



**Feed The Future - India Traingular Training**  
International Training on  
**"Critical Production and Processing Technologies in Rice"**  
20 February to 6 March, 2018

**Director**  
Dr. S.R. Voleti

**Course Director**  
Dr. P. Muthuraman

**Course Co-ordinators**  
Drs. Amtul Waris, P Jeyakumar, Shaik N. Meera,  
P. Lakshmi Prasanna, B. Nirmala and S. Arun Kumar



**ICAR - Indian Institute of Rice Research**  
and



**National Institute of Agricultural Extension Management (MANAGE)**

Rajendrangan, Hyderabad



**Feed the Future India Triangular  
Training  
(FTF ITT)**



**International Training on  
“Critical Issues in Rice Production and Processing  
Technologies”**

*20th February to 6th March 2018*

**REPORT**

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P Lakshmi Prasanna, B Nirmala & S Arun Kumar**

**Organized by**

**ICAR- Indian Institute of Rice Research  
Transfer of Technology and Training Section  
Rajendranagar, Hyderabad – 500030**





**Dr S R Voleti**

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## **PREFACE**

*Indian Institute of Rice Research (IIRR) is a premier agricultural research institute engaged in basic, strategic, coordinated and adaptive research on irrigated rice under aegis of Indian Council of Agricultural Research (ICAR). IIRR coordinates and facilitates irrigated Rice Research and Development at national level through All India Coordinated Rice Improvement Projects through its Coordinated network centres (AICRIP on Rice) spread across the whole sub-continent.*

*Rice is the most important crop to millions of small farmers who grow it on millions of hectares in Africa and Asia, and to many landless workers who derive income from working on these farms. In future, it is imperative that the rice production continue to grow at least as rapidly as the population, if not faster. Rice provides 21% of global human per capita energy and 15% per capita protein. Although rice protein ranks high in nutritional quality among cereals, protein content is modest. Rice also provides minerals, vitamins, and fiber, although all constituents except carbohydrates are reduced by milling. The world's annual rough rice production, however, will have to increase markedly over the next 30 years to keep up with population growth and income-induced demand for food. Rice research that develops new technologies for all farmers has a key role to play in meeting this demand and contributing to global efforts directed at poverty alleviation. In order to revive the demand of rice in India, various efforts are being done by the central and state governments in India. Alongside, ICAR-IIRR has made an attempt to develop both production and processing technologies in rice to sustain the livelihood of resource poor farmers.*

*A new Agriculture Partnership between US and India to achieve ever green revolution to address global food security in general and particularly in African Countries is a welcome initiative sponsored by USAID for the benefit of low income countries across the globe. The effort included Triangular Cooperation Adaption of technological advances and innovative solutions to address Food Security Challenges in Africa. Hence, ICAR-IIRR organized a Feed the Future India Triangular Training program on "Critical Production and Processing Technologies in Rice for the CEOs of African and Asian Countries" from Feb 20<sup>th</sup> to March 06<sup>th</sup> 2018 to disseminate rice based production and protection technologies to break the yield barriers and also to ensure sustainable livelihood options of the resource poor farmers in Asia and Africa.*

*I take this opportunity to congratulate Dr. P.Muthuraman, Program Director and Drs. Amtul Waris, P. Jeyakumar, S.N. Meera, P. Lakshmi Prasanna, B. Nirmala and S. Arun Kumar, Program Coordinators, In-house faculty, external expert speakers, staff of TTT IIRR and MANAGE, Hyderabad for successfully organizing this Program. I extend my best wishes to all the executives of eight countries for up scaling of technological innovations of ICAR-IIRR in their respective countries.*

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# 1. INTRODUCTION

## 1.1 Background

Agricultural partnership between US and India, to achieve global food security was announced during November, 2010 during the state visit of US President Mr. Barak Obama to India in November 2010. Thereof a MoU was signed on India-US trilateral cooperation with Africa to address the food security challenge by adapting technological advances and innovative solutions. Initially, as a pilot scheme, National Institute of Agricultural Extension Management (MANAGE), Hyderabad and National Institute of Agricultural Marketing (NIAM), Jaipur conducted 7 programs and trained 219 executives from Kenya, Liberia and Malawi. Based on the impact assessment suggesting extremely successful and overwhelming response, it was considered to further extend the program to African and Asian countries. Accordingly, USAID and Ministry of External Affairs (MEA), India identified additional countries involved in GOI-supported development programs and redefined the program as Feed the Future-India Triangular Training Program (FTF-ITT) and was launched on 25th July, 2016. Subsequently, 17 such countries partner from Africa and Asia were considered. Those include Afghanistan, Cambodia, Lao PDR, Myanmar, Mongolia, Vietnam, Botswana (Asian countries) and Kenya, Malawi, Liberia, Ghana, Uganda, Rwanda, Democratic Republic of Congo, Mozambique, Tanzania & Sudan (African countries), It was envisaged that during the program period till 2020, approximately 1400 agricultural professionals from these countries will be trained with skill enhancement. The modus operandi of this program include conducting of 32 such training program on various aspect of agricultural development and livelihood security at selected Indian Institutions and each training program shall include 25 participants. The course module mostly focused on the themes for which Indian institutions of repute has demonstrated the comparative expertise that could effectively contribute in enhancement of human capital on agricultural development and livelihood security to the target countries' existing human resource capacity. The MANAGE, Hyderabad is implementing this program in collaboration with various Subject Matter Institutions. Accordingly, the MANAGE, identified Indian Institute of Rice Research (ICAR-IIRR) as one of the potential institute to impart training on one of the important theme namely "Critical Production and Processing Technologies in Rice" for fifteen days duration for the executives from Asia and Africa. Accordingly, the present international training had been

conducted during 20 February - 06 March, 2018 in accordance with standard operating procedure for implementation of FTF-ITT as devised by MANAGE, Hyderabad.

## **1.2 Brief description about ICAR-IIRR**

Indian Institute of Rice Research has twin major mandates of coordinating the multi-location, multi-disciplinary testing of varietal and management technologies under the All India Coordinated Rice Improvement Programme (AICRIP) and conducting strategic and applied research on irrigated rice aimed at enhancing production, productivity and profitability while preserving environmental quality.

All India Co-ordinated Rice improvement Project (AICRIP) was started in 1965, with its head quarters at Rajendranagar, Hyderabad. In order to meet the objective of technology development and evaluation, the AICRIP was elevated as the Directorate of Rice Research (DRR) in April, 1983 with the added mandate of pursuing research on irrigated rice for strengthening and stabilizing rice production in the country. DRR was upgraded to national institute status as “Indian Institute of Rice Research (IIRR)” during the golden jubilee year, from 15th December 2014. The institute activities are aimed at accomplishing the vision, mission and mandate of IIRR keeping in view the “Farmer First” motive of ICAR.

### *Vision*

Welfare of the present and future generations of Indian Rice farmers and consumers by ensuring food, nutritional and livelihood security.

### *Mission*

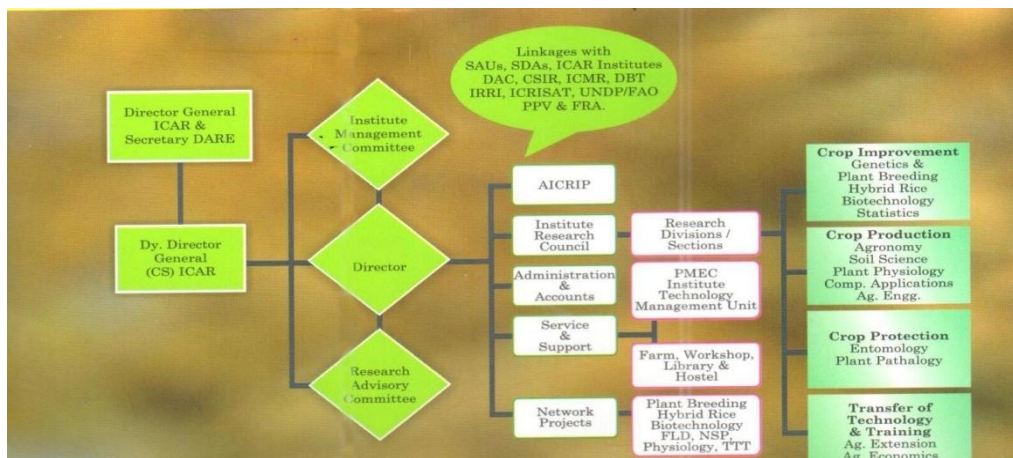
- Develop technologies to enhance rice productivity, resource and input use efficiency and profitability of rice cultivation without adverse affects on environment.

### *Mandate of ICAR- IIRR*

- To organize, coordinate and monitor multi-location testing at national level to identify appropriate varietal and management technologies for all the rice ecosystems.
- To conduct basic, strategic and anticipatory research in the major thrust areas of irrigated rice aimed at enhancement of production, productivity and profitability while preserving environmental quality.

- To develop, organize, coordinate and monitor research networks relating to problems of national and regional importance.
- To serve as major centre for exchange of research material and information.
- To accelerate the pace of technology transfer through development and adoption of innovative extension training models, self-learning modules and through organizing formal training courses, frontline demonstrations, exhibitions, farmers' day etc.
- To develop linkages with national, international and private organizations for collaborative research programmes.
- To provide consultancy services and undertake contractual research

### Organogram



### Salient Achievements of ICAR- IIRR

Over the past five decades IIRR has been instrumental in development and release of over 1200 rice varieties including 72 hybrids have been released through multilocation testing for various agro-ecological systems prevalent across the country. 46% of these varieties are meant for irrigated areas, 18% for rainfed shallow lands, 12% for rainfed uplands, 4% for irrigated areas in hills, 4% for deep and semi-deep water, 4% irrigated saline/alkaline soils, 6% for scented rice and rest for the other rice ecologies.

More than 49 varieties and 3 hybrids have been developed and released by the IIRR. Globally 25 countries cultivate 19 varieties released through AICRIP.



The national hybrid rice network coordinated by IIRR helped in release of over 72 hybrids both from public sector and private sector. Area under hybrids is now about 1.25 million ha and with a minimum of 1 tonne yield advantage, hybrids alone are contributing to production of an additional 1 million tonnes per year. The institute has also shouldered the responsibility of producing 20-30 tonnes of breeder seeds every year of the released popular rice varieties and parental lines of the hybrids. Frontline demonstrations sponsored by Department of Agriculture and Cooperation and organized by IIRR have identified suitable varietal and other production technologies for all rice ecologies that could increase production by 10-15%. Two rice varieties released through AICRIP namely Improved Pusa Basmati and Improved Samba Mahsuri are the first products of marker assisted back-cross breeding – an example of application of biotechnology in rice improvement. IIRR is reaching out to all the stakeholders through effective management of ITMU and harnessing the ICT tools for managing the Rice Knowledge Portal.

