



ICAR-IIFSR



हर कदम, हर उभार
किसानों का हमसाफर
भारतीय कृषि ऊर्ध्वसंज्ञक परिषद

Agri search with a human touch

Newsletter

ICAR-Indian Institute of Farming Systems Research
Modipuram, Meerut-250 110, Uttar Pradesh

Vol. 23, No. 2

July-December, 2016

Director's Message

The Indian Institute of Farming Systems Research (IIFSR), Modipuram, Meerut is dedicated to develop climate resilient, profitable, multi-enterprise models of farming systems by synergizing land, water, livestock, biodiversity, solar energy and human skill for assuring food, nutrition, livelihood and environment security in all the agro-climatic regions of the country. The major challenges before us are to improve livelihood of small and marginal households, which are expected to go beyond 90 per cent in the next 15 years. The farming system research from various locations indicated that up to 70 per cent of nutrient requirement can be met within the farm itself through recycling and integrations. However, a self-sustainable farming system should aim to meet all the input and energy requirements within the boundaries of farm, besides providing the household's food and nutritional security. Since, it involves highly location specific and dedicated multi-disciplinary team, the development of self-sustainable farming system across the region may consume time and resource, but once created, it will meet the long term goal of the nation such as reducing the poverty, unemployment and malnutrition. Modelling of the farming systems under given constraints is the area, which needs attention of researchers. Increasing the income of farmers with scarce and costly resources is biggest challenge at present. Capacity building for all the stakeholders such as farmers, development departments, scientists and all those who are related in farming system's domain, is also an important area to develop skilled manpower. Institute is also involved actively in multifarious activities like Swachh Bharat Abhiyan, providing need based agro-advisory services, awareness programmes about central government schemes, *mera gaon mera gaurav* etc. through various programmes.



I would like to appreciate the efforts of the editors of this volume of ICAR-IIFSR Newsletter which include sweeping informations and recent developments in farming system in pellet form with the hope, that, this newsletter will serve as a common platform for sharing the informations in the field of farming systems research and development and welfare of the discipline.

A. S. Panwar

ICAR-IIFSR

The Indian Institute of Farming Systems Research (IIFSR), Modipuram, Meerut, attained the status of a full-fledged institute of ICAR w.e.f. 27th November, 2014 from its former name as Project Directorate for Farming Systems Research (PDFSR). The goal and mandate of the institute were revised as per the new challenges and responsibilities in farming system's research in India. Presently the ICAR-IIFSR is functioning with four divisions i.e. Integrated Farming Systems Management (IFSM), Cropping Systems and Resource Management (CSRM), Organic Agriculture Systems (OAS) and Technology Transfer Refinement and Human Resource Development (TTR&HRD). AICRP on IFS and Network project on Organic Farming (NPOF) are also, the integral part of institute.

Mandate

- Research in integrated farming systems on production technologies for improving productivity and resource use efficiencies.
- Develop efficient, economically viable and environmentally sustainable integrated farming system models for different farming situations.
- On-farm testing, verification and refinement of system-based farm production technologies.
- Coordinate and monitor integrated farming systems research in the country



70th Independence Day celebrated

The 70th Independence Day was celebrated on 15th August, 2016 in the institute campus. Employees of the Institute participated in the function with their families along with locales. The programme was started with hosting of flag and rendering salutes to it by the Director and employees followed by National Anthem and address of the Director. In his address, Director highlighted the achieve-



ments of the institute during past year and appealed the officials to raise the institute to a new height and serve the nation through our new research in the arena of integrated farming systems. It was emphasized that food and nutrition security at household level especially small, marginal and landless farmers has to be achieved. The message of cleanliness and hygiene was also the point of emphasis. Different recreational activities like Tambola, tug of war, musical chair, volleyball etc. were also arranged during the occasion which was largely enjoyed by staff and their family members.



Photo: Employees of IIFSR and their family members participating in sport events during independence day

Regional Agriculture Fair (*Krishi Kumbh* 2016) Organized by the Institute from 28-30 November, 2016

ICAR-Indian Institute of Farming Systems Research, Modipuram, Meerut (Uttar Pradesh) organized a three days **Regional Agriculture Fair (*Krishi Kumbh-2016*) from 28-30 November, 2016** in the ground of Government Inter College Muzaffarnagar, U.P. The programme was inaugurated by Hon. Minister of State for Water Resources, River Development and Ganga Rejuvenation, Govt. of India, Dr. Sanjeev Kumar Balyan on 28.11.2016 in the presence of progressive farmers and farmer leaders. About 10000 farmers from seven states viz. U.P., Uttarakhand, Punjab, Haryana, Gujarat, Jammu and Kashmir and Telangana participated in the Fair. Dr. J.S. Sandhu, DDG (Crop Science), ICAR, New Delhi, Chaudhary Naresh Tikait, President, *Bhartiya Kisan Union*, Shri Ghashiram Nain, Hon. M.P. Shri Raju Shetty, Shri V.M. Singh and Hon. MLC Shri Kapildev were Guests of Honour during the inaugural function. In his inaugural speech, Hon. Minister Dr. Sanjeev Kumar Balyan expressed his pleasure for organizing such a big farmers fair in the agriculturally prosperous district of Muzaffarnagar



Photo: Inauguration of *Krishi Kumbh-2016* by Hon. Minister Dr. Sanjeev Kumar Balyan and other dignitaries

and thanked Dr. A.S. Panwar, Director of the Institute and his team for the same. He also appealed farmers to get maximum benefit of the innovative agricultural technologies being demonstrated in the *Krishi Kumbh* by different ICAR Institutes, state agricultural Universities and private sectors. Dr. J.S. Sandhu, DDG (Crop Science), ICAR, New Delhi explained about newer technologies developed in the field of agriculture and requested farmers to



Photo: Release of ICAR-IIFSR publications for farmers during *Krishi Kumbh-2016* by Hon. Minister and other dignitaries

make use of those for their prosperity and livelihood security.

Dr. Azad Singh Panwar, Director, IIFSR welcomed all the guests and farmers in the *Krishi Kumbh 2016* and explained about the activities being conducted by the Institute for economic empowerment and livelihood security of the farmers in the region.

On very next day of the farmer's fair i.e. on 29.11.2016, a big animal show was organized in which, around hundred stockmen from Uttar Pradesh, Uttarakhand, Punjab, Haryana, Rajasthan and Gujrat demonstrated their improved breed of animals. To encourage the local stockmen, a separate category of animal show was organized. Separate competition was also organized in different categories for the improved breeds of Cattles (cows and bulls), Buffalos (he and she buffalos), Equine etc. He buffalo (buffalo bull) "Yuvraj" of ShriKarnvir Singh from Haryana was awarded first prize in its category. Modi buffalo bull of Shri Manoj Mandi from Morna was awarded first



Photo: Visit of stalls by the Farmers in *Krishi Kumbh-2016*



Photo: Hon. Minister Dr. Sanjeev Kumar Baliyan interacting with farmers during *Krishi Kumbh-2016*

prize in U.P. category. An award distribution ceremony for stockmen was also organized under the chairmanship of Dr. Gaya Prasad, Vice Chancellor, S.V.P. University of Agriculture and Technology, Meerut. Progressive farmers, farm women, social workers and winners Stockmen of the animal show were felicitated and awarded by Chairman and Guest of Honour during the function.

