and Nicobar Islands, Tamil Nadu and Maldives.

Dr. Ranjay K. Singh, Senior Scientist (Agril. Extn.) was conferred the prestigious Fellowship of The Linnean Society of London for his outstanding contribution in the field of "Participatory community based biocultural diversity conservation in eastern Himalayas". His research work related to involvement of tribal communities of northeastern region in research, extension and policy decisions on conservation of natural resources and benefit shares mechanisms accrued from local biocultural resources.

Dr. Sanjay Arora, Senior Scientist, CSSRI, Regional Research Station, Bharuch (Gujarat) has been bestowed with the prestigious Gold Medal Award by Soil Conservation Society of India (SCSI), New Delhi for his outstanding contribution in Natural Resource Management and Development. Dr. Arora was awarded Gold Medal during SCSI Annual National Conference held at Shillong on November 11, 2010 for his work on management of soil and water in rainfed fragile ecosystems of Himalayas and degraded land management through scientific interventions based on improved indigenous techniques.

Dr. S.K. Chaudhari, Principal Scientist has been conferred with the Fellowship of Maharashtra Academy of Sciences for advancing the knowledge and understanding of soil-water dynamics in Vertisols and developing new concepts explaining changes in the hydraulic properties of Vertisols. He has also been bestowed with Outstanding Achievement Award of the Institution of Engineers (India) in the field of Irrigation Water Management for the year 2009-2010 for his contributions in on-farm water management research in promoting efficient water management technologies in the tribal areas.

Dr. Pradip Dey, Principal Scientist has been bestowed with the World Bank Summit Scholarship by the World Bank, Washington, DC. He was also designated as Social Innovator by the World Bank. He received a certificate to this effect during World Bank Summit: September 28-30, 2010 in Washington DC, USA

Superannuations/Promotions/New Entrants/Transfers

Superannuations

1. Sh. D.R.Khurana, AAO on 31.10.2010
2. Sh. Kanta Acharya, Asstt. on 30.11.2010
3. Dr. A.R.Bal, Principal Scientist on 31.12.2010
4. Sh. Shankar Mehto, Tractor Driver (T-5) on 31.12.2010
5. Sh. Ram Sakal, Skilled Supporting Staff on 31.12.2010

Promotions

1. Dr. R.S.Tripathi from Principal Scientist to Head, TET on 26.8.2010
2. Smt. P.Ghosh from UDC to Asstt. on 28.8.2010
3. Sh. Sultan Singh from UDC to Asstt. on 28.8.2010
4. Sh. A. Bhattacharya from UDC to Asstt. on 28.8.2010
5. Sh. Atam Parkash Bhatia from LDC to UDC on 28.8.2010
6. Dr. D.S.Bundela from Sr. Scientist to Principal Scientist on 30.8.2010
7. Dr. Anil R. Chinchmalatpure from Sr. Scientist to Principal Scientist on 23.9.2010
8. Smt. Anita from UDC to Asstt. on 28.10.2010
9. Smt. Jasbir Kaur from UDC to Asstt. on 28.10.2010
10. Sh. Ram Murat Rai from UDC to Asstt. on 28.10.2010
11. Sh. Bhagwan Dass from UDC to Asstt. on 28.10.2010
12. Sh. Som Singh from Assistant to AAO on 1.11.2010

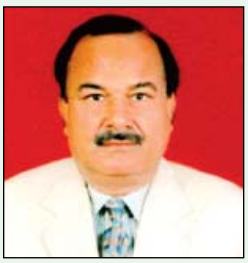
New Entrants

1. Sh.Salender Verma, Lab. Tech. (T-3) on 6.7.2010
2. Sh. Naveen Kumar, LDC on 7.7.2010
3. Smt. Ritu Rani, LDC on 9.7.2010
4. Sh. Santosh Kumar, Lab Tech. (T-3) on 12.7.2010
5. Sh. Neeraj Kumar Verma, Field Asstt. (T-3) on 2.8.2010
6. Dr. Parveen Kumar, Principal Scientist on 1.10.2010
7. Sh. Narender Kumar, Driver (T-1) on 14.10.2010
8. Sh. Ashok Kumar Kathuria, Jr. Acctts Officer on 19.10.2010
9. Dr. B. Maji, Head, RRS Canning Town on 1.12.2010