IIRR has strong and wide network of linkages and collaborations with organizations from India and abroad. Several linkages that have proven to be successful are CG organizations (IRRI, ICRISAT), national organizations (DBT, CSIR, CDFD), Universities (Delhi University, CUH, SAUs), NGOS, KVKs, Private Sector players etc., IIRR published thousands of research papers, popular articles, bulletins, books, book chapters, abstracts. IIRR also brings out periodic publications like Annual Reports covering lead research, Progressive Reports covering AICRIP research. Newsletters, activity calendars, training calendars etc., will keep the stakeholders up to date in IIRR activities.

IIRR is well recognized as the institute and its several staff members received several prestigious national and international awards for their contribution in rice research & development. IIRR scientists are also recognized as research guides for M.Sc. M. Phil and Ph. D students by several Universities.

The Institute is equipped with state of the art facilities; Laboratories with modern scientific equipments, Centrally air cooled green houses, net-houses, growth chambers, transgenic poly-houses and heat tunnels, Experimental Farm at Rajendranagar (20 ha) and Ramachandrapuram (40 ha) and a centrally air conditioned auditorium with 350 seating capacity, seminar halls, Guest house, hostel facilities and canteen. The RKMP Lab with latest multi-media, ICT tools and AV projection system, Central library with digitized content and state of



the art museum are regularly used by the visiting trainees of different national and international training programmes.

The Indian Institute of Rice Research is committed to address the future challenges in meeting the demands of the growing population and contribute in ensuring food, nutritional and livelihood security. We envision that future opportunities are equally numerous in the form of power of science, demand driven globalization, strong and emerging public-private partnership and enchanting potential of ICT that can be effectively harnessed to meet the goals. Our committed and empowered manpower and state-of-art infrastructure will ensure delivery of the promise. It is also hoped that appropriate policy environment is created to maintain the pace of progress and fruits of research reach all the concerned stakeholders.

MANAGE identified ICAR-IIRR as one of the centre to organize 15-days international training program for 20 international executives representing partner countries from Africa and Asia. In view of above, the international training programme was formulated in accordance with standard operating procedure for implementation of FTF-ITT as devised by MANAGE, Hyderabad.

### **1.3 Objectives of the training program**

The main aim of the training program was to enhance the human resources which in turn could assist in ambitious goal to achieve the food and livelihood security to the billions living in the rural and backward setups. Consequent upon the vigorous consultation with the MANAGE, it was decided that the training must focus on enhancing the income of the rice growing farmers. Accordingly the training program on “*Critical Issues in Rice Production and Processing Technologies*” was developed with the following specific objectives:

- 1) Enhancing the income of the farmers in rice based cropping systems
- 2) Dissemination of proven rice production and processing technologies
- 3) Capacity building of the agricultural officers/executives of the participant countries in rice production and processing technologies

## **1.4 Key Focus Areas of Training**

The key areas of training program included the following aspects:

- Genesis and diversity of rice crop
- Varieties suitable to different ecologies
- Breeding techniques in rice
- Hybrid rice production for food security
- Good management practices in rice
- Water management in rice production
- Weed management in rice
- Integrated nutrient management in rice
- Integrated pest management in rice
- Identification of pests and diseases in rice
- Integrated farming system as an effective approach for higher income
- Approaches to rice improvement through Biotechnology
- Transgenic rice
- Authenticity and Food Safety Issues in Rice Export
- Par-boiling and drying industry in paddy
- Value addition and marketing issues
- Digital extension in rice
- Gender issues in rice

## **1.5 Selection of executives:**

The MANAGE, USAID and the Government of India (GoI) formally informed various officials of participating countries' governments about the training program (as developed by ICAR-IIRR) and its objectives including thematic area of training well before the program implementation. The nominating entities and applicants desirous to participate in the training were suggested to submit their respective nominations including credentials and applications directly to MANAGE through their respective countries' Ministries of Agriculture or appropriate government agency. MANAGE reviewed and screened the applications and selected the final participants based on diverse working areas viz., Planning, Administration, Teaching, Research

and Extension in Agriculture and allied fields. MANAGE, also undertook the responsibility of mobilization of executives for training programs, provide funding from USAID and Government of India.

### 1.6 Profile of the Executives:

The selected executives belonged to five African countries (namely Democratic Republic of Congo, Ghana, Liberia, Sudan and Uganda) and two Asian countries (namely Afghanistan and Myanmar). There were 8 female and 12 male participants in the training program. The median age of the group was 38.55 years, with 11.55 years of professional experience.

Sl.No.	Name of the trainee	Country
1.	Fawad Khan Ahmad Zai	Afghanistan
2.	Shamshuddin Bahir	Afghanistan
3.	Tawakkal Safi	Afghanistan
4.	Hayatullah Nazari	Afghanistan
5.	M.Zalmai Bayat	Afghanistan
6.	Enayatullah Rustaqu	Afghanistan
7.	Peter Yaw Gasu	Ghana
8.	Lieber Justine Naawerebagar	Ghana
9.	Madusu Gabrietta Kromah	Liberia
10.	Linda Kpani Sumo	Liberia
11.	Ms. Tin Tin Kyu	Myanmar
12.	Mr. Kyaw Swar Htun	Myanmar
13.	Mr. Nan Myo Aung	Myanmar
14.	Omaima Merkni Eltahir	Sudan
15.	Yasir Hussain Mohamed Ela	Sudan
16.	Mbatudde Stella	Uganda
17.	Nsubuga Zacchaeus	Uganda
18.	Furaha Natalie	Uganda
19.	Rugamika Djenny	R. D. Congo
20.	Mvumbi Elysee Kabangie	R.D. Congo

Countries Representation	
1. Afghanistan	6
2. Democratic Republic of Congo	2
3. Ghana	2
4. Liberia	2
5. Myanmar	3
6. Sudan	2
7. Uganda	3
Total	20
Sectorial representation	
1. Food and Agriculture	10
2. Livestock and Fisheries	2
3. Agriculture Extension	4
4. Agricultural Marketing	3

### 1.7 Inaugural of the training programme

Twenty participants from seven countries viz., Afghanistan, Democratic Republic of Congo, Ghana, Liberia, Myanmar, Sudan and Uganda have participated in the training program. The inaugural session was held on 21st February, 2018 and Dr. V. Praveen Rao, Vice Chancellor of PJTSAU delivered the inaugural address in the gracious presence of Dr SR Voleti, Director, IIRR, Dr P Chandrasekhara, Director MANAGE, and Scientists (in-house faculty) of ICAR – IIRR and staff from MANAGE. Participants were formally welcomed and introduced to the gathering during the inaugural programme.





Post inauguration ceremony, the course director with the team of course coordinators interacted with all the participants. The course director briefed about the programme to all the participants and briefly explained the objectives of training, training methodology and significance of the training programme and also explained about various activities of IIRR. Pre course evaluation exam was conducted for the participants that comprised of 20 objective questions on various topics related to the training programme on “Critical Issues in Rice Production and Processing Technologies”





## 2. METHODOLOGY

### 2.1 Training Methodology

The training was imparted through various modules covering different aspect of rice production technologies. These include classroom deliberation, field visits, hands on experience of various equipments, live demonstrations, talk and classroom practical. Fifteen minutes from one hour classroom lecture were kept for participants to share their ideas and participate in group discussion with the individual resource person.



*Learning with live specimens*



***Participants giving their feedback***

Totally ten external faculty from different institutes and organization were also invited to interact with the trainees. They have dealt on important topics like Authenticity and Food Safety Issues in Rice Export, Water Management in Rice, Climate Smart Rice, Rodent Management in Rice, Vertebrate Pest Management, Principles of Rice Parboiling, Concept of Drying in Paddy Industry and Value Addition and Market Linkages in Millets.

**Dr KALUVAI YELLA REDDY, FIE**

Director  
Water and Land Management Training Research Institute  
Hyderabad-500030, INDIA



**Summary of Education & Career**

- i. B.Tech (Agril Engg) from Dr Punjabrao Deshmukh Krishi Vidyapeeth, Akola, MS (1982)
- ii. M.Tech in 'Water Resources Development and Management' from IIT, Kharagpur (1984)
- iii. PG Diploma in 'Sprinkler and Drip Irrigation', University of Arizona, Tucson, USA (2000)
- iv. Ph.D on 'Economic Design of Trickle Irrigation Systems' from IIT, Kharagpur (2002)

Dr K Yella Reddy has 33 years of experience in Teaching, Research, Project Management and Administration. He joined ANGR Agricultural University in 1985. Dr Reddy has been deputed to Work for Andhra Pradesh Micro Irrigation Project as Technical Head for 5 years period during 2004-08 and 2011-12. Since April 2012 Dr Reddy is working as Director of Water and Land Management Training and Research Institute (WALAMTARI), Hyderabad.

***Profile of External Faculty from WALAMTARI***



A Back at Work Plan was inbuilt with this training program to ensure the realization of learning at their respective workplace. The pre and post test was conducted to evaluate the effectiveness of the training.



*Panel discussion with team of experts*



*Group Activity – Back at Work Plan discussions*

A mutual communication approach was followed to provide orientation to the participants on the core subject of the training program.

The salient feature of the methodology adopted for the program are listed as under:

- Customised and flexible course schedule
- Participatory approach
- Lecture followed by group discussion
- Interactive session with the faculty of Institute and Guest Speakers
- Interaction with External faculty during visits to various Organization including

WALAMTARI, MANAGE

- Field visits to various institutions
- Special lectures/interactions with eminent personalities from the field were invited.
- Formulation of back to work program.
- Regular feedback on the program was collected.



*Learning by doing*

## **2.2 Study Materials**

Following study materials in the form of printed and softcopies were shared with the participants.

1. IIRR Profile
2. Annual reports of IIRR
3. Soft copies of the lecture presentation of the training program
4. Study material on rice production technologies
5. Technical bulletins of IIRR
6. RKMP brochure
7. Video on Rice Production Technology
8. Video on Hybrid Rice Production
9. Video on Rice Production Technology
10. Video on Hybrid Rice Seed Production

A comprehensive compilation of all the lecture notes and other methodologies were given as a compendium to the trainees. The executives had full access to ICAR- IIRR library, laboratories and Rice Knowledge Management Portal. In order to increase access to information and share knowledge on continuous basis, Wi-Fi as well as desk tops with Internet facility were provided during the entire course period and arrangements were made for their SIM cards.

## **2.3 Interactive session and resource person**

The formal classes of the training programme began from 20<sup>th</sup> Feb 2018. The date wise training schedule and interaction with resource person are described in subsequent paragraphs. Most of the resource persons were from Indian Institute of Rice Research. However, ten external expert resource persons having rich experience in their respective fields were also requested to deliver a talk and interact and share their experience with the trainee executives.









