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I am very much delighted to share achievements of the Academy over the last year through this Annual Report.

In fact, 2015-16 was an eventful year for the Academy. Capacity building activity at the Academy was at its peak in terms of number of trainees and the introduction of innovative approaches viz. Massive Open Online Courses (MOOCs), Training Management Information System (TMIS), etc., Annual Training Plans, Technology Enhanced Learning Centre, Centre for Agriculture Innovation, and creation of Academic Cell and Central Service Units. These approaches enhanced the capacities of individuals and institutions of National Agricultural Research and Education System (NARES) in agricultural research, education and technology management.

Over the last four decades, the Academy has been contributing significantly to the development of scientists, faculty and research leaders in the Indian Council of Agricultural Research (ICAR) and Agricultural Universities (AUs) as sensitive and responsive scientists to the needs of its stakeholders.

The Academy is expanding its horizon through online capacity strengthening programmes, especially for the faculty of Agricultural Universities, which is a great challenge for the Academy. Shortage of faculty in AUs and academic pressure limiting the participation of faculty of AUs in Academy’s regular training Courses were addressed through Massive Open Online Course (MOOC) platform. The success of MOOC has led to the inclusion of Online Courses in the regular training calendar. The Academy was in the forefront in developing and implementing training-need assessment, skill development, ATPs, and guiding ICAR Institutes in their staff capacity strengthening.

Focused and theme-based research projects were given priority and the faculty ably accomplished the research projects leading to development of knowledge and information systems, impact and policy studies, etc. Academy faculty was successful in leaving an indelible mark in the scientific arena with contributions through quality publications, sponsored research and consultancies, which improved the Academy’s visibility and reach.

The Academy’s higher education programmes such as Post Graduate Diploma in Management of Agriculture (PGDMA) and Post Graduate Diploma in Technology Management in Agriculture (PGDTMA) continued to receive overwhelming recognition; proved by 100 percent placement. Through outreach activities such as village adoption and Mera Goan Mera Gurav programmes, the Academy transformed agricultural rural life through implementation of extension methodologies.

The Academy strengthened its institutional infrastructure by adding Technology Enhanced Learning Centre and Centre for Agricultural Innovation, which are going to change the face of agricultural education and startups in the country.

I am delighted to share that the Academy had won the ‘National Award for Excellence in Training for the year -2015’, constituted for the first time by the Department of Personnel and Training (DoPT), Government of India under institutional category for its innovative initiative ‘Learning and Capacity Building’ of the National
Agricultural Innovation Project (NAIP). The staff and faculty continued to bring laurels to the Academy by winning awards at the National and International events.

The Academy received unstinted and positive support from the Council. We would like express our sincere thanks and gratitude to Dr S. Ayyappan, Former Secretary (DARE) and Director General (ICAR), Dr Trilochan Mohapatra, the present Secretary (DARE) and Director General (ICAR), and Shri Chhabilendra Roul, Additional Secretary (DARE) & Secretary (ICAR) for extending profuse support and continuous encouragement and guidance to make the Academy more vibrant and responsive to meet the emerging challenges. We are also thankful to Dr Arvind Kumar, Former DDG (Edn) and Dr N. S. Rathore, present DDG (Edn), ICAR for extending whole hearted support in pursuing the Academy’s activities.

I genuinely appreciate the earnest efforts of editorial team comprising Drs S.K. Soam, B.S. Sontakki, D. Thammi Raju and Shri S.P. Subash for bringing out this Annual Report. Dr R. Kalpana Sastry, Joint Director also contributed significantly in bringing out this publication. I hope and trust that the information given in this Annual Report will be useful for the stakeholders. I look forward for the Academy to have a challenging future role in achieving the ICAR’s mission towards agricultural development.

Date: 12 July 2016
Place: Hyderabad

(D. RAMA RAO)
Director
राष्ट्रीय कृषि अनुसंधान प्रक्रिया अकादमी (NAARM), हैदराबाद द्वारा पिछले चार दशकों से क्षमता सुधारकरण, शिक्षा, अनुसंधान, परामर्श एवं नीति सहयोग के माध्यम से राष्ट्रीय कृषि अनुसंधान एवं शिक्षा प्रणाली (NARES) में नेतृत्व, शासन तथा नवोपनाशक क्षमताओं को बढाने की दिशा में तेजी से प्रयास किया जा रहा है। राष्ट्रीय कृषि अनुसंधान एवं शिक्षा प्रणाली (NARES) में अपने उपयोगकर्ताओं की जरूरतों को पूरा करने में अकादमी द्वारा उत्कृष्टता, अनुकूलनीय नवोपनाशक रणनीतियों, युविक्षियों तथा कार्यक्रमालिकाओं को हासिल करने का प्रयास किया जाता है।

अकादमी द्वारा बुनियादी पाठ्यक्रमों, नेतृत्व विकास पाठ्यक्रमों, पुनर्विद्या पाठ्यक्रमों, जरूरत आधारित कार्यक्रमों, प्रामोझित एवं ऑफ़-कैम्पस कार्यक्रमों के साथ-साथ कार्यशालाओं, सेमिनार एवं सम्मेलनों के माध्यम से कुल 63 क्षमता निर्माण कार्यक्रमों का आयोजन करके एवं 2,495 प्रतिभागियों को प्रशिक्षित करके राष्ट्रीय कृषि अनुसंधान एवं शिक्षा प्रणाली (NARES) में अपनी दृष्टि एवं मौजूदगी में सुधार किया गया। संख्या की दृष्टि से, यह पिछले चार दशकों में सबसे अधिकतम है।

रिपोर्टर्सः अनुमानित दौरान प्रारंभिक क्षमता निर्माण में नवोपनेत्तर MOOCs, फोकस्ट क्लास, फोकस्ट वेबसाइट, नार्म डिजिटल पियोजिट्री, नार्म डाटावर्क्स, TMIS, प्रौद्योगिकी मूल्यांकन के लिए वेब आधारित विशेषज्ञ प्रणाली, वेब आधारित AHPएनलाइजर, योग तथा शारीरिक शिक्षा आदि शामिल हैं।

क्षमता निर्माण के अलावा, अनुसंधान भी अकादमी की एक महत्वपूर्ण गतिविधि बना रहा जिसमें बहु-संरचित प्रशिक्षण डिजाइनों और सुधारित क्रियाशिक्षियों के विकास हेतु आधारित रही जाती है। रिपोर्टर्सः अनुमानित दौरान, कुल 22 परियोजनाओं में से, 8 परियोजनाएं
बाह्य वित्त पोषित थीं। बाह्य वित्त पोषित परियोजनाओं
को भारतीय कृषि अनुसंधान परिषद (ICAR); अंतरराष्ट्रीय
खाद नीति अनुसंधान संस्थान (IFPRI); जैव प्रौद्योगिकी
विभाग (DBT) द्वारा प्राप्त किया गया। परियोजनाओं
के अनुसंधान विषयों में ज्ञान एवं सूचना प्रणालियों का
विकास, प्रभाव आकारन, मानव संस्थान विकास, मॉडलिंग
व पूर्वनुमान, कृषि शिक्षा आदि का विकास शामिल है।

अकादमी द्वारा तेलंगाना एवं आन्तरिक प्रदेश की
सरकारों, तत्कालीन योजना आयोग (अब नीति आयोग)
तथा अनुसंधान एवं सूचना प्रणाली को भी परमाणु सेवाएं
प्रदान की गई। अकादमी द्वारा भारतीय कृषि अनुसंधान
परिषद के अन्य संस्थाओं को अपने प्लांट के कौशल का
विकास कराने, वार्षिक शिक्षण योजनाएं तैयार करने तथा
साथ ही इनका नियन्त्रण करने में मदद देने के लिए
वर्ष 2015-16 के दौरान, अकादमी द्वारा
कुल 39 अनुसंधान पेपर, 11 पुस्तक अंश, समिग्रहण/रिपोर्ट
विभागों पर ज्ञान निर्माण करने में मदह देने के लिए
अनुसंधान प्रदान किया गया। वर्ष के दौरान, अकादमी द्वारा
कुल 62 छात्रों को दूरस्थ शिक्षण मोड में कृषि के
प्रौद्योगिकी विकास में स्नातकोत्तर डिल्मो (PGDTMA)
में प्रशिक्षण किया गया जिसमें 121 छात्रों
को कृषि व्यवसाय प्रबन्धन तथा प्रौद्योगिकी विकास में
विभाग इस कारण ज्ञानी होने के लिए आवश्यक था।