In the *Krishi Kumbh*, one hundred and two stalls including 57 stalls from ICAR, demonstrated their technologies to farmers. There were 100 stalls of stockmen and dairy companies for animal lovers. New and innovative technologies were demonstrated on farming systems management; soil, water conservation and management; dry and rain-fed farming; hill agriculture; seed production and storage; improved production technologies of food grains, oilseeds, sugarcane, potato and other cash crops; improved technologies of orchard crops, roof top gardening and vegetable production; fruits and vegetable preservation and processing for small scale industry; plant protection chemicals, fertilizers, micronutrients, equipments etc; small implements for small land holdings, big implements



Photo: Gathering of farmers in Animal Show during *Krishi Kumbh-2016*

and tractors; protection techniques from wild animals; *Khadi* and *Gramodyog*, agricultural extension techniques by KVKs and other organizations; improved livestock production and management technologies; dairy technology; improved management techniques for cattle, buffalo, sheep, goat, poultry, apiary and fish by the national and international, public and private organizations. Thousands of farmers took active participation in the fair and also purchased seeds of newly released and improved varieties of different crops, plant protection chemicals and equipments and other products.

Kisan Gosthis were organized in four different Technical Sessions viz. 'Improved seed production technologies for economic and environmental sustainability', 'Sustainable orchard management and processing technologies for enhancing income and employment generation', 'Animal resource and Dairy trade management' and 'Management of natural resources for agriculture under changing climatic scenario' in which stalwarts from the National and International organizations made a face to face interaction with farmers and gave practical tips to them. Farmers participated actively in all sessions of *Kisan Gosthi* and got the instant solutions of their problems related to agriculture and livestock production. A quiz and general knowledge competition was also organized for farmers during the *gosthi* and winner farmers were also awarded at the occasion.

Valedictory function of *Krishi Kumbh 2016* was organized on 30.11.2016 which was chaired by social activist Sh. Surendra Singh. In his valedictory remarks, Sh. Surendra Singh expressed his pleasure for organizing such a big farmer's fair in the district Muzaffarnagar and thanked Dr. A.S. Panwar and the 'Team IIFSR' for the same. The best stalls from all the categories were also awarded with prize during valedictory function.

**राजभाषा कार्यान्वयन समिति (रा.भा.का.स.)
की बैठकें एवं हिंदी कार्यक्रमों का आयोजन**

संस्थान में हिंदी के प्रयोग को बढ़ावा देने हेतु विभिन्न प्रकार के प्रोत्साहन कार्यक्रमों का आयोजन किया गया जिनका विवरण निम्न प्रकार है:



- (क) रा.भा.का.स. की तृतीय त्रैमासिक बैठक दिनांक 06.08.2016
- (ख) हिंदी पखवाड़ा का आयोजन दिनांक 14-28 सितंबर, 2016
- (ग) हिंदी कार्यशाला का आयोजन दिनांक 29.09.2016
- (घ) रा.भा.का.स. की चतुर्थ त्रैमासिक बैठक दिनांक 16.12.2016
- (ङ) हिंदी कार्यशाला का आयोजन दिनांक 31.12.2016



हिंदी पखवाड़े का आयोजन

भारतीय कृषि प्रणाली अनुसंधान संस्थान, मोदीपुरम, मेरठ में राजभाषा हिंदी के अधिकाधिक प्रयोग को बढ़ावा देने एवं समस्त कार्यालय कर्मियों में राजभाषा हिंदी के प्रति अभिरूचि पैदा करने के उद्देश्य से 14-28 सितंबर 2016 तक हिंदी पखवाड़े का आयोजन किया गया। इस दौरान हिंदी से संबंधित विभिन्न कार्यक्रमों/प्रतियोगिताओं जैसे निबंध लेखन, टिप्पण एवं प्रारूप लेखन, यूनीकोड से हिंदी टंकण, हिंदी सामान्य ज्ञान, वाद-विवाद, अंत्याक्षरी, वैज्ञानिक कार्यशाला एवं स्वरचित काव्य पाठ आदि का आयोजन किया गया। सभी प्रतियोगिताओं के विजयी प्रतिभागियों को प्रथम, द्वितीय, तृतीय एवं प्रोत्साहन पुरस्कार देकर सम्मानित

किया गया। इसके अतिरिक्त वर्ष 2015-16 के दौरान हिंदी में अधिक से अधिक कार्य करने वाले कर्मियों को भी पुरस्कृत किया गया। उक्त प्रतियोगिताओं में सभी संवर्ग के अधिकारियों एवं कर्मचारियों ने बढ़-चढ़ कर प्रतिभागन किया। संस्थान के निदेशक डॉ. आजाद सिंह पँवार ने विजयी प्रतिभागियों को बधाई देते हुए सभी वैज्ञानिकों एवं अधिकारियों से अपने अधिक से अधिक कार्यालयीन कार्यों को हिंदी में करने तथा शोध कार्यों को हिंदी के माध्यम से किसानों तक पहुँचाकर उनकी समस्याओं का समाधान करने की सलाह दी।



फोटो: हिंदी पखवाड़े के दौरान माननीय निदेशक एवं मुख्य अतिथि द्वारा विजयी प्रतिभागियों का सम्मान

Meetings and Gatherings

30th Meeting of Institute Research Committee

The 30th meeting of institute research committee (IRC) of institute was held during 16-17 September, 2016 at ICAR-IIFSR, Modipuram. The meeting was chaired by Dr. A. S. Panwar, Director, ICAR-IIFSR while Dr. S. Bhaskar, ADG (AAF and CC), NRM Division, ICAR, New Delhi was special invitee. During the meeting, action taken report of 29th IRC meeting; results of on-going research projects as well as exploratory studies were discussed. Dr. Peyush Punia, Member Secretary, 30th IRC meeting, welcomed the Chairman, ADG and all the members of the IRC. Dr. A. S. Panwar, Director during his remarks, welcomed ADG, Dr. S. Bhaskar and all the member scientists. He suggested that, number of projects should be reduced without affecting the mandate of the Institute. There should be a main programme for each division as per divisional mandate and suitable activities under the



Photo: Dr. S. Bhaskar, ADG (AAF and CC), NRM Division, ICAR addressing the scientists during 30th IRC

main programme should be taken up as sub-projects under the divisional programme in farming systems perspective to achieve the goals of the Institute. Small farmers and their overall components (enterprises) need to be kept in mind while designing the research programmes so as to come up with some solid outputs. Dr. S. Bhaskar suggested that, individual scientist (PI and Co-PI) must contribute significantly to enhance the output of the project. He emphasized to merge all small-small experiments to form a result oriented project so that, meaningful results can be drawn. Dr. A. K. Prusty presented the action taken report of the 29th IRC proceeding and research highlights of on-going projects in brief. All the scientists presented findings of their projects and presentations were followed by exhaustive discussions for further improvements in the projects.