Topics	Resource Person	Description
20/2/2018 (Tuesday)		
Registration, Pre Evaluation and orientation	Dr P Jeyakumar, Dr B Nirmala, Dr Arun Kumar S	<ul style="list-style-type: none"> <li>• Distribution of Registration Kit</li> <li>• Registration</li> <li>• Conducting Pre evaluation</li> <li>• Overview of the training programme</li> </ul>
Rice Scenario in the World and India-	Dr. S.R. Voleti, ICAR-IIRR	<ul style="list-style-type: none"> <li>• Briefing about Training</li> <li>• Interaction with Executives</li> <li>• Overview of Global Rice Sector, Rice research and development</li> <li>• Activities and Achievements of IIRR</li> </ul>

		<ul style="list-style-type: none"> <li>• The Director – IIRR introduced the genesis of rice research and development in Indian Context and later explained about the various breeding strategies adopted by the institute like early rice breeding, recombination breeding, breeding for nutritional enrichment, breeding for biotic and abiotic stresses, breeding for new plant type and mutation and cellular breeding</li> <li>• He gave the overview and genesis of All India Coordinated Rice Improvement Project and listed the achievements of the institute and the AICRIP. While explaining about the futuristic research/ research prioritization, he listed the 10-point strategy that has been developed to enhance and sustain rice productivity to meet future demands of domestic consumption and surplus for export.</li> </ul>
<p>Machineries in Rice cultivation to solve the Labor Problem-</p>	<p>Dr. Vidhan Singh, ICAR-IIRR</p>	<ul style="list-style-type: none"> <li>• Overview and importance of Farm Machineries in Rice Production and processing</li> <li>• Benefits of Mechanization in terms of Labour saving, Energy in agriculture, Relief from drudgery, Reducing cost of cultivation was explained.</li> <li>• The Constraints of Mechanization of rice farming, Improved farm implements and machinery for rice cultivation comprising were explained</li> </ul>

Visit to Engg Lab and Experimental Field	Dr. Vidhan Singh, ICAR-IIRR	<ul style="list-style-type: none"> <li>• Field exposure on Farm Machineries and experiential learning</li> <li>• Dr. Vidhan Singh showed the farm machinery unit and explained how works.</li> <li>• He explained about working condition of all the machineries</li> <li>• Land Preparation Equipment, A.P.A.U. Puddler, Cono puddler and Seeding and planting Equipment like Direct sowing Row seeder, 8-Row paddy transplanter (Chinese design) were given demo.</li> <li>• Executives impressed by seeing improved machines and they experienced it practically.</li> </ul>
Crop Establishment Technique - Different type of Nursery Management	Dr. Mangal Deep Tuti, ICAR-IIRR	<ul style="list-style-type: none"> <li>• Importance of using various crop establishment techniques in India under varying cropping situations</li> </ul>
Group discussion	Dr. Mangal Deep Tuti, Dr. Vidan Singh, Dr. Sreedevi, Dr. Aarti Singh Dr. P. Muthuraman	<ul style="list-style-type: none"> <li>• Applicability and usefulness of the farm machinery and other learnt lessons were discussed.</li> <li>• The challenges in following low cost machineries in the fields of small and marginal farmers' fields were discussed.</li> </ul>
Visit to Rice Museum	Dr .P. Muthuraman	<ul style="list-style-type: none"> <li>• Orientation to the Training institute</li> <li>• History of rice research</li> <li>• IIRR research and development activities in the past and present.</li> <li>• Future challenges and strategies of IIRR research and development</li> </ul>



21/2/2018 (Wednesday)

Water Management in Rice	Prof. Yella Reddy, WALAMTARI	<ul style="list-style-type: none"><li>• Importance of water in the current situation was made clear to all the participants</li><li>• Dr Reddy made all the participants aware of Water Availability, Water Scarcity and made all the participants realize the significance by comparing the water usage in different sectors like Agriculture, Industry &amp; others.</li><li>• Participants were surprised to know about the Virtual Water and the Trade in Virtual Water</li><li>• He concluded the talk by explaining about the changes Affecting Water Availability and the strategies to be followed for the overall Sustainable Development</li></ul>
System of Rice Intensification:	Dr. R M. Kumar, ICAR-IIRR	<ul style="list-style-type: none"><li>• Global status and future prospects of SRI with respect to global water demand set the tone of the lecture and the global rice production scenario and demand for the future in this background stressed the importance of System of Rice Intensification as a water saving and productivity enhancing technology in the minds of the trainees.</li><li>• The Principles of SRI, some desirable and best practices of SRI for harnessing the higher productivity genesis of SRI in India, Comparison of different crop establishment methods under AICRIP</li><li>• Research experiences of SRI across the country in terms of response of SRI method on grain yield across the locations with</li></ul>

		<p>respect to Nursery area and seed saving, Varietal response to SRI, Saving in water, Nutrient use efficiency and status of soil available nutrients, Influence of SRI on incidence of insect pests, Reduction of the duration of the crop, Cost of cultivation and yield difference between SRI and Conventional method, Socio-economic studies and frontline demonstrations were discussed in depth along with the Limitations of SRI technology.</p> <ul style="list-style-type: none"> <li>• The trainees were convinced that the SRI is the only technique available to Increase yields, Reduce seed and nursery costs (68% reduction), Reduce labour requirements for planting, Reduce weed management costs and drudgery to farm women, Reduce irrigation water and power requirements (in bore well irrigated systems) and reduces the methane emissions, It is a climate resilient technology for small and marginal farmers.</li> <li>• Participants were given the Future line of work and up scaling tips for SRI.</li> </ul>
<p>Integrated Weed Management with specific reference to major weeds in Rice</p>	<p>Dr. B. Sreedevi, ICAR-IIRR</p>	<ul style="list-style-type: none"> <li>• Dr Sreedevi started her lecture with identification of the weeds. She helped the participants to identify based on the morphological characteristics, cotyledons and based on the life span and habitat. Later, she explained why weeds and thrie management is very important by throwing</li> </ul>

		light on Factors Influencing Weed Competition, basic principles in weed management and methods of Weed Management. She concluded her talk with detailed explanation on Integrated Weed management and its significance.
Video film on SRI Method of Rice cultivation	Dr P Jeyakumar, Dr B Nirmala, Dr Arun Kumar S	<ul style="list-style-type: none"> <li>• Explained about the various principles followed in SRI and the field experiences of SRI</li> </ul>
Visit to Experimental Fields.	Dr P Jeyakumar, Dr B Nirmala, Dr Arun Kumar S	<ul style="list-style-type: none"> <li>• Participants were exposed to different Transplanting Techniques and were given hands on training.</li> </ul>
Discussion about Back at Work Plan and its Preparation	Faculty and participants.	<ul style="list-style-type: none"> <li>• Participants were given orientation on the need of back at work plan to ensure the transformation of learning from the executives into action in their respective work places in their country</li> </ul>
22/2/2018(Thursday)		
Rice seed systems, their management and registration of Varieties in Post WTO Regime	Dr. L.V. Subba Rao, ICAR-IIRR	<ul style="list-style-type: none"> <li>• Participants were exposed to the knowledge about rice seed system, seed production techniques.</li> <li>• They were introduced about the management and registration of Varieties in Post WTO Regime</li> </ul>
Genetic Enhancement to Plant hopper management in Rice	Dr. G. Padmavathi, ICAR-IIRR	<ul style="list-style-type: none"> <li>• Under Genesis of rice, centre of origin and centres of diversity of two cultivated species <i>O. sativa</i> and <i>O. glaberrima</i> were discussed.</li> <li>• Rice gene pool and Evolutionary pathways of the Asian and African cultivated rices created interest among the participants and was</li> </ul>

		<p>considered as easy to produce through conventional breeding methods.</p> <ul style="list-style-type: none"> <li>• Genetic diversity in rice, Plant genetic resources and the characteristics of the Subspecies of rice and the Rice ecosystems like irrigated, rainfed upland, rainfed shallow lowland, deep and semideep and hills was dealt to have better understanding of the most important food crop.</li> <li>• The need for making use of the untapped genetic resources of important genes in rice breeding programs worldwide was well taken by the participants.</li> </ul>
<p>Production Techniques of Hybrid Rice &amp; Hybrid Rice Seed Cultivation Technology</p>	<p>Dr. A.S Hari Prasad, ICAR-IIRR</p>	<ul style="list-style-type: none"> <li>• Dr Hari Prasad explained the progress in Hybrid rice development in India including the History of Hybrid rice development to realize the potential of hybrid rice to increase the production and productivity.</li> <li>• He also pointed out the efforts of Indian Council of Agricultural Research (ICAR) through a mission mode project on hybrid rice in December, 1989 in collaboration with the International Rice Research Institute (IRRI) providing the needed germplasm and technical backstopping.</li> <li>• He shared the importance of network and partnership including all the concerned research institution, public and private seed agencies and departments of agriculture of target states for ini.</li> </ul>

		<ul style="list-style-type: none"> <li>• Status and trends of Hybrid rice development, Hybrid Rice Seed Production, Impact of Hybrid rice adoption</li> <li>• Constraints and gaps in Hybrid rice development comprising Technology constraints, Social and Economic Constraints, Capability Constraints, Policy Constraints along with the Opportunities for Hybrid rice development was shared.</li> <li>• Upon requests from the participants the key strategies and policy options to promote Hybrid rice development like the Research Strategies, Seed Production strategies, Technology transfer strategies, Policy Options were suggested that can be applicable in their respective countries</li> </ul>
Aerobic Rice Technology	Dr. P. Senguttuvel, ICAR-IIRR	<ul style="list-style-type: none"> <li>• Aerobic rice was explained with its importance in current water stress situations.</li> <li>• He stressed the need of development of varieties and hybrids suitable for aerobic situations and narrated the Prospects of Aerobic Rice in India and Expected problems associated with aerobic rice cultivation</li> </ul>
Video film on Hybrid Rice Production	Dr P Jeyakumar, Dr B Nirmala, Dr Arun Kumar S	<ul style="list-style-type: none"> <li>• Video helped the participants to understand the various principles of hybrid rice production and hybrid rice seed production</li> </ul>
23/2/2018(Friday)		
Visit to MANAGE	Dr P Muthuraman and MANAGE Faculty	<ul style="list-style-type: none"> <li>• The Director General Smt. Usha Rani delivered a lecture about MANAGE and its role in the Feed the Future India Triangular</li> </ul>