अकादमी द्वारा दो शैक्षणिक कार्यक्रम चलाये जा रहें
हैं – कृषि प्रबन्धन में स्नातकोत्तर डिल्मो (PGDMA)
जो पूर्ण तरह आवश्यक एवं वित्त पोषित दो वर्षीय
कार्यक्रम है और दूसरा दूरस्थ शिक्षण मोड में कृषि के
प्रौद्योगिकी विकास में स्नातकोत्तर डिल्मो (PGDTMA)
। इन कार्यक्रमों को हैदराबाद विश्वविद्यालय एवं राष्ट्रीय
कृषि अनुसंधान प्रबंध अकादमी (NAARM) द्वारा संयुक्त
रूप से चलाया जाता है। शैक्षणिक वर्ष 2015-16 के
दौरान, कुल 17 छात्रों को अकादमी के पोर्टल पर स्था
गया था और सभी को रूपये 6.2 लाख के औसत वार्षिक
साथ किसान कल्याणकारी गतिविधियों यथा आन्द्र प्रदेश एवं तेलंगाना के जिलों में राष्ट्र भायमान यात्रा में भी भागीदारी की गई।

अकादमी में 'कृषि शिक्षा में प्रौद्योगिकी संरचित शिक्षण पर उच्चक्षेत्र परियोजना क्षेत्र (TELAge)' के अंतर्गत एक 'स्टेट ऑफ दि आर्ट' प्रौद्योगिकी संरचित शिक्षण केन्द्र भी प्रारंभ किया गया। अकादमी में सभी कक्षाएं और प्रशिक्षण हॉल उच्चक्षेत्र ऑडियो-विज्ञल, प्रोजेक्शन प्रणालियों, WiFi आदि से सुसज्जित हैं।

विज्ञान व प्रौद्योगिकी विभाग, भारत सरकार के राष्ट्रीय विज्ञान एवं प्रौद्योगिकी उद्यमी संसार में विकास बोर्ड (NSTEDB) द्वारा अकादमी के प्रौद्योगिकी व्यवसाय इनक्यूबेटर के लिए अनुदान प्रदान किया गया जो कि अकादमी के कृषि नवोत्थापक केंद्र की तत्तावधान में तीन प्रमुख कार्यक्षेत्रों यथा भार्क्रांति प्रौद्योगिकियों का व्यवसायीकरण, उद्यमियों के नवोत्थापक तथा जगतीनी स्तर के नवोत्थापक (GRIs) को बढ़ावा देने पर कार्य कर रहा है। रिपोर्टर इस साल के दौरान, कुल 12 स्टार्ट-अप को सहयोग दिया गया जिनमें से पांच वास्तविक इनक्यूबेटर को शामिल किया गया। टीबीआई द्वारा सीआईआईए, आईआईएम, अहमदाबाद के साथ सहभागिता में भारत का पहला खाद्य एवं कृषि व्यवसाय एक्सेलेंटर कार्यक्रम प्रारंभ किया गया।

अकादमी में प्रशिक्षण एवं शैक्षणिक कार्यक्रमों का प्रबंधन करने की प्रभावशीलता में सुधार लाने के मिशन में, अलग से एक शैक्षणिक सेल तथा केन्द्रीय सेवा इकाई सुरक्षित की गई। वर्ष के दौरान, भाकुङपुर-केन्द्रीय कृषि शुष्कमूषि अनुसंधान संस्थान (CRIDA), इंदौराबाद से पेंशन सेल को राष्ट्रीय कृषि अनुसंधान प्रबंध अकादमी (NAARM) में स्थानान्तरित किया गया जिसके द्वारा लगभग 600 पेंशनरियों की सेवा की जा रही है।

भारत सरकार के निर्देशों को ध्यान में रखते हुए अकादमी द्वारा 'डिजिटल इंडिया सप्ताह', 'हिन्दी पहचांड', 'सत्तरोता सप्ताह', 'विश्व मूर्ति दिवस', 'राष्ट्रीय विज्ञान दिवस', अंतर्राष्ट्रीय योग दिवस', 'सद्भावना दिवस', 'राष्ट्रीय एकता दिवस', 'संविधान दिवस' आदि का आयोजन किया गया। इसके साथ ही भारत सरकार का एक प्रतिष्ठित कार्यक्रम 'स्वच्छ भारत अभियान' अकादमी की एक नयी दिनांकित दिनचर्या बन गया है जिसमें वैज्ञानिक, संस्करण सदस्य, छात्र तथा परिसर में रहने वाले निवासी शामिल हैं।

अकादमी को कार्यक्रिया एवं प्रशिक्षण विभाग (DoPT), भारत सरकार द्वारा पहली बार अकादमी की नवोत्थापी पहल "राष्ट्रीय कृषि नवोत्थापी परियोजना का शिक्षण एवं शमन निर्माण" के लिए 'वर्ष 2015 हेतु प्रशिक्षण में उक्षेत्रित हेतु राष्ट्रीय पुरस्कार' प्रदान किया गया। अकादमी के स्टाफ तथा संस्करण द्वारा अंतर्राष्ट्रीय एवं राष्ट्रीय आयोजनों में पुरस्कार जीतकर अकादमी की ख्याति को बढ़ाने की दिशा में निरंतर कार्य किया गया।
The National Academy of Agricultural Research Management (NAARM) has been making rapid strides to enhance leadership, governance and innovation capacities of National Agricultural Research and Education System (NARES) through capacity strengthening, education, research, consultancy and policy support over last four decades. The Academy in its endeavour—cater to the needs of its clientele in NARES—tried to achieve excellence and adopted innovative strategies, approaches and methodologies.

The Academy improved its visibility and presence in the NARES by organizing 63 capacity building programmes and training 2,495 participants though foundation courses, leadership development courses, refresher courses, need based programmes, sponsored and off-campus programmes, apart from workshops, seminar and conferences. In terms of numbers, this is the highest during last four decades. During the reporting year ANGARU, ICAR-RCER, TANUVAS, CAZRI utilized the services of the Academy through tailor made off-campus capacity building programmes.

Overall feedback analysis of capacity building programmes indicated an impassive performance on several parameters, especially training design and delivery. Training Management Information System (TMIS), developed by the Academy, is in operation and takes care of management of capacity building programmes. A ‘Massive Open Online Course (MOOC)’ was designed and successfully offered for the first time in NARES.

The innovations in capacity building introduced during the year include MOOCs, FOCARS blog, FOCARS website, NAARM Digital Repository, NAARM Dataverse, TMIS, web based expert system for technology evaluation, web based AHP analyzer, yoga and physical education etc.

Apart from the capacity building, research was also a core activity of the Academy, which lays foundation for development of well-structured training designs and delivery mechanisms. During the year under report, out of 22 projects, 8 were externally funded projects. The externally funded projects were sponsored by agencies like by ICAR, IFPRI, DBT. The research topics of the projects include development of knowledge and information systems, impact assessment, human resource development, modeling and forecasting, agricultural education etc.

