PDFSR Newsletter

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भारतीय कृषि अनुसंधान परिषद

Agrisearch with a human touch

Project Directorate for Farming Systems Research
(Indian Council of Agricultural Research)
Modipuram, Meerut-250 110, Uttar Pradesh

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PDFSR

Project Directorate for Farming Systems Research (PDFSR) became functional on 23 February, 2010 after renaming Project Directorate for Cropping Systems Research (PDCSR), which was established by Indian Council of Agricultural Research, New Delhi in April, 1989 at Modipuram, Meerut (Uttar Pradesh). Similarly, AICRP on CS became AICRP on IFS which is an integral part of PDFSR with 31 on-station IFSR centres, 11 on-station CSR centres and 32 on-farm research centres spread across length and breadth of the country. The directorate is also leading a Network Project on Organic Farming (NPOF) with 13 centres from 2004.

Vision

Sustainable management of farm resources in integrated manner for achieving household food, nutritional and livelihood improvement.

Mission

Food, nutrition, livelihood and environment improvement of small and marginal farmers through integrated farming systems research approach.

PDFSR Annual Day

The directorate celebrated its Annual Day on February 23, 2012. The day was imprinted with several events like annual day lecture by DDG(NRM), inter-institutional sports and quiz competition with neighbouring ICAR institutes, fete for children's and family. On the special occasion, Dr. A.K. Singh, Deputy Director General (Natural Resource Management), Indian Council of Agricultural Research, New Delhi dedicated Pranali Dwar-1 (Main Gate) to PDFSR.

Dr A.K. Singh also delivered an annual day lecture on the theme of **"Building climate resilience agriculture through integrated farming systems".** In his lecture, he called upon the scientists to develop farming system models, which are fit for different farm situations amidst global climate change scenario.

He further stressed the need to have alternative remunerative cropping systems to unsustainable cropping systems especially in

the north-western part of the country. The publications brought out by the directorate were also released by DDG (NRM).

Earlier, Dr. B. Gangwar, Project Director, PDFSR welcomed Dr. A.K. Singh and informed that under his guidance and support, directorate is performing to achieve its vision and mission. The Project Director called upon the scientists to take the challenges of giving different modules of farming systems, which are remunerative, climate resilient, socially acceptable and environment friendly for small and marginal farmers. The directorate had become colourful with full of events like friendly inter institutional sports and quiz competitions with the staff of Project Directorate on Cattle (PDC), Meerut. In sports, PDFSR team won the volleyball shooting match, whereas PDC team won the tug of war game. In quiz competition, the PDC team led by Sh. NS Saini and Sh. Chaman Singh won the first prize. In the afternoon, fete for PDFSR staff and their family members were organized, which consisted of competitions like jalebi race, spoon and marble race, needle and thread race, rangoli, and musical chair competition.

In the evening, a thrilling cultural programme was organized which included Ragini performance by the artist

invited by the All India Radio, Delhi and a variety of dance performances by the children of staff members.

All winners of games and participants of cultural programme were encouraged by giving attractive prizes. The retired persons of the directorate were also felicitated on the occasion by the Project Director.

Dr Anil Kumar, Principal Scientist (Agricultural Extension) co-ordinated the annual day events.

NICRA Work Plan Meet

The National Initiative on Climate Resilient Agriculture (NICRA) annual work plan meet was held during 21-22 February, 2012 under the chairmanship of Dr A.K. Singh, DDG (NRM) to address the theme of climate adaptation and mitigation potential through farming systems and conservation agriculture. Twenty chief agronomists of AICRP-IFS centres participated in the meet which had three technical sessions. The annual meet programme was inaugurated by Dr A. K. Singh, DDG (NRM).

The programme started with welcoming chief guest by Dr B. Gangwar, Project Director. In his inaugural address, Dr. A. K. Singh, DDG (NRM) opined that properly designed farming system has the potential to mitigate the ill effects of climate change and he expects that the group of IFS can work towards this challenge. He also provided guidance to the participants on how to move ahead on this important aspect of research.