		<p>Training (FTF ITT) Program.</p> <ul style="list-style-type: none"> <li>• Later the CEOs were taken to different facilities of MANAGE. The CEOs were keen to replicate the approach/ strategy similar to Agri-business incubation centres in their respective country.</li> </ul>
24.02-2016 Saturday		
Problem Soils in Rice Cultivation and amelioration measures	Dr. K Surekha, ICAR-IIRR	<ul style="list-style-type: none"> <li>• Major factors contributing to the low and declining crop responses to fertilizer nutrients were introduced to the participants and they were exposed to the Soil resources of India and their nutrient status while compared to the global scenario.</li> <li>• Problem soils and their management for rice cultivation were explained in general and specifically in case of Saline soils, Alkali or sodic soils, Acid and acid sulfate soils, Reducing P fixation, Iron toxicity in rice, Aluminum toxicity were discussed and suggested Growing rice as a reclamatory crop in selected cases.</li> </ul>
Microbiological Resources for Profitable and Cost effective Rice Cultivation	Dr. P.C. Latha, ICAR-IIRR	<ul style="list-style-type: none"> <li>• Types of Biofertilizers for improving rice productivity – namely Nitrogen-fixing biofertilizers and Phosphorus mobilising biofertilizers were explained.</li> <li>• Factors Affecting Efficiency of Azolla, Limitations of Azolla in Rice fields, blue – green algae, factors affecting the use efficiency of bga in rice, azospirillum, usefulness of azospirillum inoculants,</li> </ul>

		<p>factors affecting use efficiency of the azospirillum, azotobacter, rhizobium, phosphate mobilizers, factors affecting efficient use of phosphate solubilizing biofertilizers and critical factors responsible for the effectiveness of biofertilizers</p> <ul style="list-style-type: none"> <li>• Different methods are available for applications of various biofertilizers were well explained As seed inoculants, As root dipping, And As soil inoculant</li> <li>• The participants were clarified about the benefits of biofertilizers and the precautions during storage and use of biofertilizers, along with the constraints in biofertilizers use</li> <li>• The talk concluded with the strategies to popularize biofertilizers and areas for future development.</li> </ul>
<p>Soil Test based Nutrient Management and use of on-farm Soil Testing kit</p>	<p>Dr. Brajendra, ICAR-IIRR</p>	<ul style="list-style-type: none"> <li>• Knowledge about soil testing and correction measures at the field level</li> <li>• Dr Brajendra explained about the Soil Health Cards for safe and judicious use of fertilizers for managing soil health. He introduced the concept of Soil health card and why it is very important in developing countries. He shared the experience of various cases where Soil health card based on Nutrient Recommendations have successfully worked.</li> <li>• He gave an interesting demo on using the instant soil health kit. Participants were interested to have the kit as it is an easy</li> </ul>



		<p>approach for safe and judicious use of fertilizers for better soil health. He concluded his lecture with best management practices for for better crop yield and for managing soil health.</p> <ul style="list-style-type: none"> <li>• Imparting required Skills for soil testing with cost effective tools</li> <li>• Creating a favourable attitude for soil test.</li> </ul>
Physiological Aspects of climate Change in Rice	Dr. D. Subramaniam, ICAR-IIRR	<ul style="list-style-type: none"> <li>• Knowledge on the physiological principles and its importance in the regime of climate change was imparted.</li> <li>• Participants were explained about Physiological aspects of rice production:</li> </ul>
Group discussion on Soil Management for Sustainable Rice Production: Soil scientists and Agronomists from ICAR- IIRR	Team of soil scientists, coordinators and participants	<ul style="list-style-type: none"> <li>• The lessons learnt during the soil science and microbiology module was discussed with the team of scientists.</li> <li>• Participants got clarified their doubts regarding problem soils and their management for rice cultivation specifically in case of Saline soils and Alkali or sodic soils</li> </ul>
26/02/2018 (Monday)		
Identification of Insect Pests in Rice Visit to Entomology Glass Houses:	Dr. Chitra Shankar, ICAR-IIRR	<ul style="list-style-type: none"> <li>• In her talk, Dr Chitra explained the Status of Biological Control of Rice pests, importance of the Natural Biological Control in Rice Ecosystem (NBRE), Quantification of impact of natural enemies in rice ecosystem, Weeds and other alternate hosts as reservoirs for natural enemies</li> <li>• She brought the wide biodiversity in rice</li> </ul>

		<p>ecosystem into picture and emphasized the significance of Conservation Biological Control and Methods in Conservation biological control</p> <ul style="list-style-type: none"> <li>• Later, talk dwelled around Ecological Engineering in rice and the advocated Interventions and concluded by narrating about the benefits of flowering plants on bunds.</li> </ul>
Integrated Stem borer Management in Rice	Dr. AP PadmaKumari, ICAR-IIRR	<ul style="list-style-type: none"> <li>• The complete package of the stem borer which is one of the major insect pests in was elaborated.</li> <li>• Skill to identify and control this deadly insect pests was imparted among the participants.</li> </ul>
Management of Plant hoppers	Dr. V. Jhansi Laxmi, ICAR-IIRR	<ul style="list-style-type: none"> <li>• The participants were made to understand the Brown Plant hopper and White backed Plant hopper its distribution, nature of damage, Life Cycle with the help of specimens.</li> <li>• The various factors favouring planthopper development, Economic Threshold level (ETL) and the Integrated Management of planthoppers was explained well.</li> </ul>
Leaf folder Management in Rice:	Dr. Ch. Padmavathi, ICAR-IIRR	<ul style="list-style-type: none"> <li>• She explained how leaffolders have assumed major pest status in recent years in both uplands and lowlands due to the use of high yielding varieties accompanied by heavy use of fertilizers.</li> <li>• Later she explained the Yield losses due to leaf folders, its Life Cycle, Damage symptoms, Favourable factors for leaffolder</li> </ul>

		infestation, Integrated Management.
Insect Pest Management in Rice:	Dr. Gururaj Katti, ICAR-IIRR	<ul style="list-style-type: none"> <li>• The significance of Insect pests at global level, national level and regional level was clearly explained for the benefit of the participants. Later Dr Katti narrated the importance of the emerging insect pests.</li> <li>• His talk emphasized the importance of Integrated Pest Management as a reliable long term solution. He quoted the successful cases and field experiences while explaining the General guidelines to be followed in rice IPM.</li> <li>• He elaborately listed the varieties resistant to important insect pests of rice in India.</li> </ul>
Panel Discussion on Insect Pest Management in Rice	Dr. Gururaj Katti, Dr. A.P.PadmaKumari, Dr. V. Jhansi Laxmi , Dr. R. M. Sundaram/, Dr. S. M. Balachandran/ Dr. M. Seshu Madhav , and Dr. G. Padmavati, ICAR-IIRR	<ul style="list-style-type: none"> <li>• The lessons learnt during the entomology module were discussed with the team of scientists.</li> <li>• Participants got more convinced about IPM application for rice cultivation</li> <li>• Information related to Nematodes were discussed</li> </ul>
Video film on IPM in Rice	Coordinators	<ul style="list-style-type: none"> <li>• Video clarified the concept of IPM in rice.</li> <li>• It helped the participants to understand the various principles of IPM and convinced them with the visual impact created by the field evidences.</li> </ul>

27/2/2018(Tuesday)		
Integrated BLB Management in Rice	Dr. G.S. Laha, ICAR-IIRR	<ul style="list-style-type: none"> <li>• Economic Importance of bacterial blight of rice was explained to participants along with symptoms, characteristics of the pathogen, isolation and detection of the pathogen, Virulence spectrum of the pathogen, Molecular characterization of the pathogen, Disease cycle and epidemiology.</li> <li>• Later they were told about the management of bacterial blight of rice.</li> </ul>
False Smut Disease in Rice and its Management	Dr. Ladha Lakshmi, ICAR-IIRR	<ul style="list-style-type: none"> <li>• Knowledge on the major diseases of Rice</li> <li>• Imparting skills to identify the diseases of rice at various stages</li> <li>• Economic Importance of false smut in rice was explained to participants along with symptoms, characteristics of the pathogen, isolation and detection of the pathogen, Disease cycle and epidemiology.</li> <li>• Later they were told about its management</li> </ul>
Integrated Sheath Blight Management in Rice	Dr .V. Prakasam, ICAR-IIRR	<ul style="list-style-type: none"> <li>• Economic Importance of sheath blight of rice was explained to participants along with symptoms, characteristics of the pathogen, isolation and detection of the pathogen, Virulence spectrum of the pathogen, Molecular characterization of the pathogen, Disease cycle and epidemiology.</li> <li>• Later they were told about the management of sheath blight</li> </ul>
Video Film on Improved Samba	Coordinators	<ul style="list-style-type: none"> <li>• Video helped the participants to understand the success case of adoption of a rice variety</li> </ul>

Mahsuri		resistant for BLB
Rice Disease Scenario and Integrated Disease Management with specific focus on Blast:	Dr. M. S. Prasad, ICAR-IIRR	<ul style="list-style-type: none"> <li>• Knowledge on the major diseases of Rice</li> <li>• Imparting skills to identify the diseases of rice at various stages</li> </ul>
Panel Discussion on Rice Disease Management	Dr. M.S .Prasad, Dr. G.S Laha, Dr. D. Krishnaveni, Dr. Kannan, Dr. Ladha Lakshmi, Dr. V. Prakasam, Dr. Dr. R. M. Sundaram, Dr. M. Seshu Madhav, ICAR-IIRR	<ul style="list-style-type: none"> <li>• An Inter Disciplinary discussion on diseases, its importance and strategies applicable in the participants state were discussed</li> </ul>
28/2/2018 (Wednesday)		
Rice Biotechnology to address Drought related issues	Dr. S.M. Balachandran, ICAR-IIRR	<ul style="list-style-type: none"> <li>• Dr Balachandran explained how genetic engineering has become a powerful tool for the introduction of new traits into rice and how ti can support the rice breeder.</li> <li>• He presented the cases of engineering rice against biotic and abiotic stresses and Genetic engineering for nutritional enhancement of rice</li> </ul>
Transgenic Rice	Dr. Ananda Kumar, ICAR-IIRR	<ul style="list-style-type: none"> <li>• Dr Ananda Kumar introduced the participants the transgenic, narrated the global status of GM crops and current status of transgenic rice development.</li> <li>• He clarified how in the field of agriculture several crop plants have been genetically modified to have resistance to insects</li> </ul>

		<p>(cotton, maize, rice, potato, melons and vegetables) and others to have resistance to herbicides (cotton, rice, maize, oilseed, rape seed, wheat and soybean).</p> <ul style="list-style-type: none"> <li>• Later concluded with the future advances in genetic engineering</li> </ul>
Authenticity and Food Safety Issues in Rice Export.	Dr. Anupam Dixit, BEDF, New Delhi	<ul style="list-style-type: none"> <li>• Dr Dixit explained the Authenticity and Food Safety Issues in Rice Export, The Role of Food Standards in Promoting Export Growth and Consumer Safety and The Emerging Role of Standards in International Trade.</li> <li>• He presented the different business Cases for Standards Setting and Food Safety Guidelines for exporting Basmati Rice to other countries.</li> </ul>
Rice Biofortification to achieve Nutritional Security:	Dr. CNN Neeraja, ICAR-IIRR	<ul style="list-style-type: none"> <li>• The Government of India's several interventions to address malnutrition, incidence of malnutrition among women and children, issue of malnutrition globally and the Conventional strategies to combat malnutrition include dietary supplements and food fortification programmes were discussed with the participants.</li> <li>• Current efforts to fortify rice and wheat flour for iron (Fe), vitamin B12 and folic acid and some of the constraints with these interventions including poor dissemination to the target population especially those residing in the rural areas; sustaining them over a period of time and addressing the</li> </ul>