The Academy also provided consultancy services to Governments of Telangana and Andhra Pradesh, Planning Commission and Research and Information System. The Academy provided guidance to other ICAR institutes in developing their staff skill needs, Annual Training Plans and also helped them in implementing them. During the year, the faculty published 39 research papers, 11 book chapters, 21 papers in proceedings of seminars/ symposia etc., 19 training course ware and 18 other publications, which is significantly high over last two years. During the year, one trademark was registered and three copyrights were applied.

The Academy is offering two academic programmes – Post Graduate Diploma in Management of Agriculture (PGDMA), a two year fully residential and self-financed programme and Post Graduate Diploma in Technology Management of Agriculture (PGDTMA) in distance learning mode, jointly offered by the University of Hyderabad and NAARM. During the reported year, 17 students were rolled out of portals of the Academy and all were placed in agri-business, micro irrigation, food retails, information technology, crop advisory and IP
consultancy sectors with an average salary of Rs 6.2 lakh. In PGDTMA, 62 students were enrolled, representing various governmental and non-governmental organizations. The first combined graduation ceremony of PGDMA and PGDTMA was held during the year and 121 students were conferred diplomas in Agribusiness Management and Technology Management. The Academy’s library has rich resources with more than 30,400 books, 69 foreign journals, dedicated databases, patent search and patent writing, business information, information e-resources and other learning resources.

The Academy adopted two villages in Nalgonda District of Telangana state in association with KVK and Pratishtha Industries under Mera Gaon and Mera Gaurav. Activities of ‘Pradhan Mantri Kaushal Vikas Yojana’ were also implemented in these villages. Mobile supported vernacular information modules were developed for major crops and livestock. Voice Information System was linked to KVK for updated and regular information. Soil profile in these adopted villages was connected to web application for providing specific push based mobile advisories. Farmer Field Schools on Red gram, variety PRG176 and Paddy, varieties KNM 605 and JGL 21002, were conducted during the reporting period. The Academy also participated in farmer welfare activities viz. Rythu Sadbhavana Yatra in districts of Andhra Pradesh and Telangana along with scientists from local ICAR institutes and Universities.

The Academy added a State –of- the-Art ‘Technology Enhanced Learning Centre’ under Niche Area of Excellence Project on Technology Enhanced Learning in Agricultural Education (TELAgE). All classrooms and training halls were equipped with high-end audio visuals, projection systems, WiFi etc.

The National Science and Technology Entrepreneurship Development Board (NSTEDB) of Department of Science and Technology, Government of India awarded a grant for Technology Business Incubator, which is working on three important verticals viz. commercialization of ICAR technologies, promotion of entrepreneurs’ innovation and grass root innovations (GRIs) under the umbrella of Centre for Agricultural Innovation of the Academy. During the year, 12 startups were supported, out of which five physical incubates were inducted. The TBI launched India’s first Food and Agricultural Business Accelerator programme in partnership with CIIE, IIM, Ahmedabad.

In its mission to improve the efficiency of managing, training and academic programmes at the Academy, separate Academic Cell and Central Service Unit were created. During the year pension cell from CRIDA was relocated at NAARM serving about 600 pensioners.


The Academy had won the ‘National Award for Excellence in Training for the year -2015’, constituted for the first time by Department of Personnel and Training (DoPT), Government of India for its innovative initiative ‘Learning and Capacity Building’ of National Agricultural Innovation Project. The staff and faculty continued to bring laurels to the Academy by winning awards at International and National events.
The ICAR-National Academy of Agricultural Research Management (NAARM) was established by the Indian Council of Agricultural Research in 1976 at Hyderabad. The major mandate of the Academy is to build capacity in agricultural research, education and extension education systems, and provide policy advocacy for the National Agricultural Research and Education System (NARES). To fulfil these mandates, Academy organises various capacity building programmes for researchers, academicians, extension personnel, scholars, and other stakeholders in NARES. The Academy strives to enhance individual and institutional capacity for innovation in NARES. Considering the strategic importance of agricultural research in food security and economic growth of the country, leadership, governance and innovations are emerging as prerequisite for the transformation of NARES into a more pluralistic innovation system. Keeping this in mind, the Academy has developed its vision, mission and mandate.

1.1 Vision, Mission and Mandate

**Vision**
A global knowledge institution enabling National Agricultural Research and Education System (NARES) adapt to change through continuous innovation.

**Mission**
To enhance leadership, governance and innovation capacities of National Agricultural Research and Education System (NARES) through capacity strengthening, education, research, consultancy, and policy support.

**Mandate**
1. Enhance individual and institutional competencies in managing innovation through capacity development, research and policy advocacy.
2. Serve as a think tank for National Agricultural Research and Education System and facilitate strategic management of human capital.
1.2 Organisation and Management

In line with the vision, mission and mandate, the Academy has been organised and managed into six divisions.

I. Agribusiness Management (ABM)
II. Education Systems Management (ESM)
III. Extension Systems Management (XSM)
IV. Human Resources Management (HRM)
V. Information and Communication Management (ICM)
VI. Research Systems Management (RSM)

Research Advisory Committee
The composition of Research Advisory Committee (RAC), NAARM for 2013 – 2016 is given in Table 1.1.

1.3 Linkage and Networks
NAARM as an Academy has a strong network of 103 Research Institutions of ICAR and 74 Agricultural Universities (AUs), and plays a crucial role through capacity building of these institutions, agribusiness industry, scientists, and academia. Its network spans across various National as well as International Institutions.

National Institutes/ Organisations
1. The ICAR institutions, Central and State Agricultural Universities, and Krishi Vigyan Kendras (KVKs).
2. The Government of India Departments like the Department of Science and Technology (DST), Department of Biotechnology (DBT), National Science & Technology Entrepreneurship Development Board (NSTEB), and NITI (National Institution for Transforming India) Ayog.
3. University of Hyderabad, Osmania University, Jawaharlal Nehru Technological University (JNTU), EEI, and Council of Scientific & Industrial Research (CSIR) and Indian Council of Medical Research (ICMR) Institutions located at Hyderabad.
5. Management Institutions located at Hyderabad viz. the Administrative Staff College of India (ASCI), Indian School of Business (ISB), National Institute of Agricultural Extension Management (MANAGE), National Institute of Rural Development and Panchayat Raj (NIRD & PR), and Institute of Public Enterprise (IPE); and across the country such as IIM-Ahmedabad, IIM-Lucknow and NIAM.
6. State Departments of Agriculture of various States (Telangana, Andhra Pradesh).
7. Private Sector Organisations (Agri Input Companies, Service Companies, etc.).
8. Non-Government Organisations (NGOs)
9. Other organisations viz. National Innovation Foundation, FICCI, CII, etc.

**International Organisations**
1. CGIAR Institutions (IFPRI, CIMMYT, ICRISAT, IRRI, etc.)
3. Department of International Development (DFID, UK).
4. SAARC Agricultural Centre (SAC).
5. NARS of South Asian Countries such as Bangladesh Agricultural Research Council (BARC), Nepal Agricultural Research Council (NARC), Pakistan Agricultural Research Council (PARC), and other NARS Institutions in Afghanistan, Sri Lanka and other ASEAN countries.
6. NARS in other African and South East Asian countries such as Kenya, Mali, Tanzania, Nigeria, Malawi, Liberia, and Philippines.

7. Leading Land Grant and State Universities of USA and other Universities in Europe, Australia and other developing and developed countries.

### 1.4 Infrastructure and Facilities

The Academy is situated at Rajendranagar (17°18′49″ N latitude and 78°24′42″ East longitude), about 18 km away from the city of Hyderabad. It is established in a green serene, sylvan and sprawling campus of about 50 ha, and is surrounded by other reputed Government Institutions like MANAGE, NIRD & PR and PJTSAU.

The Academy has well-equipped infrastructure with state-of-the-art lecture halls, auditorium, conference halls with modern audio-visual aids enabled with Wi-Fi. During the reporting year, Center for Agri-Innovation, Technology Enhanced Learning laboratory, and Computer Laboratories were established.