XI Annual Group Meeting of Network Project on Organic Farming (NPOF)

The XI Annual Group Meeting of Network Project on Organic Farming (NPOF) was organized at ICAR-Indian Institute of Soil Science, Bhopal during 17-19 August 2016. Prof. M. Premjit Singh, Vice Chancellor, Central Agricultural University, Imphal inaugurated the group meeting as Chief Guest. Dr. S. Bhaskar, Assistant Director General (AAF & CC), ICAR and Guest of Honour highlighted the importance of the organic farming and stated that, organic farming is a climate resilient production system and it should be promoted particularly in rainfed and hill ecology. Dr. Ashok Kumar Patra, Director, ICAR-Indian Institute of Soil Science, Bhopal welcomed all the guests and participants and informed that ICAR-IISS, Bhopal has developed

many composting techniques which are part of organic farming. While presenting the brief scheme report, Dr. A.S. Panwar, Director, ICAR-Indian Institute of Farming Systems Research, Modipuram highlighted that presently 16 states are covered through NPOF and 666 practicing organic farmers have been studied during the year for understanding the constraints of organic growers. Besides, these, he also highlighted that best performing varieties under organic farming for 20 crops have been identified and Integrated Organic Farming System (IOFS) models have been developed at Meghalaya and Tamil Nadu which promises to increase the income by 2 to 3 times and meet inputs up to 85-90% within the farm.



Photo: Dr. A.S. Panwar, Director addressing to scientists during NPOF group meeting

During the first two days, review of on-going programmes and modification of technical programme was taken up beside a round table discussion on researchable issues in IOFS. On 19 August 2016, interface meeting of NPOF and selected AICRP on IFS centres with ICAR-Directorate of Weed Research, Jabalpur was held



Photo: Release of publications by dignitaries during NPOF group meeting

to discuss the issues related to weed management under organic farming. Based on the deliberations, an experiment on weed management under organic farming was formulated which will be implemented at NPOF and selected AICRP on IFS centres. Based on the overall performance, *Coimbatore (TNAU)* centre of NPOF was selected as best centre and a certificate were issued in the plenary session.

Round table discussion on researchable issues in Integrated Organic Farming Systems (IOFS)

A round table discussion was organized on 17 August 2016 by ICAR-IIFSR to discuss the researchable issues in Integrated Organic Farming Systems (IOFS) at ICAR-Indian Institute of Soil Science, Bhopal. Prof. M. Premjit Singh, Vice Chancellor, Central Agricultural University, Imphal chaired the discussion while Dr. S. Bhaskar, ADG (Agronomy, Agro-forestry and Climate Change), ICAR, New Delhi co-chaired the programme. In his opening remarks, Prof Premjit Singh highlighted that soil health is the base of sustainable production and ecological balance for human and livestock health. Dr. S. Bhaskar emphasized on reduction of external organic inputs to make organic farming cost effective and sustainable. Dr. Azad Singh Panwar, Director, ICAR-IIFSR flagged the researchable issues in IOFS and informed that low/zero external input based organic farming is must for complete realization of the benefits of organic farming. Dr. A.K. Patra, Director, ICAR-IISS, Bhopal and Dr. Himanshu Pathak, Director, ICAR-NRRI, Cuttack, Chief Agronomists of AICRP on IFS centres, Project Co-coordinators of Utilization of Animal energy, biological nitrogen fixation and STCR



Photo: Round table discussion on researchable issued in IOFS

along with all the Principal Investigators representing all Agro-Climatic zone of India have participated in the round table discussion and brain stormed to identify researchable issues in IOFS. Dr. N. Ravisankar, National PI, NPOF, ICAR-IIFSR convened the programme. The identified researchable issues during discussion on IOFS were brought and circulated to all the stakeholders.

IV Biennial Workshop of AICRP-IFS

The IV Biennial workshop of ICAR-AICRP on Integrated Farming Systems was organized during 20-23 December, 2016 at Sher-E-Kashmir University of Agricultural Sciences & Technology (SKUAST-J), Chatha, Jammu (Jammu and Kashmir) in which review of on-going research programmes of on-station and on-farm centres including Tribal Sub Plan, discussion and finalization of new experiments, administrative, financial issues and special lectures on identified topics were undertaken. Prof. P.K. Sharma, Vice Chancellor, SKUAST-Jammu was chief guest during inaugural session. In his address Dr. Sharma confirmed that IFS models developed by AICRP on IFS centres are good income earners for farmers as he himself witnessed from his university IFS model depositing around Rs.3 lakhs/ha in to university account. Dr. S. Bhaskar, ADG (AAF&CC) in his address, informed that the present government is concentrating on schemes such as doubling of farmers income through soil health, more from less resources (input use efficiency), *har khet ko pani* (water management), *har med me ped* (Agroforestry), national *gokul* mission etc. and farming system models should include all these things during its formulation. Dr. A.S. Panwar, Director, ICAR-IIFSR also welcomed the delegates and gave brief scheme report. He appraised the participants that although 84 % of farm households in India have crop and dairy together, their recycling is very low (< 25 %) and depend for markets for their farm inputs including meeting the family food and nutritional requirements. Generating sustainable and regular income (round the year) from farm is a major challenge for farmers in the present day context. Session wise recommendations were presented by Dr. L.R. Meena, Principal Scientist, Dr. Debashis Dutta, Senior Scientist, Dr. Peyush Punia, Principal Scientist, Dr. R.P. Mishra, Principal Scientist, Dr. Amit Nath, Principal Scientist, Dr. M.

Shamim, Scientist, Dr. Amit Kumar, Scientist and Dr. N. Ravisankar, Principal Scientist. The recommendations were discussed and finalized.



Photo: Release of important publications by dignitaries during AICRP-IFS workshop

ICAR-IIFSR-CIMMYT collaborative workshop

A review workshop on, 'Optimization of resources in farming system using quantitative analysis tools' was organized at ICAR-IIFSR, Modipuram during 27-29 November, 2016 under the aegis of ICAR-CIMMYT collaborative project entitled Developing and targeting climate smart agricultural practices portfolios in South Asia. The workshop was attended by Dr. Santigao Lopez, Cropping Systems Analyst, CIMMYT, Mexico, Dr. M. L. Jat, Cropping Systems Analyst, CIMMYT, India and researchers involved in farming systems Dr. H. S. Jat (CCSRI, Karnal), Dr. J. P. Tetarwal (AICRP-IFS, Kota centre), Dr. P. C. Ghasal (ICAR-IIFSR). Dr. A. K. Prusty acted as organizing Secretary of the programme. A field visit to project implementation site was conducted on 2nd day of the workshop which was appreciated by CIMMYT representative and Director ATARI, Ludhiana.