		<p>symptoms rather than the cause of the problem.</p> <ul style="list-style-type: none"> <li>• The executives were later convinced that the long term solution lies in increasing the essential nutrient contents of the staple food crops viz., cereals through crop biofortification strategy.</li> <li>• Biofortification, Approaches of Biofortification including Agronomic, Conventional Breeding, Genetic Modification Technology were dealt in detail</li> <li>• Biofortified crops in human nutrition and the status and progress of biofortification globally was discussed. The case of DRR Dhan 45 with 1.5 fold higher compared to its check variety, implying higher absorbable Zn content was discussed.</li> <li>• The challenges like Strong policy interventions are needed to create interlinking of Biofortified produce with various National Programs like Rashtriya Krishi Vikas Yojna through higher profits would make the farmers interested to grow these improved cultivars, Integration of Biofortified grains in mid-day meal scheme and several government sponsored programmes such as National Food Security Mission and Integrated Child Development Programme would provide impetus for its popularization.</li> </ul>
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		<ul style="list-style-type: none"> <li>• Biofortification programs are also being challenged for “further simplification of human diets and food systems”, as it further restricts the dietary diversity and increases the dependence on overly dependent cereal staple foods.</li> </ul>
Molecular Breeding for Bacterial Leaf blight Resistance in Rice	Dr. R.M. Sundaram, ICAR-IIRR	<ul style="list-style-type: none"> <li>• The importance of Bacterial blight (BB) as a major disease of rice which reduces rice yields by about 10-40% depending on the severity of infection triggered the importance of the varieties with resistance genes.</li> <li>• The entire strategy of deployment of resistance genes, development into a product, its popularisation efforts, success cases were shared among the participants.</li> </ul>
Molecular Approaches to address the Blast disease in Rice	Dr. M. Sheshu Madhav, ICAR-IIRR	<ul style="list-style-type: none"> <li>• Dr Sheshu introduced the participants the molecular approaches to address the Blast disease in Rice</li> <li>• Global status of rice crop and importance of blast disease management and the revenue lost due to its damage</li> <li>• Later concluded with the future advances in this area and share his field experiences with farmers</li> </ul>
1/3/2018(Thursday)		
Rodent Management in Rice vertebrate Pest Management in Rice	Dr. Sakthivel NIPHM	<ul style="list-style-type: none"> <li>• Dr Sakthivel explained how rodents are one of the most important non-insects pests of agricultural crops, particularly rice.</li> <li>• He informed the participants about the Rodent of Economic importance at National</li> </ul>



		and regional level, major rodent pest species in rice, nature of rodent damage and some interesting management practices like Traps and Burrow Smoker
Vertebrate pest management:	Prof. Vasudeva Rao, AICRIP Ornithology	<ul style="list-style-type: none"> <li>• Dr Rao introduced the participants Vertebrate pest management to be addressed in case of rice</li> </ul>
Panel Discussion on Rice Biotechnology to address both biotic and abiotic stress	Dr. S.M. Balachandran, Dr. R.M.sundaram, Dr. CNN Neeraja, Dr. M. Sheshu Madhav, Dr. Kalyani Kulkarni, Dr.P. Divya Shyamala, Dr. A.P.Padma Kumari, Dr. G.S.Laha	<ul style="list-style-type: none"> <li>• The lessons learnt during the biotechnology and other lectures were discussed with the team of scientists.</li> <li>• Participants got more clarified about transgenics, applicability and future prospects</li> </ul>
IPR Issues in Rice in the Post WTO Era	Dr. P Lakshmi Prasanna, ICAR-IIRR	<ul style="list-style-type: none"> <li>• The IPR Issues in Rice in the the context of Post WTO was well discussed with the participants</li> </ul>
Digital Extension in Rice Sector:	Dr. S.N. Meera, ICAR-IIRR	<ul style="list-style-type: none"> <li>• Dr Meera dealt with Powering Disruption in the Extension Advisory Services.</li> <li>• He explained how disruptive technologies such as mobile/cloud computing, Internet of Things, location-based social networks etc. is a new game changer and has the potential to power Extension and Advisory Services.</li> <li>• He also informed the group about use of digital technologies in rural advisories.</li> <li>• He deliberated empirical evidences of digital</li> </ul>

		extension strategies on farmers' income and in adding value to the extension advisory systems.
2/3/2018(Friday)		
Visit to Indo-American Hybrid Rice Seed Company	Dr P Muthuraman Dr Lakshmi Prasanna	<ul style="list-style-type: none"> <li>• First hand information sharing and interaction with practitioners of private seed company helped participants to understand private perspective of rice seed system</li> </ul>
Rice Extension Practices	Dr. P. Muthuraman	<ul style="list-style-type: none"> <li>• The aims of extension services were explained to increase the productivity of the entire food system and improve yields, income, and welfare of farmers by translating research results into tangible gains.</li> <li>• The recent developments that take place in extension services were shared among the participants</li> </ul>
3/3/2018(Saturday)		
Visit to an Integrated Rice Mill Facility in Medak District	Dr. P. Muthuraman	<ul style="list-style-type: none"> <li>• Visit helped the participants to understand the rice milling procedure</li> <li>• Activities undertaken by millers gave good clarity to the participants</li> <li>• Interaction with practitioners helped to create good understanding of the milling procedures and standards followed.</li> </ul>
5/3/2018(Monday)		
Principles of Rice Parboiling	Dr. Ravindra Naik, ICAR- CIAE	<ul style="list-style-type: none"> <li>• In his lecture Dr Naik dealt about the basic concept rice parboiling, the changes occurring in the parboiling process, Parboiling – History, advantages of</li> </ul>

		<p>parboiling, disadvantages of parboiling.</p> <ul style="list-style-type: none"> <li>• Later he introduced the group about the different methods of Parboiling and the Processing variables in parboiling paddy</li> <li>• All the Traditional Methods like Single boiling and Double Boiling; Modern Methods like CFTRI method, Pressure parboiling method, Jadavapur University Method, Avorio Method, Malek Method, Crystal Rice Process were explained in detail.</li> <li>• Finally stressed the importance of nutritive value of parboiled rice and the milling and cooking quality of parboiled rice</li> </ul>
Value addition in Rice	Dr. M. Mohibbe Azam and Dr. Amtul Waris, ICAR-IIRR	<ul style="list-style-type: none"> <li>• The enormous potentials of various fractions of rice and availability of the raw materials were explained to the participants</li> <li>• IIRR attempts were made to develop various rice based products having different health care properties were shared and were shown how they are prepared in the lab.</li> <li>• Assessing the ability to implement the technology adoption and fine tuning of the technological aspects including in terms of entrepreneurship was also discussed.</li> </ul>
Concept of Drying in Paddy Industry	Dr. Ravindra Naik, ICAR- CIAE	<ul style="list-style-type: none"> <li>• The talk introduced the Theory and Drying fundamentals and moved to Different types rice dryers like Sun drying, Solar Dryers, Pit dryer, Mechanical drying , Bag Dryers,</li> <li>• He mentioned about the two-Stage Drying,</li> </ul>

		<p>pre-drying Aeration &amp; Drying of Seed Grain</p> <ul style="list-style-type: none"> <li>• Dr Naik also informed the group about the Novel dryers and recent developments</li> </ul>
Physio –Chemical Characteristics of Rice Quality:	Dr. Sanjeeva Rao, ICAR-IIRR	<ul style="list-style-type: none"> <li>• Dr Rao explained the Physio –Chemical Characteristics that play major role in the local and global demand in the rice Rice Quality</li> </ul>
Value Addition and Market Linkages in Millets :	Dr Dayakar Rao, ICAR-IIMR	<ul style="list-style-type: none"> <li>• The importance of value addition in Millets was explained well with many success cases from the industry. He gave examples of public and private sector projects that made possible the rejuvenation of the millet industry in the country.</li> </ul>
Rice Production, Trade and Policies:	Dr. B. Nirmala, ICAR-IIRR	<ul style="list-style-type: none"> <li>• Dr Nirmala explained about the Rice scenario in Asia and that of the world</li> <li>• The key variables which will influence global food security beyond 2050 were explained to the participants.</li> <li>• They were clarified that the global agricultural production would need to grow at 0.4 percent per year from 2050 to 2080.</li> </ul>
Technology Transfer Issues in Rice	Dr. P.Muthuraman, Dr. Amtul Waris, Dr. P. Jeya Kumar, Dr. S.N.Meera, Dr.B.Nirmala Dr. S. Arun Kumar	<ul style="list-style-type: none"> <li>• The past, contemporary and future issues of technology transfer was discussed.</li> <li>• The Technology Transfer challenges faced by the participants were shared by the participants.</li> </ul>
Back End Work Plan Presentation by the Participants	Coordinators	<ul style="list-style-type: none"> <li>• Backend work plan of group of participants were presented and discussed</li> <li>• Suggestions were given by the all the participants to improve the plan</li> </ul>



## 2.4 Field visits

The executives were exposed to various institutes through field visits. Following visits were planned and undertaken for the benefit of participants.

1. MANAGE
2. NIRDPR-RTP
3. AICRIP on Vertebrate Pests



4. ARI Integrated Farming system facility and Farm Machinery unit
5. Research Farms at Rajendranagar
6. Indo-American Hybrid Rice Seed Company
7. Integrated Rice Mill Facility at Medak.

### *Visit to MANAGE*

MANAGE was established in 1987, as National Centre for Management of Agricultural Extension at Hyderabad by the Ministry of Agriculture & Farmers Welfare, Government of India as an autonomous Institute, from which its acronym MANAGE is derived. In recognition of its importance of activities all over the country, its status was elevated to that of a National Institute in 1992 and re-christened to this present name i.e., National Institute of Agricultural Extension Management. MANAGE is the Indian response to challenges of agricultural extension in a rapidly growing and diverse agriculture sector. The policies and globalization of the economy and the level of agricultural technology becoming more sophisticated and complex, called for major initiatives towards reorientation and modernization of the agricultural extension system. Effective ways of managing the extension system needed to be evolved and extension organizations enabled to transform the existing set up through professional guidance and training of critical manpower. MANAGE is the response to this imperative need.

The executives visited MANAGE and the Director General Smt. Usha Rani delivered a lecture about MANAGE and its role in the Feed the Future India Triangular Training (FTF ITT) Program. Later the CEOs were taken to different facilities of MANAGE. The CEOs were keen to replicate the approach/ strategy similar to Agri-business incubation centres in their respective country.