The Academy has four Guest Houses viz. Halls of Residence, Scientist Home, Faculty House, and International Guest House with about 400 accommodation capacity. The Sports Stadium at the Academy includes large ground, two indoor Badminton Courts, indoor...
Table Tennis Room, Yoga Room and Gymnasium for men and women. Outdoor Volleyball, Tennis and Basket Ball Courts are also available. A Gymnasium is also available at the Faculty Centre for the staff at work place, and another Gymnasium in Faculty House for the hostel residents. Two new facilities of Gymnasium were created, one at the Faculty Centre and another at Faculty House during this year. The Academy also has an in-campus hospital providing service to campus residents, trainees and more than 600 pensioners of ICAR.

The NAARM Library has more than 30,400 books, 69 Foreign Journals, 75 Indian Journals, and 5 Online Databases, i.e. EBSCO, ABI-Inform, Indiastat, Commodities and Economic Outlook. The Library has many of its publications in digital formats like CD, VCD and its own digital repository (Eprints@naarm). The Academy is also a member of CeRA, and has access to journals and databases through CSIRO, Springer and OpenJ-Gate etc. The library management is completely digitized through the open source software ‘Koha’ (Figure 1.1). The Academy has rich repository of online patent search providers, GIS software and other statistical software.

The Academy has four Guest Houses viz. Halls of Residence, Scientist Home, Faculty House, and International Guest House with about 400 accommodation capacity. The Sports Stadium at the Academy includes large ground, two indoor Badminton Courts, indoor Table Tennis Room, Yoga Room and Gymnasium for men and women. Outdoor Volleyball, Tennis and Basket Ball Courts are also available. A Gymnasium is also available at the Faculty Centre for the staff at work place, and another Gymnasium in Faculty House for the hostel residents. Two new facilities of Gymnasium were created, one at the Faculty Centre and another at Faculty House during this year. The Academy also has an in-campus hospital providing service to campus residents, trainees and more than 600 pensioners of ICAR.

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1.5 Human Resources (as on 31.03.2016)
The cadre strength as on 31st March 2016 in various categories is given in Table 1.2.

Table 1.2: Human Resources at NAARM

<table>
<thead>
<tr>
<th>Category</th>
<th>Sanctioned strength</th>
<th>In position</th>
<th>Vacant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific - RMP</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Scientific - Faculty</td>
<td>60</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Technical</td>
<td>43</td>
<td>38</td>
<td>05</td>
</tr>
<tr>
<td>Administrative</td>
<td>49</td>
<td>39</td>
<td>10</td>
</tr>
<tr>
<td>Skilled Support Staff</td>
<td>39</td>
<td>36</td>
<td>03</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>193</strong></td>
<td><strong>145</strong></td>
<td><strong>48</strong></td>
</tr>
</tbody>
</table>

1.6 Budget Allocation and Expenditure
The budget allocation and expenditure are given in Tables 1.3 and 1.4.

Table 1.3: Non-Plan Estimates and Expenditure Statement (Rs in Lakh)

<table>
<thead>
<tr>
<th>Head of Account</th>
<th>Final Estimates</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Capital:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-Total (A)</td>
<td>18.00</td>
<td>17.92</td>
</tr>
<tr>
<td>(B) Revenue:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Establishment charges including LSP &amp; PF</td>
<td>1,418.91</td>
<td>1,414.43</td>
</tr>
<tr>
<td>b) Wages</td>
<td>131.69</td>
<td>131.68</td>
</tr>
<tr>
<td>c) Overtime allowance</td>
<td>0.40</td>
<td>0.40</td>
</tr>
<tr>
<td>d) Travelling allowance</td>
<td>5.00</td>
<td>4.88</td>
</tr>
<tr>
<td>e) Other charges including equipment</td>
<td>399.37</td>
<td>399.00</td>
</tr>
<tr>
<td>f) Works</td>
<td>38.63</td>
<td>38.62</td>
</tr>
<tr>
<td>g) Pension and other retirement benefits</td>
<td>298.00</td>
<td>294.00</td>
</tr>
<tr>
<td>h) Loans and advances</td>
<td>10.00</td>
<td>8.65</td>
</tr>
<tr>
<td><strong>Sub-total (B)</strong></td>
<td><strong>2,302.00</strong></td>
<td><strong>2,291.66</strong></td>
</tr>
<tr>
<td><strong>Grand total (A+B)</strong></td>
<td><strong>2,320.00</strong></td>
<td><strong>2,309.58</strong></td>
</tr>
</tbody>
</table>

Table 1.4: Plan Estimates and Expenditure Statement (Rs in Lakh)

<table>
<thead>
<tr>
<th>Head of Account</th>
<th>Final Estimates</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Establishment</td>
<td>350.00</td>
<td>350.00</td>
</tr>
<tr>
<td>b) Travelling allowance</td>
<td>95.50</td>
<td>95.42</td>
</tr>
<tr>
<td>c) H.R.D.</td>
<td>15.00</td>
<td>15.00</td>
</tr>
<tr>
<td>d) Other charges</td>
<td>378.00</td>
<td>376.66</td>
</tr>
<tr>
<td>e) Equipment</td>
<td>200.00</td>
<td>200.00</td>
</tr>
<tr>
<td>f) Information technology</td>
<td>50.00</td>
<td>49.86</td>
</tr>
<tr>
<td>g) Furniture and fixtures</td>
<td>50.00</td>
<td>49.93</td>
</tr>
<tr>
<td>h) Books and journals</td>
<td>73.00</td>
<td>72.83</td>
</tr>
<tr>
<td>i) Works</td>
<td>240.00</td>
<td>240.00</td>
</tr>
<tr>
<td><strong>Grand total</strong></td>
<td><strong>1,451.50</strong></td>
<td><strong>1,449.70</strong></td>
</tr>
</tbody>
</table>
1.7 Resource Generation
The resources generated during the reporting year are given in Tables 1.5 to 1.9

Table 1.5: Resource Generation from Off-Campus and Sponsored Programmes

<table>
<thead>
<tr>
<th>Name of the Programme</th>
<th>Amount (Rs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management of Extension Projects of KVKs of ANGRAU for the Scientists</td>
<td>150,000</td>
</tr>
<tr>
<td>ICAR-RCER, Patna</td>
<td>56,855</td>
</tr>
<tr>
<td>Second Foundation Course for SAUs</td>
<td>134,000</td>
</tr>
<tr>
<td>DWRP at MVC, Chennai (TANUVAS)</td>
<td>275,800</td>
</tr>
<tr>
<td>Training Programme, CAZRI, Jodhpur</td>
<td>284,159</td>
</tr>
<tr>
<td>DWRP at VCRI, Namakkal (TANUVAS)</td>
<td>275,800</td>
</tr>
<tr>
<td>Total</td>
<td>1,176,614</td>
</tr>
</tbody>
</table>

Table 1.6: Resource Generation from Education Programmes

<table>
<thead>
<tr>
<th>Name of the Programme</th>
<th>Year</th>
<th>Amount (Rs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGDMA</td>
<td>2014-16</td>
<td>4,899,250</td>
</tr>
<tr>
<td>PGDMA</td>
<td>2015-17</td>
<td>6,795,500</td>
</tr>
<tr>
<td>PGDTMA</td>
<td>2013</td>
<td>14,500</td>
</tr>
<tr>
<td>PGDTMA</td>
<td>2014</td>
<td>39,500</td>
</tr>
<tr>
<td>PGDTMA</td>
<td>2015</td>
<td>465,400</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1,221,150</td>
</tr>
</tbody>
</table>