Photo: Dignitaries observing IIFSR-CIMMYT demonstrations on IFS at farmer's field

Swachhta Pakhwara organized

As a part of activities the Institute organized 'Swachhata Pakhwara' during 16-31 October 2016. In this *Pakhwara* a series of cleanliness activities were organized to create awareness among different sections of the society. These activities included cleanliness drive in the Institute premises, surroundings and adjacent area, cleanliness drive in the local market, residential area, schools in the city and adopted villages, cleanliness campaign at national level through AICRP-IFS centres located in all Agro-climatic zones and a mega event in the institute. In all the activities public representatives/ local leaders were involved to ensure the spread of cleanliness message among wider sections of the communities.



Photo: Swachhta pledge by Hon. MLA Sh. Sangeet Som, employees of ICAR-IIFSR and other participants

At this occasion, the Institute devised a broad outline of the programme which included painting competition on clean environment for the school students, cleanliness drive facilitated by IIFSR staff, and *goshthi*/lectures on general cleanliness. During the 'Swachhata Pakhwara', the institute organized cleanliness activities on almost everyday. The major activities were concentrated in the villages adopted by the institute under 'Mera Gaon Mera Gaurav' (MGMG) programme. It is pertinent to mention that the institute has adopted 50 villages under MGMG programme and these villages have been grouped into ten clusters of adjoining villages being monitored under ten different teams of the scientist. It was felt appropriate to link these villages with the cleanliness programme of the Institute so



Photo: Dignitaries and other participants cleaning market and residential areas

that the message could be easily disseminated on account of already developed rapport with the villagers. The AICRP-IFS centres of the Institute also organized 'Swachhata Pakhwara' during the period and extended the message of *Swachh Bharat Abhiyan* to their local areas. By this way, ICAR-IIFSR extended cleanliness campaign to almost wider parts of the country.

The Institute organized cleanliness awareness camp on 02 October, 2016 in which the local shopkeepers of CHAUHAN MARKET, NGOs, resident of Modipuram, staff members of IIFSR and school childrens were got involved to spread the message. On this occasion, Sardhana MLA, Sh. Sangeet Som administered the oath of cleanliness to the shopkeepers and other public gathered at a central place in the market. The staff members approached each and every shop keepers of the market and resident of colony one by one and made them to commit for contributing towards maintaining cleanliness in the market and residential area.

On 17th October 2016, the Institute had organized campus cleaning programme in which all the staff members of IIFSR, Modipuram



Photo: Swachhta campaign organized at schools by ICAR-IIFSR

undertook the brooming work in the campus and also outside the boundary. The tree litters and other wastes lying in the campus area were collected and sent for recycling at appropriate location. The obnoxious weeds grown outside the boundary were also uprooted in order to make the surroundings of the campus absolutely clean. On this occasion the Director of IIFSR Dr. A.S. Panwar expressed the need to maintain general cleanliness in the campus for health and hygiene, and called upon the staff members of the Institute to contribute significantly towards the Clean India Mission.

The Institute also organized a series of cleanliness drive in the adopted villages. For this purpose the village schools were selected as key site where the school children were involved in the programme in consultation with the school principal and village pradhan and a painting competition for school children on the topic 'Swachh Gaon Swachh Bharat', cleaning of school premises and surroundings was organized besides gothi on general cleanliness. Ten prizes were given for best paintings in each school. Besides, each school was donated a dustbin, 20 brooms and cleaning material by IIFSR in order to motivate the students and teachers towards maintaining cleanliness. In this series the first programme was organized in Assa village of Mawana block, Meerut district on 24 October, 2016 followed by similar programmes on 28 October, 2016 in Jaitpur village of Budhana block, Muzaffarnagar district, Palri village of Barnauli block, Baghpat district and Mohamandpur village of Narsan Block, Haridwar district. In each of these programmes about 200 school children and about 100 villagers participated and the team of scientists from IIFSR Modipuram guided in maintaining general cleanliness in school and villages.



Photo: Painting competition organized for School childrens at ICAR-IIFSR during Swachhta Pakhwara



Photo: Participation of School childrens and villagers in Swachhta campaign organized by ICAR-IIFSR

The Institute also organized a mega event on cleanliness campaign in the institute premises on 27 October, 2016. In this event, about 200 students from different schools of Meerut participated in the Clean India Awareness Camp. For the school children, a painting competition on the theme 'Clean City Clean India' was organized and prizes were given to the four best paintings adjudged under different categories of the students. In this event the Hon. M.P. from Meerut Sh. Rajendra Agrawal was the Chief Guest. The school children along with the staff members of the IIFSR and the chief guest participated in general cleanliness activities on the national highway adjoining the IIFSR campus. The chief guest himself took the broom and inspired others for maintaining cleanliness in the surroundings. In his keynote address Sh. Rajendra Agrawal highlighted the need for proper disposal and treatment of city garbage so as to make the city clean and green. He praised the efforts made by IIFSR, Modipuram towards implementing the Clean India Mission on a wider scale.



Photo: Hon. M.P., Meerut Sh. Rajendra Agrawal and other dignitaries during Swachh Bharat Jagarukta Abhiyan organized by ICAR-IIFSR

In the closing ceremony of 'Swachhata Pakhwara' on 31-10-2016, the Superintendent of Police (Traffic) Ms. Kiran Yadav visited IIFSR and praised the general cleanliness of the campus. In her valedictory address, Ms. Yadav commended the efforts of IIFSR toward 'Clean India Campaign' and stressed upon the need for working in a sustained manner in order to meet the objectives of the campaign. The *Pakhwara* ended with vote of thanks by Dr. Anil Kumar, Principal Scientist and Coordinator of the programme.

Agricultural Education Day

Institute celebrated Agriculture Education Day on 3rd December, 2016 to disseminate the informations about scope of Agriculture Education in carrier building. The programme was inaugurated by the Director, Dr. A.S. Panwar. About 70 students of nearby schools and colleges, and staff members of the Institute participated in the function. A special session on 'carrier counselling for students' was organized during the programme in which, selected scientists from different disciplines of Agriculture deliberated on the educational and employment opportunities in the respective disciplines available in the country. This was an interactive session by which the participating students got acquainted with the latest development and opportunities in Agriculture.