Transfers

1. Dr. R.K.Gautam, Principal Scientist selected as Head, Field Crops Division, CARI, Port Blair on 28.8.2010
2. Sh. M.N.V. Rao, Jr. Acctts. Officer to NRC on Meat, Hyderabad on 30.9.2010

Dr. D.K.Sharma, Director : A Profile



Dr. D.K.Sharma, Head, CSSRI-Regional Research Station, Lucknow assumed the charge of Director, CSSRI, Karnal on October 21, 2010. Dr. Sharma, Ph.D. from G.B.Pant University of Agricultural & Technology, Pantnagar, was selected as a scientist in ARS 1978 batch. Since then, he has been associated with CSSRI in various positions such as Scientist, Senior Scientist and Principal Scientist. In 2001, he was selected as Head, CSSRI-Regional Research Station, Lucknow. As Founder Head, he established and facilitated the station, supervised and monitored the research on reclamation and management of sodic soils in Uttar Pradesh. Considering his contribution to the building-up of the station, he was once again selected as Head of RRS in 2007. Dr. Sharma, in his 32 years long career has been associated in activities related to management of salt affected soils, water management in irrigation commands and use of saline ground water. He developed crop coefficients for important food, forage and oilseed crops. This information would go a long way in irrigation planning to manage precious water resource at farm and regional levels. At RRS, Lukhnow, he conceptualized and demonstrated an Integrated Farming System (IFS) model with appropriate components of arable, vegetable, horticulture and fish farming to ensure regular income besides ensuring food and nutritional security at household level. He has developed crop production technologies for salt-affected soils through efficient, balanced and integrated use of inputs including amendments and organic & inorganic fertilizers. His contributions to minimize cost of reclamation through resource conservation strategies in sodic land and participatory varietal selection for salt tolerant varieties have paved the way for sustainable reclamation of salt-affected soils. His contributions on use of poor quality sodic water through conjunctive use mode have proved environmentally safe and viable. He has critically examined the causes of falling ground water in rice-wheat growing areas and gave agronomic solutions and recommended policy interventions to save ground water. He has handled various externally funded research projects of international organizations such as IRRI, Philippines and Germany and national organizations such as INCID, MoWR, New Delhi, UPBSN, Lucknow and UPCAR, Lucknow.

Dr. Sharma traveled widely being the visiting scientist of University of California, Davis, USA, Wageningen Agriculture University, Wageningen, The Netherlands, University of Sussex, U.K. and IRRI, Philippines. He is credited with more than 109 research papers including 22 in international journals of repute. He has been honoured with FAO fellowship. Dr. Sharma, a Fellow of the Indian Society of Water Resource, Roorkee has been recognized with a Certificate of Excellence by K. R. Singh Education Society, Unnao, Uttar Pradesh. Dr. Sharma, currently the President of the Indian Society of Soil Salinity and Water Quality has earlier served as Councilor, Indian Society of Water Management, New Delhi.