Table 1.7: Sponsored Projects Budget

<table>
<thead>
<tr>
<th>Name of the Project</th>
<th>Total Budget</th>
<th>Fund Received (2014-15)</th>
<th>Fund Received (2015-16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RKVY - Telangana State Govt. Developing SAIDP Project</td>
<td>2,471,920</td>
<td>1,235,960</td>
<td>0</td>
</tr>
<tr>
<td>RKVY - Telangana State Govt. Impact Evaluation of Research Project</td>
<td>2,488,800</td>
<td>1,244,400</td>
<td>0</td>
</tr>
<tr>
<td>RKVY - Andhra Pradesh Govt. SAIDP Project</td>
<td>1,600,000</td>
<td>0</td>
<td>1,600,000</td>
</tr>
<tr>
<td>RIS- Delhi (Socioeconomics of LMOs)</td>
<td>500,000</td>
<td>180,000</td>
<td>216,000</td>
</tr>
<tr>
<td>IFPRI - ASTI Project</td>
<td>2,100,000</td>
<td>832,262</td>
<td>888,081</td>
</tr>
<tr>
<td>DBT-NAARM Project-Socio Economic Analysis of Finger Millet in India (Ragi)</td>
<td>1,549,000</td>
<td>0</td>
<td>1,549,000</td>
</tr>
<tr>
<td>Total</td>
<td>10,709,720</td>
<td>3,492,622</td>
<td>4,253,081</td>
</tr>
</tbody>
</table>

Table 1.8: Net Receipts from Sponsored Projects

<table>
<thead>
<tr>
<th>Name of the Sponsor</th>
<th>Net Receipts Amount (Rs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NDDB, Gujarat</td>
<td>21,854</td>
</tr>
<tr>
<td>ICSSR, New Delhi</td>
<td>25,575</td>
</tr>
<tr>
<td>RKVY (Andhra Pradesh)</td>
<td>125,872</td>
</tr>
<tr>
<td>Preparation of PME Manual for ICAR &amp; SAUs, IFPRI, New Delhi</td>
<td>218,142</td>
</tr>
<tr>
<td>Total</td>
<td>391,443</td>
</tr>
</tbody>
</table>
Table 1.9: Resource Generation from Other Activities

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Net Receipts Amount (Rs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGDMA 2012-14</td>
<td>154,828</td>
</tr>
<tr>
<td>PGDMA 2013-15</td>
<td>7,780,329</td>
</tr>
<tr>
<td>PGDTMA 1st Programme (2013)</td>
<td>654,112</td>
</tr>
<tr>
<td>PGDTMA 2nd Programme (2014)</td>
<td>1,365,295</td>
</tr>
<tr>
<td>Accumulated receipts from sponsored programmes</td>
<td>401,102</td>
</tr>
<tr>
<td>Receipts from farm produce</td>
<td>81,982</td>
</tr>
<tr>
<td>Receipts from sale of publications</td>
<td>32,100</td>
</tr>
<tr>
<td>Receipts from guest house and quarters</td>
<td>4,106,921</td>
</tr>
<tr>
<td>Receipts from institute training programmes</td>
<td>682,000</td>
</tr>
<tr>
<td>Receipts for sale of application fee</td>
<td>123,900</td>
</tr>
<tr>
<td>Miscellaneous receipts</td>
<td>797,572</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16,180,141</strong></td>
</tr>
</tbody>
</table>
Capacity Building Programmes
2.1 Foundation Courses

NAARM offers foundation level courses for freshly recruited ARS Scientists of ICAR (FOCARS) and Faculty Members of AUs (FOCFAU). Details of these programmes organized during the year are summarized in Table 2.1 and discussed thereafter.

Foundation Course for Agricultural Research Service (FOCARS)

FOCARS is the flagship programme of the Academy. It aims at building the capacity of newly-recruited Scientist-Probationers of Agricultural Research Service (ARS) on the concepts and principles of research management with special emphasis on project formulation and implementation. It also seeks to expose the young...
probationers to the system at large and help them understand the developments in agricultural scenario at national and global levels. Currently, the Academy is implementing the FOCARS programme of seven-month duration in three stages, namely:

I. Foundation training of three-month duration at the Academy.

II. Orientation training of one-month duration at the Institute of posting.

III. Professional Attachment Training of three-month duration in the relevant state-of-the-art laboratories.

Table 2.1: Foundation Courses Organized during 2015-16

<table>
<thead>
<tr>
<th>Programme Title</th>
<th>Dates</th>
<th>Number of Participants</th>
<th>Programme Director(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>102 FOCARS</td>
<td>July 1- Sep 30, 2015</td>
<td>112</td>
<td>K.Srinivas</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>P.D.Sreekanth</td>
</tr>
<tr>
<td>103 FOCARS</td>
<td>January 1- March 31, 2016</td>
<td>206</td>
<td>K.H.Rao</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>N.Sivaramane</td>
</tr>
<tr>
<td>2nd FOCFAU</td>
<td>May 1-30, 2015</td>
<td>63</td>
<td>D.Thammi Raju</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>P.Venkatesan</td>
</tr>
</tbody>
</table>

Most of the contents were delivered by the in-house faculty members. Additionally, eminent guest speakers were invited to deliver lectures on contemporary topics. The programmes also had institutional and other educational visits. The daily routine in the programme started from 6.00 AM onwards with morning exercises including sports, yoga, meditation, and physical drills. Trainees were encouraged to get engaged in a variety of co-curricular activities by forming in-house committees. Through these committees under the mentorship of faculty members, trainees organized a host of cultural events such as Swachh Bharat, philanthropic services including blood donation to Red Cross and donating money and material to orphanage houses for mentally challenged children. They also conducted events like International Women Day, competitions of quiz and Rangoli, etc. Programme delivery and implementation was facilitated by extensive use of social networking tools like Google Calendar, Whatsapp, Google Forms, Dropbox and Slideshare.
During 2015-16, two FOCARS programmes were organized and 318 newly-recruited ARS Scientists were trained. Based on overall performance in academic and co-curricular activities, Ms Nabaneeta Basak (Plant Biochemistry) and Dr Debarup Das (Soil Science) were adjudged as the 'Best Trainee' of 102nd and 103rd Batches of FOCARS, respectively.

**Foundation Course for Faculty of Agricultural Universities (FOCFAU)**

This Course was designed to cater to the needs of the newly-recruited Faculty Members (Assistant Professors) of the Agricultural University (AU) system. One such programme was organized during the year and 63 newly-recruited Assistant Professors of 9 AUs were trained. This course imparted knowledge, skills and attitude in education (teaching-learning and evaluation), research and extension management, besides administration and finance and health management. The pedagogy involved conceptual orientation lectures by in-house and invited guest faculty, practical sessions, presentations and other hands-on exercises, and institutional visits.

Skill building was given top priority through practical sessions, *i.e.* digital presentation, human resources, micro teaching, data, group seminars, lesson planning, poster preparation, yoga, *etc.* Daily reflections on the content helped the participants realize the potential of their learning outcomes. Field visits to national and international institutes consolidated the learning experience. Similar to FOCARS, this course also provisioned overall personality development by equal
emphasis on co-curricular activities. Dr Lakshmi Kuchibhotla, Assistant Professor (Foods and Nutrition), College of Home Science, Guntur, ANGARU, was awarded the 'Best Trainee' award for her outstanding performance in the curricular and co-curricular activities. The learnings from this course organized for the newly-recruited faculty members are expected to improve the quality of agricultural education in the AUs. It is also expected that learnings from this course will be used by the participants at their work place, and may impact the quality of agricultural education in a more concerted manner.

2.2 Leadership Development Programmes

There is a need to develop effective leadership to steer the agricultural research and development in the country. In the recent past, there has also been equal emphasis on succession planning to sustain the leadership development initiatives. In response to these needs, the Academy has been organizing Executive Development Programmes (EDPs) to enhance leadership competencies of the newly-recruited Research Management Positions (RMPs) in ICAR system; Management Development Programmes (MDPs) on Leadership Development aimed at developing capacities of prospective research managers/(pre-RMP) and the newly-recruited Programme Coordinators (PCs) of KVKs. In all, six such programmes were organized in the bygone year and 159 professionals were trained (Table 2.2).