The programme was coordinated by Dr V.P. Chaudhary. The first session was started with the presentation of Dr Ch. Srinivasarao on "Conservation agriculture for soil carbon sequestration and mitigation of GHGs emission" under theme area of carbon sequestration potential in agricultural system and conservation agriculture. In the second technical session on theme area of "Long term crop-weather relationship" Dr B. Gangwar made the lead presentation on, "Adoption and mitigation potential through conservation agriculture and IFS modules".

In the third technical session on methodologies for estimation of GHGS in cropping/farming systems, Dr S.S. Pal, Principal Scientist had given his presentation on "Guide to field measurement of carbon sequestration". At the end of the meet, a road map with work plan has been finalized for working on the researchable issues of climate change mitigation potential of farming systems.

Sponsored Trainings

Training on IFS

A collaborative training programme was organized on "Farming Systems Management for Livelihood Improvement of Small Land Holders" during 6-10 February, 2012, sponsored by NABARD, Kolkata which was attended by 20 progressive farmers registered with NABARD from the states of Uttar Pradesh, Madhya Pradesh, Chattisgarh, Rajasthan, Gujarat and Maharashtra.

Dr B. Gangwar, Project Director inaugurated the programme In his opening remarks, he complemented the efforts. Taken by the NABARD in training the farmers on IFS. The valedictory session of the training programme was graced by Dr Panjab Singh, Ex Secretary (DARE) and Director General, ICAR. In his valedictory address, Dr Singh, lauded the efforts taken by the directorate in organizing the collaborative training programme on

integrated farming systems for farmers. He emphasized that while imparting training programme, the resource availability and constraints faced by the farmers should be taken in to account. He also distributed certificates to all the participants.

The impact assessment of the training revealed that there was about 20.8 percent gain in overall knowledge of the participant farmers as a result of training imparted to them.

MTC on NRM

Model Training Course (MTC) sponsored by Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India on "Natural Resource Management" was organised during 12-19 March, 2012.

The purpose of this training was to introduce and popularize energy efficient and cost effective natural resource management techniques for improving the system productivity, profitability, soil health and

environmental quality and efficient use of irrigation water. During the training, trainees have also been exposed to practical field demonstration at PDFSR, Modipuram, Sardar Vallabhai Patel University of Agriculture and Technology, Modipuram, Central Potato Research Institute Regional Station, Modipuram and few selected farmers field in Muzzafarnagar, and Haridwar. Twenty one trainees participated in the programme representating five states namely Andhra Pradesh, Bihar, Chattisgarh, Madhya Pradesh and Uttar Pradesh. Dr. B. Gangwar, Project Director, PDFSR distributed the certificates to all participants in the valedictory session.

Training on Sugarcane

A training on "Improved Technologies for Rice and Sugarcane Production" was organized on 22 March 2012. The training was sponsored by Uttar Pradesh Sugarcane Development Council (UPSDC) under ATMA project in which 12 farmers and 4 Cane Development Officers from Modinagar tahsil of Ghaziabad district participated.

Training of Staff

Multi Skill Training for TSS

A multi-skill training was organized in the directorate during 01-15 June, 2012 for temporary status/ casual labour staff of PDFSR who do not possess the requisite matriculate qualification to enable the office to grant them the Grade Pay of Rs.1800/- in the pay band of Rs.5200-20200. The training programme consisted of lectures/ practicals on various skills which were supposed to be acquired by the participants to be able to perform higher level of assignments in the directorate. The training was attended by 8 supporting staff namely Sh. Gajendra Singh, Sh. Devendra Kumar, Sh. Vijay Shankar, Sh. Rakesh Kumar Sharma, Sh. Kripa Shankar Tiwari, Sh. Narendra Pal Singh, Sh. Subhash Chand Sharma and Sh. Sunil Kumar Sharma. On successful completion of the training, the Project Director, Dr. B. Gangwar distributed certificates to all the participants. Dr. Anil Kumar, Principal Scientist co-ordinated the training.