संस्थान में सद्भावना दिवस का आयोजन

संस्थान के निदेशक डा. एस. के. गुप्ता की अध्यक्षता में संस्थान कर्मियों द्वारा देश के पूर्व प्रधानमंत्री स्व. राजीव गांधी का 65वां जन्मदिवस सद्भावना एवं अक्षय ऊर्जा दिवस के रूप में मनाया गया। डा. एस. के. गुप्ता ने राजीव गांधी जी के विज्ञान एवं प्रौद्योगिकी के क्षेत्र में दूरदर्शी कदमों पर प्रकाश डाला जिनके फलस्वरूप आज देश में टैलीकम्युनिकेशन एवं कम्पयूटर प्रणाली में क्रान्ति आई निदेशक ने बिजली की खपत घटाने तथा सौर ऊर्जा का प्रयोग करने की सलाह देते हुए प्राकृतिक संसाधनों जैसे जल, वायु, वनस्पति, सूर्य इत्यादि से उत्पन्न ''अक्षय ऊर्जा'' को सुरक्षित रखने का भी आह्वान किया। निदेशक द्वारा सद्भावना दिवस पर संस्थान के अधिकारियों एवं कर्मचारियों को जाति, धर्म, क्षेत्र और भाषा का भेदभाव किए बिना भावात्मक एकता और सद्भावना के लिये हिंसा का सहारा लिये बिना सभी प्रकार के मतभेद बातचीत और संवैधानिक माध्यमों से तय करने की शपथ भी दिलाई गई।

संस्थान द्वारा जागसी (सोनीपत) में किसान गोष्ठी का आयोजन

संस्थान ने सोनीपत जिले के जागसी गाँव में दिनांक 7 सितम्बर, 2010 को किसान गोष्ठी का आयोजन किया। इस गांव में हरियाणा आप्रेशनल पॉयलट प्रोजेक्ट चल रहा है इसके अंतर्गत संस्थान के परामर्श एवं सहयोग से उपसतही जलनिकास तन्त्र द्वारा घुलनशील व हानिकारक लवणों को खेतों से बाहर निकालने का कार्य किया गया है उन्ही खेतों पर संस्थान द्वारा विकसित विभिन्न लवणसहनशील प्रजातियों में धान की सीएसआर 10, 13, 23, 27, 30 व 36 प्रजातियों के अलावा पेड़ पौधों की प्रजातियाँ भी परीक्षण एवं प्रदर्शन हेतु लगाई गई हैं। इसी गाँव के एक किसान के खेत पर तालाब बनाकर मछली पालन का कार्य भी शुरू किया गया है। इस अवसर पर संस्थान के निदेशक डा. एस. के. गुप्ता, प्रौद्योगिकी मूल्यांकन एव प्रसार प्रभागाध्यक्ष डा. आर. एस. त्रिपाठी एवं विभिन्न विषय के वैज्ञानिकों एवं हरियाणा कृषि विभाग एचओपीपी के परियोजना उपनिदेशक श्री जे. पी. वर्मा द्वारा किसानों की कृषि सम्बन्धी समस्याओं का समाधान किया गया। संस्थान द्वारा विकसित तकनीकियों की जानकारी लेने हेतु गांवों के लगभग 300 किसानों ने किसान गोष्ठी में भाग लिया। डा. गुप्ता ने किसानों से आह्वान किया कि वे वैज्ञानिकों के साथ मिलकर एवं उनके परामर्श के अनुसार वैज्ञानिक ढंग से खेती करें और लवणसहनशील प्रजातियाँ एवं कम पानी की मांग की तकनीक अपनायें ताकि प्राकृतिक संसाधनों को भी बचाया जा सके और कम लागत में अधिक पैदावार ली जा सके।

संस्थान के वरिष्ठ वैज्ञानिक डा. आर. के. सिंह ने एक कृषि ज्ञान प्रतियोगिता आयोजित की जिसमें परम्परागत खेती एवं आधुनिक खेती से सम्बन्धित किसानों से विभिन्न प्रश्न पूछे गए। विजयी किसानों को संस्थान के निदेशक एवं मुख्य अतिथि डा. एस. के. गुप्ता द्वारा पुरस्कृत किया गया।

हिन्दी पखवाड़े का आयोजन

संस्थान में 14 से 28 सितम्बर 2010 तक हिन्दी पखवाड़ा मनाया गया। संस्थान के निदेशक डा0 एस0 के0 कामरा ने हिन्दी पखवाड़े का उद्घाटन किया। उन्होंने अपने उद्घाटन अभिभाषण में कहा कि यह दिवस हमें अपने संवैधानिक उत्तरदायित्व के प्रति सचेत करता है। निदेशक ने कहा कि संस्थान द्वारा प्रकाशित ''कृषि किरण'' पत्रिका के पहले और दूसरे अंक को भारतीय कृषि अनुसंधान परिषद द्वारा अपने स्थापना दिवस पर ''गणेश शंकर विद्यार्थी प्रोत्साहन तथा द्वितीय पुरस्कार से सम्मानित किया जा चुका है। इस अवसर