World Soil Day

Institute organized World Soil Day on 05.12.2016 which was inaugurated by Hon. MLA of the area (Sardhana constituency) and Chief Guest Sh. Sangeet Singh Som. About 250 participants graced the occasion which includes farmers from Mandora village, school students, teachers and office employees. In his address, chief guest suggested for sustainable use of resources and chemical inputs and also prevent water pollution for maintaining soil health and its productivity. He appreciated the work of ICAR-IIFSR in maintaining soil health and help to farmers of the area and thanked the Director and the team ICAR-IIFSR for the same. Dr. A.S. Panwar, Director welcomed all the guests, farmers, teachers, students and other participants. For maintaining food and nutrition security in the country, he has suggested the farmers for proper management of soil for



Photo: Hon. MLA. Sh. Sangeet Som during World Soil Day organized by ICAR-IIFSR, Meerut

improving its physical, chemical and biological properties by the application of organic matter, proper use of resources and control on pollution. On this occasion, 200 Soil Health Cards were distributed to farmers by the chief guest. Deliberations were also made by other scientists on the importance of soil health for our life and proper ways for maintaining the soil health. It was very interactive session and students, teachers and farmers shown their keen interest.



Photo: Soil Health Card Distribution to farmers the by chief guest

Vigilance Awareness cum Sensitization workshop on "Public participation in promoting Integrity and eradicating corruption"

ICAR-IIFSR organized the Vigilance Awareness cum Sensitization workshop on "Public participation in promoting integrity and eradicating corruption" during 31 October to 5 November 2016. Various activities such as administering the pledge to staff and public representatives, school teachers, debate competition for staff, sensitization workshop on procedures of organization and preventive vigilance, slogan/drawing competition for school children's

were organized during the week. The concluding programme was held on 5 November 2016 in which certificates were distributed to awardees and participants of various programmes. Based on the activities and commitment made by ICAR-IIFSR in the form of pledges, sensitization workshops and various other activities, Central Vigilance Commission (CVC) has issued Certificate of Commitment to ICAR-IIFSR.



Photo: Guests and employees of ICAR-IIFSR administering pledge on vigilance

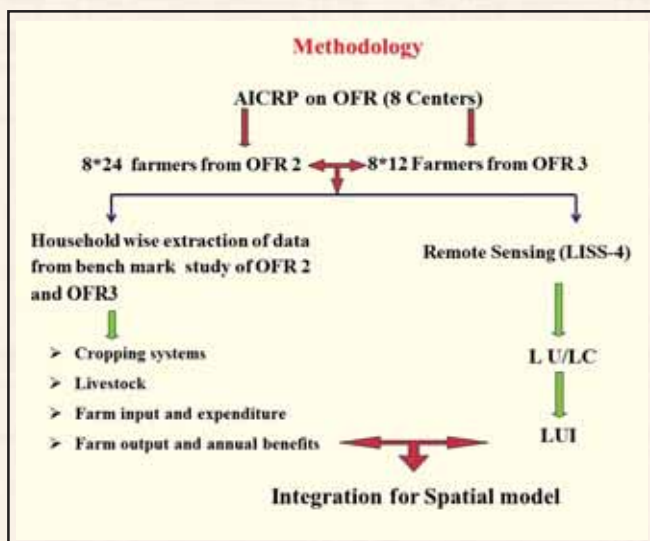
Research Highlights

Integrated Farming Systems Analysis Techniques with Remote Sensing and Ancillary Data (INFARM)

(N. Ravisankar, M. Shamim, Brijmohan Garg, V.P. Mandal and Manoj Kumar)

Farming systems play critical role in improvement of livelihood of agricultural households in rural India. Hence, the current study aims to delineation of farming systems at village level and evaluating those systems for identifying the ideal alternate farming system using remote sensing and ancillary data along with other thematic and socio-economic information in a GIS environment. The study was undertaken in 8 selected districts namely Mehsana (Gujarat), Kendrapara (Odisha), 24 Parganas (West Bengal), Kanpur Dehat (Uttar Pradesh), Dharmapuri / Krishnagiri (Tamil Nadu), Udaipur (Rajasthan), Pune and Amravati (Maharashtra). Based on the analysis and using scale, family size index, land utilization index and socio-economic index were developed and used for comparison of different farming systems.

Two predominant farming systems were found in Mehsana district (Gujarat) where 83%



households having 1.07 ha holding size and 5-6 family member are having field crops + dairy. Results revealed that family size increase is inversely related with household index. Three crops (*kharif*, *rabi* and *summer*) were taken by 75% of the households in the district, however 25% households were taking only two crops i.e. in *kharif* and *rabi*. On the basis of socio economic index, it was found that the 47% households were earning between Rs. 40, 000 to Rs. 60, 000 each from *rabi* and *kharif*. A highly diversified farming system was observed in Kendrapara in Odisha where eight major farming systems were found. Maximum households having average size of 4-5 family member adopted field crop + dairy farming system. The results showed that the larger is the family size, the more farming system components are adopted in larger area. It was found that 31% households in the district were growing three crops (*kharif*, *rabi* and *summer*) in a year whereas, 69% households were taking only two crops i.e. *kharif* and *rabi*. In 24-Paragnas (West Bengal), maximum households were practicing field crop + dairy + fish farming system. Two crops (*kharif* and *rabi*) in a year were being taken by 86% households, however only 11% households were taking three crops i.e. *kharif*, *rabi* and *summer*. Four farming systems were found in Kanpur Dehat, Uttar pradesh however 52% households having 0.96 average holding sizes and 4-5 family members were growing field crop and rearing dairy animals. Results revealed that the family size is constant for all indexes. It was found that the 41% households were earning between

Rs. 40,000 to Rs. 60,000 and 38% households were earning between Rs. 20,000 to Rs. 40,000 each from *kharif* and *rabi*. Maximum households (94%) having family size of 3-4 members have adopted field crop + dairy farming system in Dharampuri and Krishnapuri. It was found that the 37% households were earning between Rs. 20,000 to Rs. 40,000 and 34% households were earning up to Rs. 20,000, 28% households were earning between Rs. 40,000 to Rs. 60,000 each from *kharif* and *rabi*. Three different farming systems have been found and adopted by 97% households with average family size of 6-7 members in Udaipur, Rajasthan. Results of socio economic index showed that the 83% households were earning upto Rs. 20,000 whereas, 17% households were earning between Rs. 20,000 to Rs. 40,000 each from *kharif* and *rabi*. Maximum households (83%) having 3-4 family members and holding size of 0.58 ha have adopted field crop + dairy farming system in Pune, Maharastra. Maximum households (80%) having family size of 4-5 members and holding size of 0.95 ha adopted field crop + dairy farming system in Amravati district of Maharashtra. Results of socioeconomic index showed that 50% households were earning up to Rs. 20,000 however, 45% households were earning between Rs. 20,000 to Rs. 40,000 and 5% households were earning between Rs. 40,000 to Rs. 60,000 each from *kharif* and *rabi*.

Evaluation of Black gram and Green gram varieties for resistance to yellow mosaic disease

(Chandra Bhanu, Devendra Kumar, P.C. Ghasal and R. P. Mishra)

Western plain zone of Uttar Pradesh is hot spot for whitefly transmitted yellow mosaic disease caused by *Geminiviruses*. Black gram (Urdbean) and green gram (Moongbean) are important pulse crops in the region. On the occasion of **International Year of Pulses 2016**, to boost the production of pulses in the region, ICAR-IIFSR started the programme for evaluation of best varieties of pulses on its own farm then spread them to farmer's field through various on-farm integrated farming systems management programmes.