Table 2.2: Leadership Development Programmes Organized during 2015-16

<table>
<thead>
<tr>
<th>Programme Title</th>
<th>Dates</th>
<th>Number of Participants</th>
<th>Programme Director(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive Development Programme on Leadership Development</td>
<td>August 18-22, 2015</td>
<td>10</td>
<td>R.Kalpana Sastry P.Manikandan</td>
</tr>
<tr>
<td>Management Development Programme on Leadership Development</td>
<td>June 16-27, 2015</td>
<td>14</td>
<td>P.Manikandan N.Sandhya Shenoy</td>
</tr>
<tr>
<td>Management Development Programme on Leadership Development</td>
<td>November 30 - Dec. 11, 2015</td>
<td>48</td>
<td>R.V.S.Rao P.Ramesh</td>
</tr>
<tr>
<td>Management Development Programme for newly-recruited PCs of</td>
<td>April 16-30, 2015</td>
<td>31</td>
<td>V.K.J.Rao N.Sandhya Shenoy</td>
</tr>
<tr>
<td>KVKs (2nd programme)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management Development Programme for newly-recruited PCs of</td>
<td>December 15-29, 2015</td>
<td>31</td>
<td>Bharat S. Sontakki Surya Rathore</td>
</tr>
<tr>
<td>KVKs (3rd programme)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Executive Development Programmes on Leadership Development
In the two EDPs organized during 2015-16, 35 newly-recruited Directors of ICAR Institutes and Assistant Directors General (ADGs) were trained. These 5-day programmes were organized with a basic framework that focused on three important aspects viz. personal effectiveness, leadership essentials, and system-focused areas. The EDPs provided opportunities for the participants to make presentations on their experiences on leadership and to make a self-audit to look at what they would or would not do during their tenure as leaders. The programme structure was modified based on the needs and situations. The programme contents were found relevant and useful by the participants.

Management Development Programmes on Leadership Development (pre-RMP)
Sixty-two senior level scientists (Principal Scientists and Heads of Division) of ICAR were trained in two MDPs conducted during the year. These 12-day programmes bridged the gap between scientific and leadership position by provisioning opportunity for the senior-level scientists to orient themselves with various aspects of leadership to enable smooth transition to take up leadership position in the system. These MDPs focused on important aspects that covered personal effectiveness, leadership styles and essentials, core leadership issues, information and technology management, research project management, and system-focused issues that are essential in effective management of Institutes.
programme contents were carefully planned to meet the future leadership needs of participants. All the participants agreed that the programme provided an opportunity for them to understand the missing links in what they had experienced and practiced all these years regarding leadership. They expressed that passing through this programme would definitely help them make a conscious decision to understand their strengths and weaknesses while moving into leadership position.

Management Development Programmes for Newly Recruited Programme Coordinators of KVKs
MDP-KVK programmes were organized in collaboration with Agricultural Extension Division of ICAR and Directors of ATARIs. These programmes consisted of three Phases viz. Phase I of 15 days duration at NAARM, Phase II of 10 days duration at the Best KVK and Phase III of 5 days duration at respective ATARI. The Agricultural Extension Division of ICAR with the support of Directors of ATARI facilitated the nominations and training of Second and Third Phases. The training Phase at NAARM envisaged honing up of managerial skills of newly-recruited PCs of KVKs besides updating them with knowledge and attitudinal competencies. Four Modules, namely, (i) Agricultural Extension Management, (ii) Human Resource Management, (iii) Knowledge Management and Sharing, and (iv) Technology Application and Integration, formed the core content. In addition, specific topics on administration and financial management, and health management were also covered. These contents were imparted by Faculty Members from NAARM, Resource Persons from ICAR and Guest Faculty. Adequate emphasis was given on developing teamwork culture, analytical, communication and presentation skills, writing reports, and action research proposals development, etc.

2.3 Refresher Courses
These Courses are designed exclusively for the directly-recruited Senior Scientists and Principal Scientists of ICAR. Two such programmes were organized during the year (Table 2.3).

Table 2.3: Refresher Courses Organized during 2015-16

<table>
<thead>
<tr>
<th>Programme Title</th>
<th>Dates</th>
<th>Number of Participants</th>
<th>Programme Director(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refresher Course on Agricultural Research Management</td>
<td>July 13-25, 2015</td>
<td>23</td>
<td>K.Kareemulla, Surya Rathore</td>
</tr>
<tr>
<td>Refresher Course on Agricultural Research Management</td>
<td>February 23- March 5, 2016</td>
<td>23</td>
<td>Manoj P.Samuel, P.Venkatesan</td>
</tr>
</tbody>
</table>

Dr. K.Vijayraghavan at a training session
Mrs. Usha Rani, DG, MANAGE distributing certificates
Completion certificate distribution during Refresher Course, July, 2015
Dr D Rama Rao, Director(NAARM) addressing participants of Refresher Course on Agricultural Research Management
These 10-day Courses were intended to orient the lateral-entry Scientists to governance and research management perspectives in ICAR, apart from equipping them with KSAs needed to effectively discharge their roles and responsibilities. Major emphasis was on appropriate research management process and methodologies for research and technology management, and science communication.

### 2.4 Need Based Programmes
These are short-term trainings of 4-10 days duration on specific thematic areas as per the needs and requirements of the NARES professionals. These programmes catered to the capacity building needs of Scientific, Technical and Administrative Cadres. During the year 16 such programmes were organized benefitting of 336 personnel.

These programmes were organized on several thematic areas Table 2.4. They followed multi-pronged instructional strategy with a combination of lectures, hands-on exercise/practical sessions, group exercises, and institutional visits imparted by in-house faculty of NAARM and guest speakers. These programmes facilitated acquisition of knowledge updates on the training themes besides enabling the participants in skill upgrading and positive behavioural changes.
### Table 2.4: Need-based Programmes Organized during 2015-16

<table>
<thead>
<tr>
<th>Programme Title</th>
<th>Dates</th>
<th>Number of Participants</th>
<th>Programme Director(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training Programme on Priority Setting, Monitoring and Evaluation (PME)</td>
<td>June 2-6, 2015</td>
<td>22</td>
<td>K.Srinivas B.Ganesh Kumar</td>
</tr>
<tr>
<td>Training Programme on Stress Management</td>
<td>June 16-19, 2015</td>
<td>11</td>
<td>A.Debnath P.Ramesh</td>
</tr>
<tr>
<td>Training Programme on Consultancy Project Management</td>
<td>August 3-7, 2015</td>
<td>15</td>
<td>K.Kareemulla R.V.S.Rao</td>
</tr>
<tr>
<td>Training Programme on Analysis of Experimental Data</td>
<td>August 17-22, 2015</td>
<td>23</td>
<td>S.Ravichandran A.Dhandapani</td>
</tr>
<tr>
<td>Training Programme on Geospatial Analysis for Natural Resources Management using Statistical Tools</td>
<td>September 2-11, 2015</td>
<td>17</td>
<td>P.D.Sreekanth A.Dhandapani</td>
</tr>
<tr>
<td>Training Programme on Quantitative Techniques for Business Managers and Social Scientists</td>
<td>September 7-12, 2015</td>
<td>11</td>
<td>N.Sivaramane A.Dhandapani</td>
</tr>
<tr>
<td>Training Programme on Agricultural Knowledge Communication</td>
<td>October 5-9, 2015</td>
<td>13</td>
<td>M.Balakrishnan S.K.Soam</td>
</tr>
<tr>
<td>Training Workshop on Innovative Approaches to Technology Enhanced Learning (under TELAgE Project)</td>
<td>October 28- Nov. 6, 2015</td>
<td>15</td>
<td>G.R.K.Murthy D.Thammi Raju</td>
</tr>
<tr>
<td>Training Programme on Quantitative Techniques for Analysis of Breeding Experiments</td>
<td>November 2-7, 2015</td>
<td>19</td>
<td>A.Dhandapani S.Ravichandran</td>
</tr>
<tr>
<td>Faculty Development Programme on Education Technology</td>
<td>December 9-15, 2015</td>
<td>12</td>
<td>P.Ramesh K.H.Rao</td>
</tr>
<tr>
<td>Training Programme on Administration and Finance Management</td>
<td>August 11-14, 2015</td>
<td>21</td>
<td>B.D.Phansal D.D.Verma</td>
</tr>
</tbody>
</table>

### 2.5 Workshops and Meetings

The Academy serves as a platform for organizing professional events like Workshops, Seminars, Conferences and Meetings on topics of contemporary relevance and importance. NAARM conducted 18 Workshops, one Seminar and three Meetings of strategic importance during the bygone year. These were short-duration events, ranging from 1-3 days (Table 2.5).