New Initiatives

Online Data Submission

As per the decision taken in the Biennial Workshop held at Hyderabad during 2010, a new initiative has been taken up by the directorate in collaboration with Indian Agricultural Statistics Research Institute (IASRI), New Delhi to facilitate online data submission by AICRP centres. The data from 31 on-station, 11 CSR and 32 on-farm centres are received in the form hard copy till 2010-11 which takes vital time, energy and resources. In order to save time, energy and resources, online data submission process has been formulated and initiated by the directorate. The main objective of this initiative is to create real time data submission along with creation of repository information process for the AICRP on Integrated Farming Systems. To start with, a "Web enabled information system for On-Farm Research experiments" has been finalized and put in place for real time data submission. On-Farm Research (OFR) comprises of three experiments *viz.,* response of pre-dominant cropping systems to nutrients, crop diversification/intensification and integrated farming system. Online system has been developed for the first experiment of OFR on response of nutrients.

A training on "Web enabled information system for On-Farm Research experiment" was conducted for OFR Agronomists during 20-21 April 2012 at IASRI, New Delhi. Dr V.K. Bhatia, Director, IASRI, New Delhi and Dr B. Gangwar, Project Director graced the inaugural programme.

Dr V.K. Bhatia informed the participants that the information system developed for online data submission is the first of its kind in the history of IASRI for on-farm

experiments and this initiative should be taken forward for other experiments also. Dr B. Gangwar informed the house that he is very happy to see the laptops brought by OFR Agronomists for the training. He also mentioned, in order to facilitate the real time data processing, all the centres have been provided with laptops, internet connection and printers.

The facilities given should be utilized optimally for the specific purpose and requested the participants to learn the data submission process completely with due attention as the data of 2011-12 have to be compulsorily submitted through online system.

In the valedictory, Dr A.K. Singh, DDG (NRM) was the chief guest along with Dr V.K. Bhatia, Director, IASRI and Dr B. Gangwar, Project Director. After taking the feedback from the participants, Dr A.K. Singh, DDG (NRM) congratulated the IASRI and PDFSR for this new initiative and asked to continue this effort for other experiments of the AICRP on IFS in a shortest possible time.

He also informed that "Integrated Farming Systems" is one of the important programme of the council as this will serve as a mitigation tool for climate related risks. Dr B. Gangwar, Project Director asked the OFR Agronomists to devote themselves to the cause of on-farm farming systems research.

In the afternoon of 21 April, an interaction meeting with OFR Agronomists were also conducted at IASRI, New Delhi to deliberate on the issues related to implementation of on-farm integrated farming systems programme. Dr. B. Gangwar, Project Director, Dr Kamta Prasad, Dr N. Ravisankar and Dr S.P. Singh, Principal Scientists of the directorate have participated in the interaction meeting with OFR Agronomists.

Platform Research

Considering the need for ensuring food security in the face of changing climate, the ICAR Platform on "Conservation Agriculture" is planned during XII Plan. This will become a major initiative for research, technology demonstration and capacity building in the area of conservation agriculture. The scheme will have the following three components:

1. Strategic research: To carry out long term research on evolving CA package and development of suitable

machinery for irrigated and rainfed cropping systems by understanding and overcoming operational constraints at farm level through network of identified research institutes and SAUs.

2. Technology demonstration and dissemination: To organize on-station and on-farm front line demonstration and adaptive trials of conservation agriculture technologies mainly in 50 districts of Indo-Gangetic Plains.

3. Capacity building: Capacity building of scientists through international and national training and consultancy; and of other stakeholders (extension staff and farmers) through nationwide training on CA.

The proposal was presented in the Directors conference on 15 February 2012 and final concept note was submitted to council on 07 April 2012. The same was also presented in meeting with DG, DDGs, ND-NAIP and Directors on 24 May 2012. In the final concept note submitted to council 14 ICAR institutes, 8 SAUs, 2 CGIAR institutes, 1 NGO and 50 KVKs are partnering with a budget estimate of Rs 120 crores.

Meetings

Quinquennial Review Team

The fourth Quinquennial Review Team (QRT) of the directorate including AICRP on Integrated Farming Systems has been constituted with eminant experts from different fields. The team is led by Prof. Panjab Singh, Ex-Secretary DARE & DG, ICAR as Chairman with Dr K. Pradhan, Ex-Vice Chancellor, OUAT Bhubaneswar, Dr Gyanendra Singh, Ex-Vice Chancellor MGGU Chitrakoot, Dr CL Acharya, Former Director, IISS, Bhopal, Dr D.M. Hegde, Ex-Project Director, DOR, Dr W.S. Dhillon, Director, Post harvest technology centre, Hyderabad, PAU, Ludhiana and Dr Anjani Kumar, Pr. Scientist, NCAP, New Delhi as members. The Member Secretary of the QRT is Dr. Kamta Prasad, Pr. Scientist (Agronomy). The first meeting of the team was held during 9-10, February 2012 at the directorate in which Chairman and all the members of team except Dr K. Pradhan participated.