### *Visit to RTP of NIRD & PR*

The Rural Technology Park of National Institute of Rural Development and Panchayat Raj, Hyderabad has been established with a view to uplifting the rural people in all aspects of life such as capacity building, rural employment generation and livelihood etc. It is established in an area of 65 acres of land with a scope to envisage for transfer of technology through live demonstrations. The development of RTP has been divided into various categories to cater to the needs of the rural people. The major objectives of RTP-NIRD are

1. Live demonstration/ dissemination of cost-effective, local resource based and environment friendly technologies of different sectors of Rural Development,
2. Provide functional exposure to replicable models to meet location-specific, season-specific and social contextual needs
3. Promote participative-cum-partnership collaboration between frontline / forward demonstration teams, other official and NGO institutions of NIRDPR
4. Facilitate transfer of technologies to users and help improve the operational skills to produce high quality products and
5. Link users and institutions (PRIs, NGOs, CBOs) with technology developer / suppliers

RTP-NIRDPR- is a place, where a variety of models of rural technologies are showcased with practical demonstration, in other words Training cum Production Centre. RTP spread across 65 acres in NIRDPR. RTP is an instrument in disseminating appropriate and affordable rural technologies to villages through dynamic approach. RTP is run on Partnership basis with the active participation of individual entrepreneurs, NGOs and government agencies. The guiding principles of RTP include use of local resources, cost-effectiveness, eco-friendly and blending tradition with modern technologies. Rural Housing, Renewable energy and natural resource management and Skill development & Promotion of entrepreneurship.

The participants were exposed to cost-effective rural housing units, rural sanitation, solar energy workshops, hand made paper natural dyeing, vermi composing and culture, medicinal plant nursery, bacillus thurunesis, trichograma, Trichogramma viridi, botanical pesticides and need based products, viral pesticides and home based products, tribal jewellery and pearl processing, bee keeping and honey marketing, hand made soap making, paper plate making , fashion jewellery, soya based value added products, textile garment and fashion making. Being rice trainees the participants have evinced keen interest on solar energy workshops, vermi composing and culture, bacillus thurunesis, trichograma, Trichogramma viridi, botanical pesticides and need based products, viral pesticides. Some of them planned to have these in their respective countries.

### *Indo-American Hybrid Seeds ( PVT) Ltd*

The Indo-American Hybrid Seeds (PVT) Ltd came into being on 1965. The company was established by Padmasree Dr. Manmohan Attavar its primary focus was supplying seeds of the highest quality to the American market. Fifty years later, it started the Indian market and their focus is unwavering and Quality is the company's priority. IAHS is mainly involved in the development and production of hybrid seeds of vegetables, flowering plants, field crops and the production of ornamental crops. Over the years, through h precise research and development IAHS has developed wide range of products that are to suit various agro climatic conditions, thus enabling us to cater to domestic as well as international markets.

We visited the Indo-American seed company situated at the village Dalipur. The participants have seen the seed production farm, processing unit and had through interaction with the staff of the company. Some of the participants were interested to have dealership in their respective country for the company. The company staff have instructed them to approach through the external affairs ministry. The company had provided sumptuous lunch and compliments to the executives. The executives have immensely benefitted by the visit.

### *Integrated Farming System Facility at Agriculture Research Institute*

The trainees were taken to Integrated Farming System Facility at Agriculture Research Institute. Prof. Srinivas delivered a lecture anut the advantages of Integrated farming systems and how the enterprises act as a safety valve in case of crop failure and maximum return to investment. In 2 acre farm they have included the enterprises like rice, maize, pulses, poultry birds, livestock agro forestry vegetables, fruit trees, sheep and goat and fisheries. The concept of recycling the waste is very well utilized in the farming system research centre. The trainees were very much impressed with these farming system and its economics.

### *Visit to different laboratories, workshop and Experimental fields.*

In the 15 days training program the executives were exposed to all the facilities of IIRR namely visit to rice museum, IIRR experimental fields, glass house facilities to demonstrate the screening techniques of insect pests and diseases, engineering workshop to show the cost effective mechanization to overcome the labour shortage, rice biotechnology labs, quality

analysis laboratories, soil science and soil microbiology laboratories. The trainees were also made to transplant seedlings and to do some inter culture operation to know about the drudgery involved in it.

### *Visit to Modern Integrated Rice Mill at Medak*

The CEO visited an integrated rice mill at Medak owned by a graduate farmers. He spent one crore to establish a rice mill with facilities like parboiling, milling sorting, packing and marketing. He availed the finance from a nationalized bank and making Rs.25000/ as profit per month. The CEO were interested to establish such type of rice mills in their countries particularly the participants from Uganda and Ghana. The CEO spent half a day and asked many questions about the project, source of machineries, average milling capacity, and the nifty gritty of rice milling. The entrepreneur cleared all their doubts in a convincing manner.

### *Visit to AICRIP on vertebrate pests*

On the CEO were taken to AICRIP on vertebrate pests and Prof. N. Vasudeva Rao have shown both video film and power pint presentation about the various types of vertebrates pests affecting rice crop. The executives narrated that in their counties also the monkeys, wild boar and birds are major threat to rice cultivation. The learnt the management techniques.







## 2.5 Collective action and participatory learning

All the executives were divided into groups to enhance learning in small groups throughout the training program including field/ Institutional visits and prepare for cultural programme. The groups were given responsibility for learning from interactions, collection of literature, photographs, contact details, use of library and identify useful technology to their respective countries. The group also participated and managed cultural programme successfully.

## 2.6 Life Membership to professional bodies and journals

The Society for Advancement of Rice Research is a registered society for researchers, research managers extension personnel, institutions, development agencies, trade and industry who practice and promote activities for the advancement of rice science and development. The society has been started with an overall objective of providing a platform for exchange of information and knowledge and disseminate the latest developments in rice research and to bring together all persons / institutions working for the cause of rice.

All the executives were made life members of Society for Advancement of Rice Research which is operating from IIRR, Hyderabad which publishes “Journal of Rice Research”, that acts as a channel for publication of full length papers original of research, critical reviews or interpretative articles related to all areas of rice science, rice crop systems and rice crop management. The journal also publishes short communications, book reviews and letters to the editor. As a life member of this society, the journal is automatically subscribed to the executives and they will receive the journal in PDF form from next publication issue. The executive not only can receive the journal but also can submit their future work for publication in this journal. The executive can access the archive of the journal by visiting <http://www.sarr.co.in>





## **2.7 Back-at-work-plans**

The present program aimed at strategies for income enhancement. Hence, the expected outcome would be a professional commitment by each executive to try new initiatives learnt during the training programs at their work place after the training program. In the backdrop of orientation, inputs, interactions, study material and experiences received during the program, the executives prepared and presented individual “Back-at-work-plans” which would help operationalize the relevant concepts learned during the program in their respective countries. Back at work -plan also trace the connectivity between Indian experience and back home extension issues. Details of individual Back-at-work-plans are given at Annexure-III.

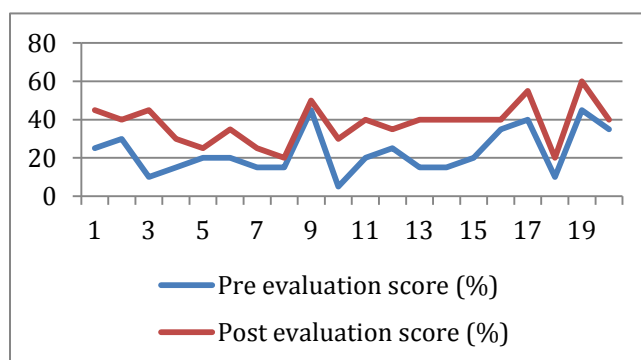
### 3. TRAINING EVALUATION

#### 3.1 Evaluation of Technical sessions

Feedback of Executives was collected on all technical sessions taken by resources persons, and field visits on a scale of 0 to10 i.e. ‘1 being the least and 10 being highest. In addition to this their suggestions on aspects like boarding and lodging were obtained in order to bring necessary changes in the future. The executives expressed their satisfaction level by rating the program on an average score of 9.07 on a 10 point. The feedbacks received from executives are tabulated and presented in the Annexure. Executives were asked to rate the Accommodation, Food, Class room environment, Power point Presentation, Field Visit, Course Content, Logistics, Transport, Behavior of Course Director and Coordinators. The scores gave were 8.87, 8.60, 9.07, 8.87, 8.87, 8.73, 8.53, 8.47 and 9.20 respectively.

#### 3.2 Pre and Post Training

Pre and post-training test Pre and Post Training test were conducted for the executives at the beginning and at the end of the training respectively. Twenty questions on different aspects of rice production were asked for pre and post-training test and obtained answers of the executives to assess their change of knowledge levels and effectiveness of the training programme. The average score of executives in the pre-training test was 23%, whereas the average score of post-training was 37.75%. Thus, it was found that the level of knowledge of executives was increased by 15 percent after the training programme. The details of pre and post-training test are given at Annexure-.IV





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*Feed back from Participants*

## 4. VALEDICTORY

Valedictory session was conducted on 6<sup>th</sup> Feb, 2018. Smt Usha Rani, Director General MANAGE had graced the occasion of valedictory session as chief guest in the presence of Dr GR Katti, In Charge Director, IIRR, Dr P Chandrasekhara, Director MANAG, and Scientists (in-house faculty) of ICAR – IIRR and staff from MANAGE. Participants were formally welcomed and introduced to the gathering during the inaugural programme.



The chief guest, in her address to the executives gauged the positive feedback of the training programme. She suggested the participants to back end work plan with great zeal and enthusiasm to make the programme successful. The executives were presented with the course certificate, memento and souvenir. Each executive were given a bag of basmati rice as token of love and appreciation. The executive were also awarded for various activities. The executives were asked to give their valuable feedback on the training program.





## 5. CULTURAL EVENING

In order to expose the participants with the Indian culture, a cultural evening was organized. Organisers made every effort by informing all executives well in advance about cultural evening and facilitated them with required items and preparation. All the executives enthusiastically participated in the cultural evening presenting their culture in the form of songs and dance. IIRR staff gave the glimpse of Indian tradition to the participants through songs and dance performances.