**Workshops**

Major purpose of conducting these Workshops was to initiate policy dialogues, work out implementation modalities of specific programmes and schemes, and peer review of consultancy. These Workshops evoked active participation of a wide range of stakeholders to achieve programme-specific objectives. Participatory learning strategies like group exercises, discussions, presentations, case analysis, *etc.* were used to drive the contents designed as per Workshop objectives. The outputs of Workshops were produced as proceedings and reports, and published by NAARM. Some of these were sponsored events, while others were organized in collaboration with other R&D Institutions.
Address by Dr N S Rathore, DDG (Edn), ICAR

One day workshop on strengthening of KVKs

Group photo of Interactive Meeting of RKVY teams

Participants of Food-Agri Business Accelerator Capacity Building Workshop

Dr. Ranjini Warrier, Advisor, MoEF&CC with Director and Joint Director, NAARM and participants of GMO Workshop
Seminars and Conferences
A two-day national Seminar on ‘Integrated Farming Systems’ (IFS) was organized in collaboration with Retired ICAR Employees Association (RICAREA), Hyderabad. The event brought together three generations of scientific fraternity of ICAR and other institutions to deliberate on the need and mode for promoting IFS Models for sustainable agricultural development.

Meetings
In response to the emerging needs and issues in the NARES, the Academy hosted three important strategic meetings related to initiation of Post-Graduate Diploma in Educational Technology, Review of Vigilance Issues and Finance Management in AU System. Executives from the ICAR Headquarters and other Institutions steered the deliberations in these events.

Table 2.5: Workshops/Seminars/Conferences/Meetings, etc. Organized during 2015-16

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Programme Title</th>
<th>Dates</th>
<th>Number of Participants</th>
<th>Programme Director(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Strengthening of KVKs for Knowledge Sharing (under SAIDP Project sponsored by the Govt. of Telangana)</td>
<td>April 15, 2015</td>
<td>36</td>
<td>S.K.Soam P.Venkatesan</td>
</tr>
<tr>
<td>2.</td>
<td>Monitoring of Confined Field Trials of Regulated GE Plants (in collaboration with the Ministry of Environment, Forests &amp; Climate Change, Govt. of India)</td>
<td>June 3-4, 2015</td>
<td>28</td>
<td>S.K.Soam</td>
</tr>
<tr>
<td>5.</td>
<td>Stakeholder Consultation Workshop (under SAIDP Project- sponsored by the Govt. of Telangana)</td>
<td>August 8, 2015</td>
<td>41</td>
<td>S.K.Soam P.Venkatesan</td>
</tr>
<tr>
<td></td>
<td>Event</td>
<td>Date</td>
<td>Page</td>
<td>Name(s)</td>
</tr>
<tr>
<td>---</td>
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<td>--------------------</td>
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<td>---------------------------------------------</td>
</tr>
<tr>
<td>6</td>
<td>Strategies for Adopting Technology Enhanced Learning in Agriculture Education (under TELAgE)</td>
<td>August 26-27, 2015</td>
<td>29</td>
<td>S.Senthil Vinayagam</td>
</tr>
<tr>
<td>7</td>
<td>Current Trends in Agricultural Bioinformatics</td>
<td>September 22-24, 2015</td>
<td>32</td>
<td>M.Balakrishnan Dinesh (IASRI)</td>
</tr>
<tr>
<td>8</td>
<td>Consultation Workshop on Preparation of State and District Agriculture Infrastructure Development Plans for AP</td>
<td>November 3, 2015</td>
<td>46</td>
<td>K.Kareemulla</td>
</tr>
<tr>
<td>9</td>
<td>Impact Evaluation of RKVY Funded Research Projects Implemented by Agricultural Universities in Telangana State</td>
<td>November 17, 2015</td>
<td>40</td>
<td>N.Sivaramane Bharat S. Sontakki P.C.Meena</td>
</tr>
<tr>
<td>10</td>
<td>Strengthening of Access &amp; Benefit Sharing and Use of Biological Resources in Research &amp; Development (in collaboration with Telangana State Biodiversity Board-TSBB)</td>
<td>November 24, 2015</td>
<td>43</td>
<td>S.K.Soam</td>
</tr>
<tr>
<td>11</td>
<td>Orientation Workshop for Writers and Editors for PGD-Educational Technology Management (ETM)</td>
<td>November 30, 2015</td>
<td>26</td>
<td>S.Senthil Vinayagam</td>
</tr>
<tr>
<td>12</td>
<td>Strategies for Promoting Farmer Producer Organization</td>
<td>December 9-11, 2015</td>
<td>17</td>
<td>P.Venkatesan Bharat S. Sontakki</td>
</tr>
<tr>
<td>13</td>
<td>Utilization of Social Media in National Agricultural Research System (NARS)</td>
<td>December 18, 2015</td>
<td>31</td>
<td>Bharat S. Sontakki V.K.J.Rao</td>
</tr>
<tr>
<td>14</td>
<td>Essential Skills for the 21st Century Researcher (DSIR sponsored, organized with Skyquest)</td>
<td>January 13, 2016</td>
<td>26</td>
<td>Manoj P. Samuel</td>
</tr>
<tr>
<td>16</td>
<td>Current Trends in Agricultural Bioinformatics (DBT Sponsored)</td>
<td>February 15-17, 2016</td>
<td>18</td>
<td>M.Balakrishnan S.K.Soam</td>
</tr>
<tr>
<td>17</td>
<td>Grass-root Innovators</td>
<td>March 19, 2016</td>
<td>27</td>
<td>Manoj P. Samuel S.Senthil Vinayagam</td>
</tr>
<tr>
<td>18</td>
<td>Sensitization Workshop on Agri-Business Incubation</td>
<td>March 21-22, 2016</td>
<td>23</td>
<td>Manoj P. Samuel K.Srinivas</td>
</tr>
<tr>
<td>19</td>
<td>Geospatial Analysis in Agriculture &amp; Spatial Data Requirements</td>
<td>March 29-30, 2016</td>
<td>40</td>
<td>A.Dhandapani S.K.Soam</td>
</tr>
</tbody>
</table>

**B. Seminars/Conferences, etc.**

<table>
<thead>
<tr>
<th></th>
<th>Event</th>
<th>Date</th>
<th>Page</th>
<th>Name(s)</th>
</tr>
</thead>
</table>

**C. Meetings**

<table>
<thead>
<tr>
<th></th>
<th>Event</th>
<th>Date</th>
<th>Page</th>
<th>Name(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Joint Advisory Meeting of NAARM-University of Hyderabad on Post-Graduate Diploma in Educational Technology</td>
<td>June 23, 2015</td>
<td>10</td>
<td>S.Senthil Vinayagam</td>
</tr>
<tr>
<td>2</td>
<td>ICAR Zonal Review Meeting of Vigilance Officers</td>
<td>November 18, 2015</td>
<td>24</td>
<td>S.K.Soam</td>
</tr>
<tr>
<td>3</td>
<td>Interactive Meet of Comptrollers of SAUs / DUAs / CUss</td>
<td>December 28, 2015</td>
<td>62</td>
<td>D.D.Verma P.Vijender Reddy</td>
</tr>
</tbody>
</table>
2.6 Sponsored Programmes

Seven sponsored training programmes were organized (Table 2.6), in response to the specific needs of the sponsoring organizations.