Table 1: Effect of IPM measures on grain yield in different Black gram/ Green gram varieties

Character	Pest control practice	Black gram		Green gram				
		PU 31	Mash 1008	PM 4	IPM 2-3	IPM 2-14	Meha	Samrat
Grain yield (kg/ha)	IPM	1141	699	245	576	680	477	381
	Non-IPM	1038	612	193	427	549	365	260

Two varieties of black gram i.e. Pant Urd 31 (PU 31) and Mash 1008 (local variety from Punjab) and five varieties of green gram i.e. Pant Moong 4, IPM 2-3, IPM 2-14, Meha and Samrat were evaluated under two conditions i.e. under integrated pest management (IPM) package and under non-IPM package in demonstration plot of 7m x 2m (210 m²). Recommended doses of nutrients were applied to the crops as and when needed. Among black gram varieties, PU 31 was best performing variety with lowest yellow mosaic incidence (0.04% under IPM conditions and 0.86% under non-IPM conditions) and highest grain yields (1141 kg/ha and 1038 kg/ha under IPM and non-IPM conditions respectively). Among green gram varieties, IPM 2-14 performed outstanding with 680 kg/ha and 549 kg/ha of grain yield under IPM and non-IPM conditions respectively. This variety also showed lower yellow mosaic incidence (3.33%) under IPM conditions but slightly higher yellow mosaic incidence (6.67) under non-IPM conditions when compared to variety Samrat IPM 2-3 although, showed comparatively higher incidence of yellow mosaic (16.60% under IPM conditions and 23.30% under non-IPM conditions), but performed better than rest of the other green gram varieties with 576 kg/ha and 427 kg/ha of grain

yield under IPM and non-IPM conditions respectively (Table 1). In general, all the varieties performed better and produced higher yield under IPM conditions with comparatively lower incidence of yellow mosaic disease. Based on the results of above study, PU 31 of black gram and IPM 2-14 were found promising for growing as pulse crop in the region.

Seeds of PU 31 variety of black gram were also distributed to farmers of WPZ of U.P. along with IPM package for maintaining seed by farmers themselves and boosting pulse production in the region. About 150 kg seed of PU 31 was distributed to farmers.

Technology for Dragon fruit cultivation under western plain zones of India

(Dushyant Mishra; Chandra Bhanu and D. Dutta)

Dragon Fruit (*Hylocereus undatus*) or Pitaya is a lithophytic or hemiepiphytic fruit from cactus family. It is a high value and non-traditional fruit crop for India. It is a fruit crop of Central American origin but well exploited in South East Asia. In India, research and development on this fruit crop of cactus family is in infancy stage. Keeping these points in view, we started a trial on this important

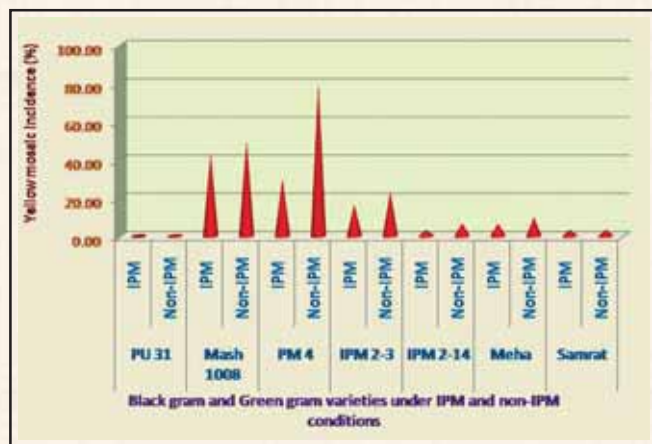


Fig. 1. Incidence of yellow mosaic disease in black gram and green gram varieties under IPM and non-IPM conditions



Photo: A full grown plant of dragon fruit



Photo: Flower of Dragon fruit



Photo: Mature fruit of Dragon fruit

fruit crop at experimental farm of our Institute. Two type of germplasms (white pulped and red pulped) of this fruit crop were introduced from Maharashtra. Rooted cuttings of 8-10 inch length were planted with the support of cemented pillar during August 2014.

The height of plants after two years was about 6.5 feet. There were side branching also from all the plants. This crop tolerated the minimum temperature of about 1°C and maximum temperature of about 45°C during extreme winters and summers of western plains of U.P. After two years of planting, floral buds appeared on plants. Floral biology was studied; 6-8 floral buds appeared per plant which ultimately resulted in fruit set. Length of floral buds before flower opening was 15.0cm, big sized flowers opened during night hours. Flower colour was white, flowers were 20-22 cm long and 15-16 cm wide with the pericarpel 2.5 cm long, about 2.0 cm thick; receptacle about 3 cm thick,

bracteoles are linear-lanceolate, 5-8 cm long; outer tepals lanceolate-linear to linear, acuminate being 13-15 cm long, 10–12 mm wide. Their colour is greenish-yellow or whitish, rarely rose-tinged; inner tepals are lanceolate up to 10–15 cm long about 40 mm wide at widest point and white. Stamens 7-9 cm long, are declinate, inserted in one continuous zone from throat to 30 mm above the pericarpel. Under Meerut conditions, it took 45 days from flower bud emergence to fruit harvesting. The fruits were oblong, 8- 9 cm long, 7.5-8.5 cm thick, red with large bracteoles, white pulp and black seeds. Average fruit weight was recorded as 375 gram and TSS of fruits was recorded 18 -19 °brix. The fruit quality obtained under Meerut conditions was matched with international standards and it was at par with that. There was no record of any disease and insect-pests during the period, but bird's damage was noticed at ripening stage of the fruits.

News of *Mera Gaon Mera Gaurav* (MGMG) Programme

Kisan Gosthi organized

S. No.	Name of Programme	Name of village	Date	No. of Participants	Remarks
1.	<i>Kisan Gosthi</i>	Pawati Khurd, Muzaffarnagar	10.08.2016	210	Lectures and demonstrations on integrated farming systems, orchard management, integrated nutrient and pest management in crops, drudgery reduction and small farm tools etc.
2.	<i>Kisan Gosthi</i>	Badhai Kalan, Muzaffarnagar	11.08.2016	166	Lectures and demonstrations on integrated farming systems, orchard management, integrated nutrient and pest management in crops, drudgery reduction and small farm tools etc.

S. No.	Name of Programme	Name of village	Date	No. of Participants	Remarks
3.	<i>Kisan Gosthi</i>	Tihai, Muzaffarnagar	12.08.2016	209	Lectures and demonstrations on integrated farming systems, orchard management, integrated nutrient and pest management in crops, drudgery reduction and small farm tools etc.
4.	Swachh Gram Jagarukta Abhiyan	Mohammadpur, Haridwar	28.10.2016	190	Lectures and demonstrations on Swachh Bharat Mission for school childrens, farmers, teachers etc.
5.	Swachh Gram Jagarukta Abhiyan	Assa, Meerut	24.10.2016	200	Lectures and demonstrations on Swachh Bharat Mission for school childrens, farmers, teachers etc.