At the outset, Dr B. Gangwar, Project Director welcomed the chairman and members and presented the achievements in terms of physical, technical and financial outcome of the directorate including AICRP on IFS during 2007-2012. The action taken report on the recommendations of the previous QRT was presented by Dr Kamta Prasad, Member Secretary. Achievements of various programmes were presented by respective Programme Facilitators of the units. The committee visited all the field experiments of the directorate in the evening of 9th and morning of 10th February 2012 and reviewed the progress. The chairman appreciated the efforts taken by the directorate in meeting the objectives and serving the small and marginal farmers. The team has finalized the schedule for visiting the different AICRP centres for review of work. The meeting ended with vote of thanks proposed by member secretary.

Research Advisory Committee

The 2nd meeting the 6th Research Advisory Committe was held under the chairmanship of Prof. Panjab Singh, Ex-Secretary DARE and DG ICAR during 9-10 April 2012. Dr K.K. Vass, Ex-Director, CIFRI, Barrackpore, Dr Shyam Singh, Ex-Director, NRC Citrus, Nagpur and Dr A.K. Yadav, Director, National Centre on Organic Farming, Ghaziabad attended as members. Dr B. Gangwar, Project Director welcomed the chairman and members and presented the highlights in terms of research, infrastructure, human resource development and publications of the directorate during 2011-12. He informed to the team that based on the information generated over the years, the zone-wise efficient alternative cropping systems, along with their package of practices, have been documented in the form of a book entitled, "Efficient Alternative Cropping Systems". The action taken report of the previous meeting was presented by Dr Kamta Prasad, Principal Scientist and Member Secretary of RAC. The research project wise achievements were presented before the committee by respective Programme Facilitators.

All the scientists of the directorate participated in the meeting. The Chairman and members have expressed their overall satisfaction about the progress of research at the directorate. Chairman remarked that farming systems are difficult to manage, but once managed; this approach may give answer to many issues being talked to be managed through agriculture development, such as resource conservation and sustainability, sustainable productivity, climate change, employment, nutritional security, increasing farmers income etc. Tagging the system with on-farm value addition/ processing is very important to achieve the goals of production-consumption chain. The committee is of the opinion that empowering of Project Directorate to a full-fledged institute will give flexibility for management of the difficult rather complex, farming systems in the country. The meeting ended with vote of thanks proposed by member secretary.

Institute Management Committee

The 29th meeting of Institute Management Committee (IMC) was held on 14 February, 2012 under the chairmanship of Dr B. Gangwar, Project Director.

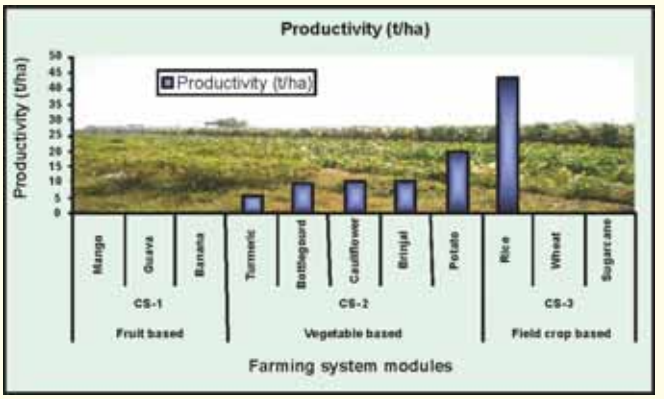
Dr. J. C. Dagar, ADG (Agronomy and Agroforestry), ICAR, New Delhi, Shri K.K. Sharma, Ex- President District Board, Bulandshahar (UP), Dr. P.C. Bhatia, EX-ADG- ICAR, Dr. Arjun Prasad Tiwari, Dy. Director (Hort), Meerut and Dr. Chandra Sen, Prof & Head, BHU, Varanasi attended the meeting as members of IMC while Dr. Kamta Prasad, Dr. J.P. Singh, Dr. S.S. Pal, Dr. M.P. Singh, Principal Scientist Principal Scientists and Sh. Anil Kumar Agrawal, F.& A.O attended the meeting as special invitees. At the outset, Dr. B. Gangwar, Project Director and Chairman of the Committee welcomed all the members and special invitees on behalf of the Directorate. Subsequently, the agenda items, which were placed before the IMC were discussed in detail. The Action taken report on proceedings of 28th meeting was accepted in toto. The chairman apprised the committee that with the concerted efforts, the scientific staff strength position increased from 24 to 31 during last one year besides full occupancy of the residential quarters. The Finance & Accounts Officer of the directorate presented the budget and utilization under the head Plan/ Non-plan and other projects during financial year. The issues related to authorization of empanelled hospitals of CGHS in Meerut for treatment of employees at CGHS rates, construction of boundary wall of E block, prioritization /replacement of items approved under EFC were discussed and appropriate recommendations were made. Member secretary, Mr. H.S. Chauhan, Assistant Administrative Officer, PDFSR, proposed the vote of thanks.