# ANNEXURE-I- TRAINING SCHEDULE



## ICAR- Indian Institute of Rice Research

Transfer of Technology and Training Section  
Rajendranagar, Hyderabad - 500030



### International Training on “Critical Issues in Rice Production and Processing Technologies”

Feed the Future-India Triangular Training  
(FTF-ITT)



**USAID FEED THE FUTURE**

**Training Schedule (20<sup>th</sup> Feb 2018 to 6<sup>th</sup> March 2018)**

20/2/2018 (Tuesday)	
09.30AM	Registration, Pre Evaluation an orientation
10.00 AM	Rice Scenario in the World and India- Dr. S.R. Voleti, ICAR-IIRR
11.00 AM	<b>High Tea</b>
11.30 AM	Machineries in Rice cultivation to solve the Labor Problem- Dr. Vidhan Singh, ICAR-IIRR
01.00 PM	<b>Lunch</b>
02.00 PM	Visit to Engg Lab and Experimental Field: Dr. Vidhan Singh, ICAR-IIRR
03.00 PM	<b>Tea Break</b>
03.15 PM	Crop Establishment Technique - Different type of Nursery Management Dr. Mangal Deep Tuti, ICAR-IIRR
04. 15PM	Group discussion by Dr. Mangal Deep Tuti, Dr. Vidan Singh, Dr. Sreedevi, Dr. Aarti Singh Dr. P. Muthuraman
05.00 PM	Visit to Rice Museum Dr .P. Muthuraman
21/2/2018 (Wednesday)	
10.00AM	Inaugural Function
10.45AM	<b>Group Photo, High Tea</b>
11.00AM	Water Management in Rice: Prof. Yella Reddy, WALAMTARI
12.00AM	System of Rice Intensification: Dr. R M. Kumar, ICAR-IIRR
1.00PM	<b>Lunch</b>
02.00PM	Integrated Weed Management with specific reference to major weeds in Rice: Dr. B. Sreedevi, ICAR-IIRR
3.00PM	Video film on SRI Method of Rice cultivation & Visit to Experimental Fields to Learn different Transplanting Techniques.
03.15PM	<b>Tea Break</b>
03.30PM	Visit to AICRIP on Weed control and Visit to Herbicide Residue analysis Lab: Dr. Madhavi & Dr. Reddy, PJTSAU

<b>04.30PM</b>	Discussion about Back at Work Plan and its Preparation: Faculty and participants.
<b>22/2/2018(Thursday)</b>	
<b>09.30AM</b>	Rice seed systems, their management and registration of Varieties in Post WTO Regime: Dr. L.V. Subba Rao, ICAR-IIRR
<b>10.30AM</b>	Visit to Vermi Compost Unit in IIRR Experimental Field: Hands on Training – Participation by all participants
<b>11.30AM</b>	<b>Tea Break</b>
<b>11.45AM</b>	Genetic Enhancement to Plant hopper management in Rice: Dr. G. Padmavathi, ICAR-IIRR
<b>01.00PM</b>	<b>Lunch</b>
<b>02.00PM</b>	Production Techniques of Hybrid Rice& Hybrid Rice Seed Cultivation Technology: Dr. A.S Hari Prasad, ICAR-IIRR
<b>03.00PM</b>	<b>Tea Break</b>
<b>03.15PM</b>	Aerobic Rice Technology: Dr. P. Senguttuvel, ICAR-IIRR
<b>04.15PM</b>	Video film on Hybrid Rice Production
<b>23/2/2018(Friday)</b>	
<b>Whole day program at MANAGE</b>	
<b>24.02-2016 Saturday</b>	
<b>09.30AM</b>	Problem Soils in Rice Cultivation and amelioration measures Dr. K Surekha, ICAR-IIRR
<b>10.30AM</b>	Microbiological Resources for Profitable and Cost effective Rice Cultivation: Dr. P.C. Latha, ICAR-IIRR
<b>11.30AM</b>	<b>Tea Break</b>
<b>11.45AM</b>	Soil Test based Nutrient Management and use of on-farm Soil Testing kit: Dr. Brajendra, ICAR-IIRR
<b>01.00 PM</b>	<b>Lunch</b>
<b>02.00PM</b>	Physiological Aspects of climate Change in Rice: Dr. D. Subramaniam, ICAR-IIRR
<b>03.00PM</b>	<b>Tea Break</b>
<b>03.15PM</b>	Climate Smart Rice : Dr. Himanshu Pathak , ICAR -NRRI
<b>04.15PM</b>	Group discussion on Soil Management for Sustainable Rice Production: Soil scientists and Agronomists from ICAR- IIRR
<b>25/2/2018(Sunday )</b>	
Week End Off	
<b>26/02/2018 (Monday)</b>	
<b>09.30AM</b>	Identification of Insect Pests in Rice Visit to Entomology Glass Houses: Dr. Chitra Shankar, ICAR-IIRR
<b>10.30AM</b>	Integrated Stem borer Management in Rice: Dr. AP PadmaKumari, ICAR-IIRR
<b>11.30AM</b>	<b>Tea Break</b>
<b>11.45AM</b>	Management of Plant hoppers: Dr. V. Jhansi Laxmi, ICAR-IIRR
<b>1.00PM</b>	<b>Lunch</b>
<b>02.00PM</b>	Leaf folder Management in Rice: Dr. Ch. Padmavathi, ICAR-IIRR
<b>03.00PM</b>	<b>Tea Break</b>
<b>03.15PM</b>	Insect Pest Management in Rice: Dr. Gururaj Katti, ICAR-IIRR
<b>04.15PM</b>	Panel Discussion on Insect Pest Management in Rice Dr. Gururaj Katti, Dr. A.P.PadmaKumari, Dr. V. Jhansi Laxmi , Dr. R. M. Sundaram/, Dr. S. M. Balachandran/ Dr. M. Seshu Madhav , and Dr. G. Padmavati, ICAR-IIRR

	Video film on IPM in Rice
<b>27/2/2018(Tuesday)</b>	
<b>09.30AM</b>	Integrated BLB Management in Rice: Dr. G.S. Laha, ICAR-IIRR
<b>10.30AM</b>	False Smut Disease in Rice and its Management: Dr. Ladha Lakshmi, ICAR-IIRR
<b>11.30AM</b>	<b>Tea Break</b>
<b>11.45AM</b>	Integrated Sheath Blight Management in Rice: Dr .V. Prakasam, ICAR-IIRR
<b>12.45PM</b>	Video Film on Improved Samba Mahsuri
<b>01.00PM</b>	<b>Lunch</b>
<b>02.00 PM</b>	Rice Disease Scenario and Integrated Disease Management with specific focus on Blast: Dr. M. S. Prasad, ICAR-IIRR
<b>04.15PM</b>	Panel Discussion on Rice Disease Management : An Inter Disciplinary Approach Dr. M.S .Prasad, Dr. G.S Laha, Dr. D. Krishnaveni, Dr. Kannan, Dr. Ladha Lakshmi, Dr. V. Prakasam, Dr. Dr. R. M. Sundaram, Dr. M. Seshu Madhav, ICAR-IIRR
<b>28/2/2018 (Wednesday)</b>	
<b>09.30AM</b>	Rice Biotechnology to address Drought related issues: Dr. S.M. Balachandran, ICAR-IIRR
<b>10.30AM</b>	Transgenic Rice : Dr. Ananda Kumar, ICAR-IIRR
<b>11.30AM</b>	<b>Tea Break</b>
<b>11.45AM</b>	Rice Genetic Resources and Pre-Breeding: Prof. Kuldeep Singh, NBPGR, New Delhi
<b>01.00PM</b>	<b>Lunch</b>
<b>02.00PM</b>	Authenticity and Food Safety Issues in Rice Export. Dr. Anupam Dixit, BEDF, New Delhi
<b>03.00PM</b>	Tea Break
<b>03.15PM</b>	Rice Biofortification to achieve Nutritional Security: Dr. CNN Neeraja, ICAR-IIRR
<b>04.15PM</b>	Molecular Breeding for Bacterial Leaf blight Resistance in Rice: Dr. R.M. Sundaram, ICAR-IIRR
<b>05.00PM</b>	Molecular Approaches to address the Blast disease in Rice Dr. M. Sheshu Madhav, ICAR-IIRR
<b>1/3/2018(Thursday)</b>	
<b>09.30AM</b>	Rodent Management in Rice vertebrate Pest Management in Rice: Dr. Sakthivel NIPHM
<b>10.30AM</b>	<b>Tea Break</b>
<b>11.00AM</b>	Vertebrate pest management: Prof. Vasudeva Rao, AICRIP Ornithology
<b>01.00PM</b>	<b>Lunch</b>
<b>02.00PM</b>	Panel Discussion on Rice Biotechnology to address both biotic and abiotic stress Dr. S.M. Balachandran, Dr. R.M.sundaram, Dr. CNN Neeraja, Dr. M. Sheshu Madhav, Dr. Kalyani Kulkarni, Dr.P. Divya Shyamala, Dr. A.P.Padma Kumari, Dr. G.S.Laha
<b>03.00PM</b>	<b>Tea Break</b>
<b>03.15PM</b>	IPR Issues in Rice in the Post WTO Era : Dr. P Lakshmi Prasanna, ICAR-IIRR
<b>04.15PM</b>	Digital Extension in Rice Sector: Dr. S.N. Meera, ICAR-IIRR
<b>05.30PM</b>	Cultural Evening
<b>2/3/2018(Friday)</b>	
<b>09.30AM</b>	Visit to Indo-American Hybrid Rice Seed Company
<b>03.00PM</b>	Rice Extension Practices: Dr. P. Muthuraman
<b>3/3/2018(Saturday)</b>	
<b>09.30AM</b>	Visit to an Integrated Rice Mill Facility in Medak District

<b>4/3/201 (Sunday)</b>	
Week End Off	
<b>5/3/2018(Monday)</b>	
<b>09.00AM</b>	Principles of Rice Parboiling : Dr. Ravindra Naik, ICAR- CIAE
<b>10.00AM</b>	Value addition in Rice : Dr. M. Mohibbe Azam and Dr. Amtul Waris, ICAR-IIRR
<b>11.00AM</b>	<b>Tea Break</b>
<b>11.30AM</b>	Concept of Drying in Paddy Industry: Dr. Ravindra Naik, ICAR- CIAE
<b>01.00PM</b>	<b>Lunch</b>
<b>02.00PM</b>	Physio –Chemical Characteristics of Rice Quality: Dr. Sanjeeva Rao, ICAR-IIRR
<b>03.00PM</b>	Value Addition and Market Linkages in Millets : Dr Dayakar Rao, ICAR-IIMR
	<b>Tea Break</b>
<b>04.00PM</b>	Rice Production, Trade and Policies: Dr. B. Nirmala, ICAR-IIRR
<b>05.00PM</b>	Technology Transfer Issues in Rice Dr. P.Muthuraman, Dr. Amtul Waris, Dr. P. Jeya Kumar, Dr. S.N.Meera, Dr. P. Lakshmi Prasanna, Dr.B.Nirmala and Dr. S. Arun Kumar
<b>05.00PM</b>	Back End Work Plan Presentation by the Participants
<b>6/3/2018(Tuesday)</b>	
<b>10.00AM</b>	Post Evaluation of the Training
<b>11.00AM</b>	<b>Tea Break</b>
<b>11.30AM</b>	Valedictory Function
<b>01.00 PM</b>	Lunch
<b>02.00PM</b>	Departure