Success Story from MGMT programme

Simple advisory bumper production: success story of integrated nutrient and pest management (INPM) package in boosting sugarcane production in Mandawali village of Uttarakhand

(Anil Kumar, Chandra Bhanu, Sanjeev Kumar and M.P.S. Arya)

Village Mandawali is located in Narson Block of District Haridwar (Uttarakhand). The total geographical area of the village is 125 ha with net cultivated area of 105 ha. Total population of village is 2100 with 400 households. Out of total 400 households, 75 % are having cultivated lands and falling under large, medium, small and marginal categories. Maximum cultivated area of the village is owned by small and medium categories of farmers. The major cropping systems of the village sugarcane (plant crop)- sugarcane (ratoon crop)-wheat. Sugarcane is major crop of the village occupying about 80% of net cultivated area among crops and main source of income and livelihood security of the farmers. The yield of sugarcane was comparatively medium (600q/ha). Four varieties of sugarcane i.e. Co 0238, CoJ 88, CoS 8432 and CoJ 98014 are occupying most of the cultivated area by sugarcane. The major problems of sugarcane identified through PRA were its lower productivity due to imbalance use of fertilizers, higher incidence of insect-pests and diseases. In sugarcane, farmers have been found to apply 2-2.5 times higher doses of nitrogen through urea as compared to the

recommended one (150kg/ha). Application of phosphorus was more or less in the range of recommended range (60kg/ha). However, there was almost nil application of potash and micronutrients (sulphur, zinc, and iron). Imbalanced use of fertilizers was also linked with heavy infestation of insect-pests and diseases in sugarcane. The major insect-pests of sugarcane were early shoot borer (*Chilo infuscatellus*) and top borer (*Scirpophaga excerptalis*) were responsible for heavy damage of crop and ultimately the yield losses to the tune of 20-30%. Recently a new emerging disease of sugarcane known as *Pokkah boeng* was also noticed in many fields of sugarcane. Farmers of the village were helpless in managing the pests and were dependent on local pesticide dealers whose major intension was to make profit by providing substandard quality of pesticides without giving any recommended advisory. This also led to the heavy application of



Photo: Farmers of Mandawali village with their healthy sugarcane crop and scientists from IIFSR in the field

pesticides by the farmers with lower degree of pest control.

Keeping above problems in view the scientists of Group A of ICAR-IIFSR given time to time advisory to farmers through field visits, telephonic conversation etc. to incorporate integrated nutrient and pest management (INPM) package in ratoon and plant crop of sugarcane in an area of about 30 ha. under *Mera Gaon Mera Gaurav* programme. Recommended doses of NPK (150, 60, 60 kg/ha) and other nutrients i.e. sulphur (25kg/ha), zinc sulphate (25kg/ha) and ferrous sulphate (8kg/ha) were applied in the plant crop and 25% higher doses of urea in case of ratoon crop. For managing early shoot borer, a basal application of carbofuran 3% CG was done. For controlling top borer and other borers in advance stage of crop one application of chlorantranilipore (0.4% GR) was done in the month of June or July. The affected field with *pokkah boeng* disease were sprayed with 0.1% carbendazim. Observations on the incidence of insect-pests and diseases and yield of sugarcane were recorded at end of the season. Views of farmers were also taken on the visible results of the interventions. There was

tremendous increase in the yield of sugarcane due to application of integrated nutrient and pest management technology. On an average, yield of plant crop increased to 1100 q/ha from 800 q/ha (37.5%) on the field of selected farmers.

The impact of technology was much more visible in case of ratoon crop (50% increase in yield) where it reaches to 1200 q/ha in INPM fields when compared to 800 q/ha in non-INPM fields. On an average, the net benefit of Rs. 90000 to Rs. 120000/ha was recorded with additional Rs. 4000-5000/ha expenditure on INPM package. The green top weight was also increased in the INPM fields which assures green fodder supply to animals. There was 50 to 100% decrease in the attack of different borers and *pokkah boeng* disease in sugarcane crop with INPM package. Farmers of the village are very much impressed with the INPM technology in sugarcane and it has also changed the mind-set of other farmers for adopting the technology. The success of the INPM technology in Mandawali village conveys the message that, there is scope for increasing the productivity of sugarcane in a sustainable way in the region to the tune of 30-50%.

Farmer's Corner

Trainings for farmers

An on-farm training-cum-demonstration was organized on the management of shoot gall psylla in mango in Kailawara-Kalan village of district Muzaffarnagar on 23.08.2016. Thirty five mango farmers and contractors participated in the training. Lectures were delivered on biology and management

of shoot gall psylla; integrated nutrient and pest management in mango by the experts of the Institute. A live demonstration for the safe use of pesticides for managing mango shoot gall psylla was also organized during the training.



Photo: Training and demonstration on management of mango shoot gall psylla to orchard owners and contractors by ICAR-IIFSR

Kisan Gosthi organized

A *Kisan Gosthi* was organized in Kailawara Kalan village of Distt. Muzaffarnagar on 23-8-2016 in which, 219 farmers participated. Scientists of different disciplines of the Institute delivered the lectures on different aspects crop production and protection in sugarcane, rice, mustard and pulses; integrated orchard management, management of low conception rate and infertility problem in dairy animals, mortality in calves and Prime Minister's/ Central Govt. Schemes for farmers.



Farm advisory services

The Scientists and employees of the institute have extended their farm advisory services as and when needed with the help of local newspapers, radio talks, TV talks, telephonic conversations, *Kisan Gosthi*, *Kisan Mela*, field days, personal visit of scientists to farmer's field or to visiting farmers in the institute. Farmers and visitors of the region were provided appropriate technological inputs in the field of weather forecasting and planning of



Launching of Farmer FIRST Programme

The Farmer FIRST Programme (FFP), an ICAR initiative to move beyond the production and productivity, to privilege the smallholder agriculture and complex, diverse and risk prone, was launched by ICAR-IIFSR in 3 villages viz. Soanta, Sathedi, Bhangela in Muzaffarnagar district of Uttar Pradesh. Under this programme 1000 households in 3 villages were adopted for enhancing farmer-scientist interface and development of agriculture through technology assemblage in farming systems perspective.



farming system, horticulture, integrated nutrient and pest/disease management in crops, mushroom production, poultry, fishery, livestock production and management, integrated farming systems etc. The most important fields of farmer's interest were insect-pests, diseases and nutrient management in crops; infertility as well as low conception rates and disease of livestock; new varieties of fruits and their cultivation techniques. Thousands of farmers were given appropriate tips for the integrated management of weeds, insect-pests and diseases



Photo: Advisory services to farmers by Scientists of IIFSR



Photo: Scientists of IIFSR visiting Mango orchards of local farmers



Photo: Scientists of IIFSR training farmers for release of Trichocards

in sugarcane, wheat, pulses, oilseeds, vegetables and other crops. More than 250 farmers were advised for improved cultural practices for improving the profitability from their fruit orchards.