पर राजभाषा में सूचना प्रौधोगिकी आवश्यक है या नहीं विषय पर एक वाद–विवाद प्रतियोगिता भी आयोजित की गई जिसमें 10 प्रतिभागियों ने अपने विचार प्रकट किए। हिन्दी पखवाड़ा के दौरान कम्प्यूटर पर हिन्दी में टाईपिंग, प्रश्नोत्तरी, टिप्पणी एवं मसौदा लेखन, पोस्टर प्रदर्शनी, आवेदन पत्र लेखन (कुशल सहायक कर्मचारियों हेतु) और कविता पाठ प्रतियोगिता (नगर स्तरीय) का आयोजन किया गया। डा. त्रिपाठी ने सभी कर्मियों से हिन्दी में कार्य करने की अपील करते हुए कहा कि नये विचार और चिंतन अपनी मातृभाषा द्वारा ही स्फुटित हो सकते हैं। इस अवसर पर राजभाषा को बढ़ावा देने के लिए कृषि, उपभोक्ता मामले, खाद्य और सार्वजनिक वितरण मंत्री माननीय श्री शरद पवार एवं महानिदेशक भारतीय कृषि अनुसंधान परिषद नई दिल्ली डा. एस. अय्यप्पन द्वारा भेजे गए संदेशों को पढ़ा गया।

खरीफ किसान मेले का आयोजन

संस्थान में दिनांक 8 अक्तूबर 2010 को खरीफ किसान मेले का आयोजन किया गया। मेले में एक हजार से अधिक किसानों, प्रसार कार्यकर्ताओं व स्कूल/कालेजों के विद्यार्थियों ने भाग लिया। मेले का उद्घाटन माननीय डा. आर. एस. परोदा, अध्यक्ष, किसान आयोग, हरियाणा द्वारा किया गया। निदेशक, कासा, नई दिल्ली डा. आई. पी. अबरोल ने समारोह की अध्यक्षता की। मेले में करनाल स्थित भारतीय कृषि अनुसंधान परिषद के सभी संस्थानों, हरियाणा सरकार के कृषि विभागों, चौधरी चरण सिंह हरियाणा कृषि विश्वविद्यालय के क्षेत्रीय केन्द्र, उचानी व अन्य सरकारी संस्थाओं द्वारा अपनी–अपनी कृषि सम्बन्धी प्रदर्शनियों के अलावा सहकारी, गैर सरकारी, प्राइवेट तथा स्वयं सेवी संस्थाओं द्वारा बीज, खाद, दवाईयॉं, कृषि संयंत्र, ट्रैक्टर आदि के लगभग 60 स्टाल लगाये गये। किसान मेले के दौरान किसानों के लिये संस्थान के फार्म पर चल रहे अनुसंधान प्रयोगों के भ्रमण के साथ–साथ एक किसान गोष्ठी भी आयोजित की गई जिसमें वैज्ञानिकों/विषय विशेषज्ञों द्वारा किसानों की कृषि सम्बन्धित समस्याओं का समाधान किया गया। माननीय डा. आर. एस. परोदा ने कुछ प्रगतिशील किसानों से कृषि संबंधी समस्याओं पर अलग विचार–विमर्श किया। संस्थान के निदेशक डा. एस. के. गुप्ता ने समारोह के मुख्य अतिथि, विशिष्ट अतिथि, विशेषज्ञों, किसानों, प्रसार कार्यकर्ताओं तथा अन्य आगन्तुकों का स्वागत किया तथा संस्थान की गतिविधियों एवं उपलब्धियों पर विस्तार से प्रकाश डालते हुये कहा कि संस्थान द्वारा लवणग्रस्त भूमि सुधार तकनीक एवं निम्न गुणवत्ता वाले पानी का उपयोग करके अच्छी उपज लेने के लिये सार्थक प्रयास किये गये हैं। संस्थान द्वारा विकसित तकनीक अपनाकर प्रतिवर्ष 45 हजार हैक्टर लवणग्रस्त मृदाओं को सुधारा जा रहा है, फलस्वरूप देश की 1.8 मिलियन हैक्टेयर लवणग्रस्त भूमियों को सुधारा जा चुका है। इन भूमियों के सुधार से देश में प्रतिवर्ष 12 से 15 मिलियन टन अतिरिक्त वार्षिक अनाज उत्पादन हो रहा है तथा भूमि सुधार प्रक्रिया में काफी अधिक रोजगार मिलने से लाखों किसान लाभान्वित हो रहे हैं। निदेशक महोदय ने इस अवसर पर