## ANNEXURE-II

### LIST OF EXECUTIVES



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## ANNEXURE-III

### DETAILS OF INDIVIDUAL BACK-AT-WORK-PLANS

Name of executive	Proposed Activity	Proposed Place of activity	Duration	Expected Outcome
Yasir Hussain	Demonstrations on aerobic rice	Gezira state	6 months	Capacity building of target group Increased rice productivity
Linda sumo	Low land rice production	Foya district	6 months	Household food security Reduced cost of cultivation
Madusu G Kromah	Integrated soil health management	Liberia	6 months	Soil health management
Omaima	Aerobic rice	Central Sudan	6 months	Weed management Increased income from rice production
Z Bayat	Post harvest management	Takhar, Kunduz, Baghlan, Balkhand Badahshan	6 months	Capacity building of extension officers
Rugamika	Rice byproducts	Kinshasa	4 months	Opportunities for marketing of rice based products will be explored
Rustagi	Nursery management	Takhar	6 months	Improved nursery management
Kyaw Swar Htun	System of rice intensification	Ayearwady	6 months	Increased income of rice farmers
Tin Tin Kyu	Seed production	Bago, Kyauktaga	6 months	To increase income of seed producers
Nano Myo Aung	System of rice intensification	Nay Pyi	6 months	Increased income of rice farmers

## ANNEXURE-IV

### DETAILS OF PRE AND POST-TRAINING TEST

S.No	Name	Pre evaluation score	Pre evaluation score (%)	Post evaluation score	Post evaluation score (%)	Improvement in score	Percentage of improvement
1	PETER YAN GASU	5	25	9	45	4	20.00
2	YASIR HUSSAIN	6	30	8	40	2	10.00
3	M ZALMAY BAYT	2	10	9	45	7	35.00
4	KYAW SWAR HTUN	3	15	6	30	3	15.00
5	LINDA KPANAI SUMO	4	20	5	25	1	5.00
6	ELYSEE MUUMBI	4	20	7	35	3	15.00
7	MADUSU GABRIETTA KROMAH	3	15	5	25	2	10.00
8	TIN TIN KYU	3	15	4	20	1	5.00
9	MBAUDDE STELLAH	9	45	10	50	1	5.00
10	FAWED KHAN AHMAD ZAI	1	5	6	30	5	25.00
11	FURAHA NATALIE	4	20	8	40	4	20.00
12	HAYATULLAH	5	25	7	35	2	10.00
13	SHAMSUDDIN BAHIN	3	15	8	40	5	25.00
14	ENAYATULLAH RUSTAQI	3	15	8	40	5	25.00
15	TAWAKAI	4	20	8	40	4	20.00
16	NAN MYO ALING	7	35	8	40	1	5.00
17	LIEBER N.N JUSTINE	8	40	11	55	3	15.00
18	RUGAMIKA B DGENNY	2	10	4	20	2	10.00
19	NSUBUGA ZACCHEUS MUKASA	9	45	12	60	3	15.00
20	OMAIMA MERRANI	7	35	8	40	1	5.00
	<b>Average score</b>	<b>4.6</b>		<b>7.55</b>		<b>2.95</b>	<b>14.75</b>



## ANNEXURE-V

### EXECUTIVES FEEDBACK EVALUATION

S No	Topic/Subject/Item of Evaluation	Average rating score
1	Overview and Pre Evaluation. -Dr. P. Muthuraman and Dr. B. Nirmala	8.78
2	Global Scenario of rice and AICRIP- Dr. S.R.VOLETI	8.65
3	Visit to Rice Museum- Dr. P. Muthuraman	7.88
4	Genesis & Diversity of Rice Crop: G. Padmavathi	8.76
5	Types of Nursery and its management- RM Kumar	8.41
6	Field exposure: Nursery sowing, Mechanical sowing	8.50
7	IPR issues in rice Post WTO Era: Dr.P.A.Lakshmi Prasanna	8.18
8	Microbiological Resources for Profitable and Cost effective Rice Cultivation: Dr. P.C.Latha	8.47
9	Weeds: Management & Aerobic Rice Technology: Dr. Sreedevi	7.94
10	Physiological Aspect of Climate Change in Rice: Dr. Subramaniam	8.11
11	Rice Bio-fortification to achieve Nutritional Security: Dr. CN Neeraja	7.21
12	Soil Test based Nutrient Management and use of on- farm Soil Testing kit: Dr. Brajendra	8.21
13	Rice seed systems, their management and registration of Varieties in Post WTO Regime: Dr. L.V.Subba Rao	8.00
14	Hybrid Rice Production Technology: Dr. A.S Hariprasad	7.84
15	New Plant type / Ideotype concept: Dr. P.Raghuveer Rao	8.11
16	Soils: Rice cultivation and amelioration: Dr. K. Surekha	7.79
17	Visit to Weed Control Lab PJTSAU: Madhavi and Reddy	8.22
18	Identification of Insect Pests in Rice field and glasshouse: Dr. Chithra and Dr. V.Jhansi lakshmi	8.65
19	Insect Pest scenario of Rice: Dr. G.R. Katti	8.50
20	Management of Insect Pest and Nematodes in Rice: Entomology and team	8.35
21	Eco friendly Techniques for Pests and Natural enemies: Dr. Chithra Shankar and Dr. Jhansi Rani	8.53
22	Rice Disease Scenario and Integrated disease Management: Dr. M.S.Prasad	8.71
23	Bacterial leaf Blight disease Management in Rice: Dr. G.S. Laha	8.73
24	Developing disease resistant- Improve Samba Mahsuri: Dr. R.M.Sundaram	8.50
25	Molecular Methods to Control Blast and Sheath blight: Dr.M.Sheshu Madhav and Dr.V.Prakasham	8.93
26	False smut and RTV in Rice: Dr.Ladha Lakshmi and Dr.D.Krishnaveni	8.40
27	Approaches to Rice Improvement through bio technology:	8.53

	Dr.S.M.Balachandran	
28	Transgenic Rice: Dr. P.Ananda Kumar	8.27
29	Authenticity and Food safety issues in Rice Export: Dr. Anupam Dixit	8.27
30	Rodent Management in Rice and Vertebrate Pest Management in Rice: Dr. Sakthi vel	8.93
31	Vertebrate Pest Management: Dr. Vasudeva Rao	8.57
32	Digital Extension in Rice Sector: Dr. Shaik. N. Meera	8.64
33	Use of Big data in Precision farming: Dr.B.Sailaja	8.43
34	Visit to Indo – American Hybrid Rice Seed Company: Dr.P. Muthuraman	8.35
35	Rice Extension Practices: Dr.P.Muthuraman	8.67
36	Visit to an Integrated Rice Mill Facility in Medak District: Dr.P.Muthuraman	8.06
37	Gender issues in Rice: Dr. Amtul Waris	8.33
38	Values addition In Rice: Dr.M. Mohibbe Azam	8.19
39	Paddy Parboiling and Drying Industry: Ravindra Naik	8.38
40	Value addition and Market Linkages in Millets: Dr.Dayakar Rao	8.53
41	Economics of Rice Production trade and polices: Public and Private Industry: Dr.B.Nirmala and Dr.Arun Kumar S	8.73
42	Accommodation	8.87
43	Food	8.60
44	Class room environment	9.07
45	Power point Presentation	8.87
46	Field Visit	8.87
47	Course Content	8.73
48	Logistics	8.53
49	Transport	8.47
50	Behavior of Course Director and Coordinators	9.20
51	Overall Training assessment	9.07

## ANNEXURE-VI

### EXECUTIVES FEED BACK



**Feed The Future India Triangular Training (FTF ITT)**  
**International Training Program on**  
**Critical Production and Processing Technologies in Rice**  
**for the CEOs of African and Asian Countries**  
**Feb 20<sup>th</sup> to March 06<sup>th</sup> 2018**



**Ms. Linda Kpanai Sumo**  
**Liberia**

*“This training is very valuable for me because I got to learn lot of techniques to step up rice production in a cost effective manner. I can transfer some of the techniques to my county’s rice farmers”*



**Ms. Madusu Gabrietta**  
**Kromah**  
**Liberia**

*“The training has been an eye opener for me personally.”*



**Ms. Natalie Furaha**  
**Uganda**

*“The training was very important. Being an executive from private industry I will popularize the rice seed production technologies among the rice farmers.”*



**Mr. Zacchaeus Mukasa**  
**Nsubuga**  
**Uganda**

*“The training was very educative. We learnt a lot. I will work on rice blast disease because it is a major problem in my country.”*



**Ms. Stellan Mbatudde**  
**Uganda**

*“The training was very important because it combined both production and processing technologies in rice sector.”*



**Mr. Tawakal Safi**  
**Afghanistan**

*“Technologies we have learned and sure to implement them back home.”*



**Mr. Shamsuddin Bahir**  
**Afghanistan**

*“I will deliver the technologies to my smallholder farmers.”*



**Mr. M. Zalmay Bayat**  
**Afghanistan**

*“The training was very educative and informative”.*



**Mr. Enayatullah Rustaqi**  
**Afghanistan**

*“Soil testing is very useful we need to adopt this technology in Afghanistan and we will try off-campus training with the help of IIRR and MANAGE.”*



**Mr. Fawad Khan Ahmad**  
**Zai**  
**Afghanistan**

*“Basmati rice production can be adopted in Afghanistan.”*





**Mr. Hayatullah Nazari**  
**Afghanistan**

*“Identification of pest and diseases in rice is interesting and it can solve many production constraint.”*



**Mr. Peter Yaw Gasu**  
**Ghana**

*“This training is very effective for my country particularly I want to introduce the small scale mechanization in my county. Small scale rice mill will be very useful to process the paddy.”*



**Mr. Lieber Justine**  
**Naawere Bagr Nee-ero**  
**Ghana**

*“We have learned the technologies. Water and weed management will solve my country’s problem to the maximum extent.”*



**Mr. Kyaw Swar Htun**  
**Myanmar**

*“The technologies we have learned are very useful and will sure try to implement them back home.”*



**Mr.Nan Myo Aung**  
**Myanmar**

*“The training was very educative. We learnt a lot from the training because it has filled a lot of gaps which were there at our division. Soil related problem will be addressed through this training.”*



**Ms.Tin Tin Kyu**  
**Myanmar**

*“I was very lucky to have been chosen for this unique training programme.”*



**Ms.Djenny B Rugamika**  
**Congo**

*“The training was very important.”*



**Ms.Elysee Mvumbi**  
**Kabangi**  
**Congo**

*“I will deliver the relevant and applicable technologies to my smallholder farmers.”*



**Mr. Yasir Hussain M  
Hussain  
Sudan**

*“Technologies we have learnt are sure to  
implement them back home.”*



**Ms. Omaila Merkani  
Eltahir  
Sudan**

*“The training was very educative. I have learnt  
much knowledge from the training”*

# ANNEXURE-VII

## GLIMPSES