Research Highlights

Productivity and economic evaluation of horticulture based farming systems

Poonam Kashyap and Kamta Prasad

Experiments were conducted at PDFSR, Modipuram to develop horticultural crop based model for improving profitability, enhanced productivity and nutritional security of small and marginal farmers particularly of western plain zone of Uttar Pradesh, in which three modules, viz. Fruit based (CS 1, 0.3 ha), vegetable crops based (CS 2, 0.22 ha) and field crop based (CS 3, 0.4 ha) are evaluated. Among the modules, vegetable based system has been proved to be most effective in terms of productivity in the first year with adoption of recommended dose of fertilizers and other cultural practices. Maximum yield of 20.4 t/ha was recorded with potato followed by brinjal (10.3 t/ha) and cauliflower (10.2 t/ha).

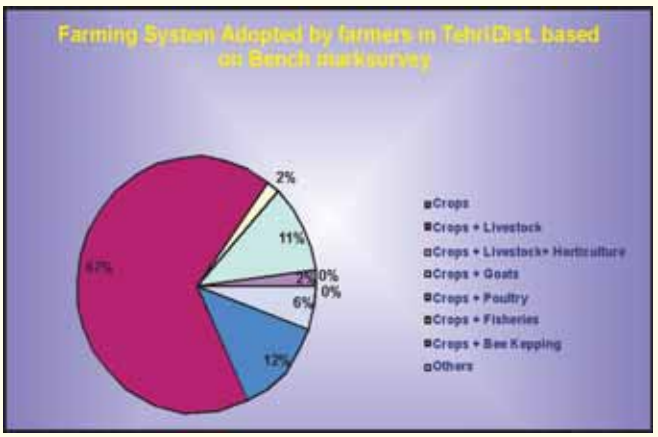


Ensuring livelihood security through farming system approach in Tehri district of Uttarakhand

B.Gangwar, M.P. Singh, S.P. Singh, V.P. Choudhary, Poonam Kashyap and Sanjeev Kochewad

Under the THDC sponsored project, studies were undertaken in clusters of randomly selected villages in Tehri districts of Uttarakhand using stratified random sampling. Two clusters namely Koteshwar and Kandisoud consisting of 10 villages each were selected after an extensive survey of Tehri district of Uttarakhand. In order to accomplish the objectives of the study, bench mark survey was initiated and Participatory Rural Appraisal (PRA) technique was used to collect the detailed information about the existing cropping/farming systems and different management practices followed by the farmers in the study area. Major farming systems prevailing in the area were identified.

The identified tools for technological interventions based on constraints are promotion of kitchen gardening,



organic farming/vermi-composting/greenmanuring / biofertilizer, fruit plantation for quality food and medicinal importance, mineral mixture/ salt brick in livestock dieting, crop diversification, balanced nutrition, quality seed production, introduction of improved/hybrid varieties of cereals, crops and fruits/vegetables and residue recycling.