लवणग्रस्त मृदाओं के सुधार व निम्न गुणवत्ता वाले पानी का कृषि में उपयोग, पानी की रिचार्ज तकनीक, फसल विविधीकरण, बहुउद्देश्यीय खेती, प्राकृतिक संसाधन प्रबन्धन एवं जीरो टिलेज तकनीक आदि की जानकारी दी ।

खरीफ किसान मेले के मुख्य अतिथि एवं किसान आयोग, हरियाणा के अध्यक्ष डा. आर. एस. परोदा ने अपने उद्घाटन भाषण में संस्थान की उपलब्धियों की सराहना करते हुए वैज्ञानिकों से किसान की सामाजिक व आर्थिक परिस्थितियों के अनुसार तथा प्राकृतिक संसाधनों को संरक्षित रखते हुए अनुसंधान करने की अपील की ताकि देश की कृषि पैदावार में अधिक टिकाऊपन लाया जा सके। डा. परोदा ने कृषि उत्पादों की गुणवत्ता में वृद्धि करके उन्हे अन्तर्राष्ट्रीय स्तर का बनाने पर बल दिया। उन्होंने कहा कि उत्पादन के साथ कृषि उत्पादों के प्रसंस्करण तथा विपणन के लिये भी काम करने की आवश्यकता है ताकि किसान को अपनी उपज का सही मूल्य मिल सके। उन्होंने संस्थान द्वारा की जा रही बहुधन्धी माडल खेती की सराहना करते हुए कहा कि घटती जोत व गिरते जलस्तर को ध्यान में रखते हुये सीमान्त व छोटे किसानों के लिये यह अच्छी तकनीक है। डा. परोदा ने कहा कि वैज्ञानिकों और किसानों के सामने सबसे बड़ी चुनौती यह है कि दिनों–दिन बढ़ रही प्रति हैक्टर लागत को कैसे कम किया जाय जिससे किसानों को प्राप्त होने वाली आमदनी बढ़ सके।

अपने अध्यक्षीय अभिभाषण में डा. आई. पी. अबरोल ने संस्थान के वैज्ञानिकों द्वारा किए जा रहे शोध कार्यो की सराहना की और वैज्ञानिक ढंग से खेती करने, खेती में रासायनिक खादों की बजाय जैविक खाद का प्रयोग एवं मिश्रित खेती करने पर बल दिया। उन्होंने संरक्षित खेती, कम पानी की मांग वाली तकनीकें, बैड प्लाटिंग, लेजर लैंड लेवलिंग, धान की सीधी बिजाई एवं जीरो टिलेज तकनीक से खेती करने पर बल दिया ताकि घटते भूजल स्तर को कुछ हद तक बचाया जा सके और उत्पादन लागत को कम करके अधिक उपज ली जा सके। कुछ किसानों ने भी अपने विचार रखते हुये खुशी जाहिर की कि इस संस्थान के वैज्ञानिक किसानों के हित में कार्य कर रहे हैं। इस अवसर पर करनाल स्थित स्कूलों/कालेजों के छात्र व छात्राओं ने भी मेले का भ्रमण किया तथा बच्चों को अनुसंधान गतिविधियों जैसे मिट्टी एवं पानी जांच प्रयोगशाला, टिशू कल्चर प्रयोगशाला, लाईसीमीटर, ग्रीन हाउस, ग्लास हाउस, औषधीय उद्यान, मौसम वेधशाला, बहुउद्देशीय खेती तथा पानी की रिचार्ज तकनीक आदि की जानकारी दी गई।