Thousands of quality nurseries of important fruit crops from ICAR-CISH, Lucknow, and other certified nurseries were made available to a number of farmers of Western U.P. (Meerut, Muzaffarnagar and Saharanpur) with the efforts of Institute scientists. About 20 ha new orchards of improved varieties of Mango, Guava and Ber were established by farmers during the period.

Front line demonstrations (FLDs) conducted

As per the MOU with ICAR-Directorate of Rapeseed and Mustard Research, IIFSR is running

100 front line demonstrations (FLDs) on improved varieties of mustard (RH 749 and RH 406) with the aim to increase the yield of oilseed in the region. Two hundred demonstrations were also laid during current *rabi* season on improved varieties of Mustard (RH 749, RH 406 and NRCDR 2) and Yellow Sarson (YSH 401) in about fifty adapted villages under MGMG programme and 10 other villages in Meerut, Muzaffarnagar and Haridwar Districts of U.P. and Uttarakhand. Ten demonstrations were laid on the use of balanced nutrient application and IPM in mustard. Eighteen demonstrations each on improved varieties of wheat (DBW 71 for late sown condition) and barley (BH 946 for timely sowing) were also laid on farmer's field in collaboration with ICAR-Indian Institute of Wheat and Barley Research (IIWBR), Karnal.

Human Resource Development

Training/ Workshop/Seminar/Symposia etc. organized

S. No.	Name of Programme	Date (duration)	Venue
1.	Training on "Carbon Sequestration and Green House Gas measurement in IFS Models of AICRP on Integrated Farming Systems"	02-04 August 2016 (3 days)	ICAR-IIFSR, Modipuram & ICAR-IARI, New Delhi
2.	XI Annual Group Meeting of NPOF	17-19 August 2016 (3 days)	ICAR-IISS, Bhopal
3.	Six days "Refresher Course on Farm Management" for Technical Officers of ICAR	19-24 September, 2016	ICAR-IIFSR, Modipuram, Meerut

S. No.	Name of Programme	Date (duration)	Venue
4.	हिंदी पखवाड़ा	14–28 सितंबर, 2016	भाकृअनुप-भारतीय कृषि प्रणाली अनुसंधान संस्थान, मोदीपुरम, मेरठ
5.	हिंदी कार्यशाला	29 सितंबर, 2016	भाकृअनुप-भारतीय कृषि प्रणाली अनुसंधान संस्थान, मोदीपुरम, मेरठ
6.	Vigilance Awareness Week	31 October to 05 November 2016 (6 days)	ICAR-IIFSR, Modipuram
7.	Farmers Meet on “On-farm farming systems research: Impact and farmers perception”	18 November 2016 (1 day)	RRS, TNAU, Paiyur, Tamil Nadu
8.	XVIII National Conference of Agricultural Research Statisticians	16-17 December 2016 (2 days)	ICAR-IIFSR, Modipuram
9.	IV (XXXII of project) Biennial workshop of AICRP on Integrated Farming Systems	20-23 December 2016 (4 days)	SKUAST, Jammu and Kashmir
10.	हिंदी कार्यशाला	31 दिसंबर, 2016	भाकृअनुप-भारतीय कृषि प्रणाली अनुसंधान संस्थान, मोदीपुरम, मेरठ

Joinings

S. No.	Name	Designation	Date of Joining
1.	Sh. Suryakant	PS to Director	22.09.2016

Retirements

S. No.	Name	Designation	Date of Super-annuation
1.	Dr. M.P.S. Arya	Principal Scientist	31.12.2016
2.	Sh. Jagpal Singh	Computer Programmer (CTO)	31.07.2016

Awards and Recognitions

Dr. Dushyant Mishra, Senior Scientist (Fruit Science) received “BEST PERFORMANCE AWARD” and “APPRECIATION CERTIFICATE” by Honorable Governor of Himanchal Pradesh Sri Devvratji on 3rd July 2016 during 25th National

Seminar on Mango cum Mango Mela organized by Haryana Government at Pinjor Garden, Panchkula (Haryana).



Photo: Dr. Dushyant Mishra receiving Award from Honorable Governor of Himanchal Pradesh Sri Devvratji

Distinguished Visitors

1. Shri Chhabilendra Roul, Additional Secy. (DARE) & Secy. (ICAR), New Delhi and Dr. A. K. Singh, DDG (Agric. Extension), ICAR, New Delhi visited IIFSR on 20.12.2016



Photo: Shri Chhabilendra Roul and Dr. A.K. Singh visiting IIFSR Research Farm



Photo: Shri Chhabilendra Roul and Dr. A.K. Singh observing experiments and interacting with Scientists on IIFSR Research Farm

2. Shri Suresh Chandel, Member, Governing body, ICAR and Ex. M.P. visited ICAR-IIFSR from 20-21 September, 2016



Photo: Plantation of fruit plant at IIFSR Research Farm by Shri Suresh Chandel, Hon. Member of GB, ICAR

Important Publications

Folders and Leaflets published

1. महिला अनुकूल कृषि यंत्र
2. महिला अनुकूल बागवानी यंत्र
3. पपीते की सफल खेती
4. बटन मशरूम की मौसमी खेती
5. उड़द एवं मूँग की उन्नत खेती
6. सरसों की उन्नत खेती
7. आंवले के मूल्य संवर्धित उत्पादों द्वारा ग्रामीण महिला उन्नतीकरण
8. बाग स्थापना की वैज्ञानिक विधि
9. पशुओं के लिए वर्ष भर हरे चारे का प्रबन्धन
10. छोटीजोत के किसानों के लिए कृषि मशीनरी
11. कृषि प्रणाली में समन्वित मछली पालन
12. स्मार्ट कृषि
13. सब्जियों की उन्नत पौध उत्पादन
14. गेहूँ की उन्नत खेती

Books published

1. Kumar, A.; Kashyap, P.; Bhanu, C.: Kumar, S. and Panwar, A.S. (2016). Modern Techniques of Farm Management. ICAR-Indian Institute of Farming Systems Research, Modipuram, Meerut. p-222.

Published by:



Editors: Dr. Chandra Bhanu, Scientist (Plant Pathology) and Dr. Peyush Punia, Principal Scientist (Fish Resource Management)

Dr A.S. Panwar

Director, ICAR-Indian Institute of Farming Systems Research
Modipuram, Meerut-250 110, India;

Tel: 0121-2888611; **Fax:** 0121-2888546

E-mail: director.iifsr@icar.gov.in,
directoriiifsr@yahoo.com;

Visit us at: <http://www.pdfsr.ernet.in>

Printed at: M/s Yugantar Prakashan (P) Ltd. WH-23, Mayapuri Industrial Area, Phase -I, New Delhi -64