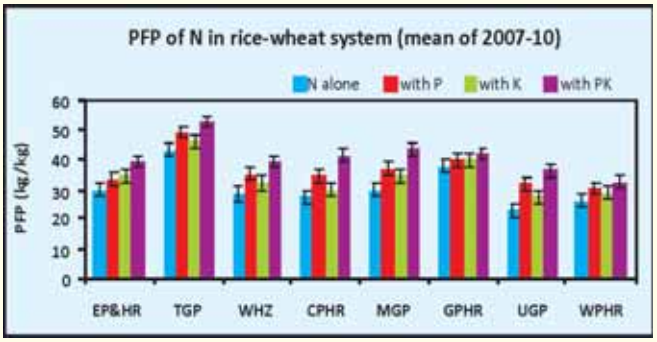
A kisan gosthi cum launching workshop was organized at Koteshwar and Kandisaud which about 72 farmers from near by villages participated. Inputs related to crop and animal components were provided to farm families.

Partial Factor Productivity and Agronomic Efficiency of nutrients in pre-dominant cereal based cropping systems

N. Ravisankar, Kamta Prasad, B.Gangwar and Brij Mohan

Partial Factor Productivity (PFP) and Agronomic efficiency (AE) of N was higher when it is applied with P and K rather than N alone or with P or with K in the pre dominant cropping systems of all the zones indicating the importance of balanced nutrient application for enhancing nitrogen use efficiency. PFP of N can be increased by 54.6, 33.9, 35.7 and 55.6 % in rice-rice, rice-wheat, rice-greengram and maize-wheat systems

respectively by applying N with P and K compared to N alone. Similarly, PFP of P can be increased by 21.1, 10.9, 17.5 and 14.4 % in the respective systems by applying it with NK than with N alone. In case of PFP of K, it was found that it increases by 23.8, 21.9, 13.6 and 34.4 % in the respective systems when K is applied with N and P instead of with N alone. AE of N can be enhanced to 238.9, 112.6, 167.7 and 140.7 % in rice-rice, rice-wheat, rice-greengram and maize-wheat systems respectively by application of NPK together instead of N alone.



P and K nutrients also recorded similar trend. AE of P was found to be higher in rice-greengram system (54.5 kg REY/kg of P) while AE of K was found to be higher in maize-wheat system (91.5 kg REY/kg of K) compared to other cereal based systems. Relative response to treatment over control was higher with application of recommended dose of NPK for all the systems. Marginal returns of N was 426, 254, 339 and 476 % for rice-rice, rice-wheat, rice-greengram and maize-wheat systems when N is applied with P and K. Application of N alone recorded lower marginal returns ranging from 180 to 325 % only.

REY of rice-rice system was higher with application of recommended dose of NPK in all the zones. Among the zones, Eastern, Southern plateau and hills regions and East coast plains and hills region recorded higher yield. However, the PFP and AE of N in these zones were lower compared to Eastern himalayas, Lower gangetic plains and West coast plains and ghat regions indicating need to enhance the use efficiency of N in the eastern and southern regions. WEY of rice-wheat system in Trans gangetic plain was higher followed by Western himalayas, Central Plateau and Hills regions and Middle gangetic plains compared to other zones. Unlike rice-rice system, PFP and AE of N of rice-wheat system was higher in the same zones where in yield levels were higher. Lowest NUE was recorded in Western Plateau and hills region. MEY of maize-wheat system was higher in Eastern and Central plateau and hills regions than Western himalayas. Nitrogen use efficiency was better in all the zones when N is applied with P and K. REY of 8000 kg ha^{-1} can be obtained with NPK application to rice-greengram system. Though PFP of N was higher in all the zones, AE of N is lower in East coast plains and hills region and Lower gangetic plain indicating loss of applied N. Factor productivity of N can be increased by 30 % by applying it with P and K.

Visitors

Quinquennial Review Team led by Hon'ble Prof. Panjab Singh, Ex Secretary, DARE and Director General ICAR visited the field experiments of the directorate

Dr A.K. Singh, DDG (NRM) visited on the eve of NICRA-Annual Work Plan Meet and Annual day of the directorate

Team of Agronomists led by Dr A.K. Vyass, Head, Department of Agronomy, Indian Agricultural Research Institute, New Delhi visited the IFS models of the directorate

Human Resource Development

International Training

Dr N. Subash, Senior Scientist and Dr Mohammad Shamim, Scientist attended the AgMIP South Asia Regional workshop organized by AGMIP during 20-24th February 2012 at ICRISAT, Patancheru, Hyderabad.