किसानों द्वारा उनके खेत से लाये गये मिट्टी एवं पानी के नमूनों की निःशुल्क जांच की गई। गेहूं की उन्नत प्रजातियों में पीबीडब्ल्यू 550, डीबीडब्ल्यू 17, एचडी 2894, केआरएल 19 तथा सरसों की लवण सहनशील प्रजातियों में सीएस 52, 54 व 56 के बीजों की बिक्री भी की गई।

सतर्कता जागरूकता सप्ताह का आयोजन

संस्थान में 25 अक्तूबर से 1 नवम्बर 2010 तक सतर्कता जागरूकता सप्ताह मनाया गया जिसके तहत 25 अक्तूबर, 2010 को संस्थान के निदेशक डा. डी. के. शर्मा द्वारा संस्थान के कर्मचारियों को सतर्कता जागरूकता हेतु शपथ दिलाई गई। निदेशक ने इस अवसर पर कर्मियों का आह्वान करते हुये कह कि वे दैनिक कार्यों में सत्यनिष्ठा, पारदर्शिता, ईमानदारी और निष्पक्षता अपनाते हुए भ्रष्टाचार उन्मूलन में सहयोग करें और अपने सामूहिक प्रयासों द्वारा संस्थान को गौरवशाली बनाएं । इस अवसर पर संस्थान के सतर्कता अधिकारी एवं प्रधान वैज्ञानिक डा. पी. सी. शर्मा द्वारा सतर्कता जागरूकता सप्ताह आयोजन के उद्देश्य पर प्रकाश डाला गया, उन्होंने कहा कि हमें सूचना के अधिकार के कानून के प्रति सचेत रहना चाहिए। संस्थान के वरिष्ठ प्रशासनिक अधिकारी श्री रत्नेश कुमार यादव ने विचार व्यक्त करते हुए कहा कि यदि चैन की नींद लेनी है तो हमें सतर्कता के प्रति जागरूक होना होगा।

पलवल के किसानों के लिए लवणीय मृदा सुधार जागरुकता कार्यक्रम

संस्थान में 25 अक्तूबर 2010 को पलवल (हरियाणा) के किसानों के लिए जलाक्रान्त एवं लवणीय भूमि सुधार तकनीक कार्यक्रम के अंतर्गत दो दिवसीय जागरुकता शिविर लगाया गया। प्रशिक्षण शिविर का शुभारम्भ संस्थान के निदेशक डा. डी. के. शर्मा द्वारा किया गया। दो दिवसीय प्रशिक्षण के दौरान किसानों को विषयक जानकारी देने के अलावा हरियाणा आपरेशनल पायलट प्रोजैक्ट, कृषि विभाग हरियाणा एवं इस संस्थान द्वारा जागसी (सोनीपत) में लगाए गए उपसतही जलनिकास तंत्र को भी दिखाया गया । इस प्रशिक्षण शिविर में जिला पलवल के 30 किसानों ने भाग लिया। निदेशक डा. डी. के. शर्मा ने प्रशिक्षण शिविर में आए सभी किसानों एवं अधिकारियों का स्वागत किया। उन्होंने बताया कि हरियाणा में सोनीपत, झज्जर, भिवानी, जीन्द, सिरसा, फतेहाबाद, पलवल, रोहतक आदि जिलों में जलाक्रान्त एवं लवणीय मृदा की समस्या है जो उपसतही जलनिकास तंत्र लगाकर खेती योग्य बनाई जा सकती हैं। इस तंत्र द्वारा खेत के हानिकारक एवं घुलनशील लवणों को पाइपों द्वारा खेत से बाहर निकालकर लवणीयता को कम किया जाता है।

परियोजना समन्वयक एवं प्रशिक्षण कोर्स निदेशक डा. एस. के. गुप्ता ने बताया कि एचओपीपी, कृषि विभाग हरियाणा एवं केन्द्रीय मृदा लवणता अनुसंधान संस्थान के बीच आगामी 5 वर्षों के लिए हुए समझौते के अनुसार हरियाणा के तीन स्थानों पलवल, झज्जर व फतेहबाद जिलों की जलाक्रान्त एवं लवणीय भूमि सुधार हेतु उपसतही जलनिकास तंत्र लगाए जाएगे। डा. गुप्ता ने सभी किसानों का ध्यान गोहाना (सोनीपत), कलायत (कैथल), बेरी (झज्जर), चरखीदादरी (भिवानी), जागसी (सोनीपत), दरबाँ कला (सिरसा) व वनमदोंरी (फतेहाबाद) मे भूमिगत जलनिकास के सफल प्रयोग की ओर दिलाया तथा आह्वान किया कि वें अपने खेतों पर यह तंत्र लगवाएं और अपनी जलाक्रान्त व लवणीय मृदाओं को ठीक करके खेती योग्य बनाकर लाभ उठाएं।

परियोजना उप निदेशक (एचओपीपी) करनाल श्री जे. पी. वर्मा ने भूमि सुधार तथा एचओपीपी के योगदान पर प्रकाश डालते हुए कार्यक्रम आगे बढ़ाने में संस्थान के वैज्ञानिकों, हरियाणा कृषि विभाग के अधिकारियों एवं किसानों के सहयोग पर चर्चा की।

मुख्य आगन्तुक

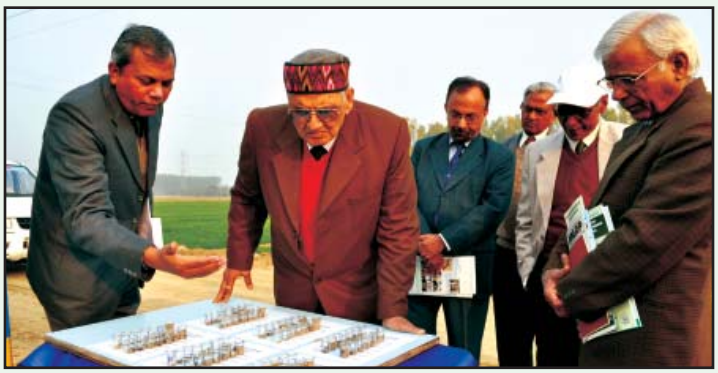
निदेशक डा. डी. के. शर्मा इथोपिया के वैज्ञानिकों को संस्थान की उपलब्धियों के बारे में जानकारी देते हुए

डा. एस. के. गुप्ता जर्मनी के वैज्ञानिक को बहुउद्देशीय खेती का उद्देश्य बताते हुए

यू. एस. ए. आई. डी. के वैज्ञानिकों ने संस्थान का दौरा किया तथा अनुसंधान कार्यों के बारे में जानकारी प्राप्त की

कृषि मंत्रालय में सचिव श्री पी. के. बासु (भा. प्रशा. सेवा), डा. गुरबचन सिंह, कृषि आयुक्त, भारत सरकार एवं श्री मुकेश खुल्लर, संयुक्त सचिव ने संस्थान की बहुधन्धी मॉडल खेती के बारे में जानकारी प्राप्त की

डा. आर. एस. परोदा, अध्यक्ष, किसान आयोग, हरियाणा संस्थान के अनुसंधान कार्यों की जानकारी प्राप्त करते हुए



क्यू आर टी के अध्यक्ष डा. खन्ना व अन्य सदस्यों ने संस्थान के अनुसंधान कार्यों का निरीक्षण किया

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