Dr N. Subash, Senior Scientist and Dr Mohammad Shamim, Scientist attended the second training workshop and mid-term review meeting of SAARC-Australia Project on "Developing capacity in cropping systems modelling to promote food security and the sustainable use of water resources in South Asia" during 25 May- 1 June, 2012 at Kandy, Sri Lanka organized by University of Peradeniya-Sri Lanka, SAARC, CSIRO- Australia, IRRI-Philippines and Australian Centre for International Agricultural Research-Australian Government.

New Joining

Dr Sushil Kumar Singh, Senior Administrative Officer joined this directorate on 14 May 2012 upon his transfer from Directorate of Seed Research, Mau.

Transfer

Dr M.P. Sharma, Principal Scientist (Soils Science) has been relived from the directorate on 6 June 2012 to enable him to join his parent university (SKUA &T, Jammu).

Sports

The directorate participated in the ICAR inter-institutional sports meet of North Zone which was held at NDRI, Karnal during 25-28 April, 2012. A total of 22 contingents with Dr. Anil Kumar as Chief-de-Mission and Dr. OK Tomar as Manager participated in various sports events like volleyball (shooting), kabaddi, table tennis, badminton, chess, carom and athletics. This year the performance of PDFSR players was good and they bagged two medals. Mr. Rajesh Kumar represented the PDFSR, Modipuram team in chess and was declared Runner-up (Men) in inter-institutional staff sports tournament (North Zone)-2012 of Indian Council of Agricultural Research held at National Dairy Research Institute, Karnal (Haryana) during 25th to 28th April, 2012. Smt. Sheela Devi bagged bronze medal in Javelin throw event.

WAY FORWARD

Farming System Management offers scope for meeting the multiple challenges of agriculture such as natural resources deterioration in terms of quantity and quality, sustaining the productivity, climate related risks, decent livelihood and nutritional security of ever growing population. The question of science behind the integrated farming systems can be answered only through i) Systematic characterization of existing farming systems in various agro-climatic regions, ii) Farm constraints identification, iii) Collective, compatible and convenient farm interventions iv) Convergence of resources for making a self reliant farm, v) Auditing of input-output vi) Assessing the impact of interventions on employment generation, productivity enhancement, sustainability of natural resources and vi) Large scale demonstration of farming systems in participatory mode. The directorate had initiated scientific studies on the first two steps and in the process of preparing national atlas on existing farming systems and their constraints. Small and marginal farmers are often subjected to hardships due to failure of one larger component which they depend for their livelihood. Designing of weather, market, financial and labour proof farming systems will help small and marginal farmers who constitute 84 % of land holdings in India. Management of farming system is difficult, but once managed, it will give answer to the problems of increasing food production, net farm income, improving nutritional status, promoting natural resource management and sustainable use of land, water and biota. Moving from primary to secondary agriculture is vital to retain the youth in agriculture. Micro business modules on integrated farming systems needs to be prepared for different regions of the country to demonstrate to the farmers that agriculture in the form of farming system approach can also make wealth like any small scale and micro business. Reaching the unreached is the goal of the directorate and will achieve the vision and mission through our concerted efforts in farming systems research and management.

Important Publications

1. Consolidated Report (2004 to 2011), NPOF
2. Cropping System Management (B. Gangwar)
3. Krishkoki Arjhik samraddhi Avam Adhik utpadan ke liya unnat fasal pranalia (M.P. Singh and B. Gangwar)
4. System based INM (B. Gangwar and V.K. Singh)
5. Solving Pulses Crisis (A.K. Singh and B. Gangwar)

Upcoming events

July	: Agricultural Education Day
August	: Regional training for OFR staff at Paiyur (TN)
September	: MTC on " Integrated Farming Systems"
October	: Winter school on "System based conservation Agriculture" Farm Innovators Day
November	: Biennial Workshop of AICRP on IFS Annual Group Meeting of NPOF
December	: MTC on "Good Agricultural Practices" ICAR (PDFSR)-Industry Day

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