Table 2.6: Sponsored Programmes Organized during 2015-16

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Programme Title</th>
<th>Dates</th>
<th>Number of Participants</th>
<th>Programme Director(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KVKs of ANGRAU &amp; PJTSAU (sponsored by ANGRAU &amp; PJTSAU)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>ICAR Sponsored Short Course on Communication Skills and Management Skills for Extension Professionals</td>
<td>June 1-10, 2015</td>
<td>25</td>
<td>P.Venkatesan (Course Director) Bharat S.Sontakki (Coordinator)</td>
</tr>
<tr>
<td>3.</td>
<td>ICAR Sponsored Short Course on Mainstreaming Gender for Holistic Agricultural Development</td>
<td>September 9-18, 2015</td>
<td>18</td>
<td>Surya Rathore (Course Director) P.Venkatesan (Coordinator)</td>
</tr>
<tr>
<td>4.</td>
<td>ICAR Sponsored Competency Enhancement Programme for Technical Officers of ICAR (T5 &amp; above)</td>
<td>August 19-28, 2015</td>
<td>30</td>
<td>P.D.Sreekanth K.V.Kumar</td>
</tr>
<tr>
<td>7.</td>
<td>ICAR Sponsored Competency Enhancement Programme for Technical Officers of ICAR (T5 &amp; above)</td>
<td>March 1-10, 2016</td>
<td>43</td>
<td>P.Vijender Reddy P.C.Meena</td>
</tr>
</tbody>
</table>

2.7 Off-campus Programmes

These programmes were customized as per the capacity and learning requirements of sponsoring organizations at their premises. A small team of Faculty Members from

Three-day training on Management of Extension Projects for the Scientists of KVKs was organized at the behest of ANGRAU and PJTSAU for equipping the participants with competencies needed for effectively managing extension projects. The programme dealt on the topics ‘Writing Action Research Project Proposals’, ‘Public Private Partnership’, ‘Convergence of Programme Implementation at KVKs’, and ‘Monitoring and Evaluation of Extension Projects’. Participants were engaged in concept note writing and presentation exercises for over half of the programme duration. All the participants reported impressive learning and expressed their intent to use these learning to effectively manage extension projects.

Two 10-day programmes were sponsored to the Academy by the Education Division of ICAR under the category of ‘Short Courses’. The first one on Communication and Management Skills for Extension Professionals equipped the participants with a variety of communication and management skills to effectively perform their roles and responsibilities. The second was Gender Mainstreaming, which enabled the participants to be sensitive to the gender-related concerns and issues in research and development, and develop gender-friendly technological packages and advisories. Both these programmes used participatory learning strategies with a blend of lectures, self-assessment exercises, discussions and presentations, and institutional visits. Four more 10-day programmes approved by the Work Study Section of ICAR exclusively for the Technical Officers of ICAR were organized by the Academy to enhance their functional effectiveness.
NAARM moved out to these locations to impart learning on the areas (Table 2.7). Nine such programmes were organized—two sponsored by TANUVAS and the rest by the ICAR Headquarters and two research institutes. These programmes were organized on themes of high strategic importance like ‘HRD’, ‘Enhancing Organizational Productivity through Management of People at Work’, ‘Developing Winning Research Proposals’, ‘Enhancing Human Relations and Performance of People at Work’, and ‘Experience Sharing by ICAR Awardees’. These programmes reached diverse clientele right from Executives to Support Staff (Table 2.7). All the programmes received overwhelming response and appreciative feedback.

<table>
<thead>
<tr>
<th>Programme title</th>
<th>Place and Period</th>
<th>Number of Participants</th>
<th>Programme Director(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership Workshop on Enhancing Organizational Productivity through Management of People at Work</td>
<td>ICAR, New Delhi</td>
<td>April 16, 2015</td>
<td>15</td>
</tr>
<tr>
<td>Leadership Workshop on Enhancing Organizational Productivity through Management of People at Work</td>
<td>ICAR, New Delhi</td>
<td>April 17, 2015</td>
<td>17</td>
</tr>
<tr>
<td>Leadership Workshop on Enhancing Organizational Productivity through Management of People at Work</td>
<td>ICAR, New Delhi</td>
<td>April 19, 2015</td>
<td>13</td>
</tr>
<tr>
<td>Programme for ICAR Awardees-2015 (Admn./Tech./Supporting Categories) covering the visits to ICAR HQ, IARI, NDRI, IVRI, CIFE &amp; NAARM</td>
<td>ICAR HQ, IARI, NDRI, IVRI, CIFE &amp; NAARM</td>
<td>Oct 26 – Nov 1, 2015</td>
<td>11</td>
</tr>
<tr>
<td>Enhancing Human Relations and Performance of People at Work</td>
<td>ICAR-CAZRI, Jodhpur</td>
<td>Nov 16-19, 2015</td>
<td>25</td>
</tr>
<tr>
<td>Leadership Workshop on Enhancing Organizational Productivity through Management of People at Work for DARE/ICAR/ASRB Officials</td>
<td>NASC, New Delhi</td>
<td>March 1-3, 2016</td>
<td>52</td>
</tr>
</tbody>
</table>
2.8 Online Course

For the first time in the 40-year history of the Academy, an Online Course (Table 2.8) was designed and successfully offered.

Table 2.8: Online Course Organized during 2015-16

<table>
<thead>
<tr>
<th>Programme Title</th>
<th>Dates</th>
<th>Number of Participants</th>
<th>Programme Directors</th>
</tr>
</thead>
</table>

The Massive Open Online Course (MOOC) was offered targeting those who are actively engaged in teaching or at the beginning of their career and aspiring teachers. It was an ‘open-to-all course’ without any course fee. A unique approach of MOOC on MOODLE was attempted. This is in continuation with e-learning activities of ICAR. “MOOC in Agriculture” a new phrase in its domain, has been initiated and attempted successfully with 318 registered users, 62 per cent course participation and 30.82 per cent course completion rates, optimum enough matching with any other MOOC in any domain. This was made possible with the technical support of Enhanced Learning Centre having the high end state - of - art technology. The programme guided participants on various dimensions of teaching and helped them develop effective teaching styles for quality education and pedagogical competencies.

Courseware comprised many background concepts, integrated questions, discussions, and assignments. Every week participants were expected to view 2 to 3 video lectures, which were of about 10-15 minutes each along with other relevant courseware including presentations and background and reference material on concepts relevant for the week. Stand-alone point of the Course remains to be the interactive user forums of every video lecture, supporting community interactions among the teachers’ community. At the end, participants produced a teaching video as an output for evaluation by expert panel for award of a certificate. This success has led to initiation of offering MOOCs as part of NAARM regular programmes.

2.9 Feedback Analysis

Eliciting objective feedback from the trainees on training design and delivery, and using it for continuous improvement is a vital aspect of training management. The Academy follows this in letter and spirit by subjecting its training and training workshops to ‘end-of-the-programme’ evaluation by participants. The online training management system envisages tracking the feedback from the participants in a structured format. This format consists of 16 dimensions of training management (5 dimensions on the design aspect and 11 others representing training delivery and immediate impact), which the participants would evaluate based on their training experience on a 5-point continuum (5 representing the highest and 1 the lowest).

The data available for 30 programmes organized during 2015-16 were collated and analyzed by computing mean rating (Figure 2.2). The participants rated highly impressive performance on training design and delivery. Mean rating was in excess of 4.00 out of 5.00 for most of the dimensions with 4.52 for the dimension ‘Recommend to others’, indicating that the programmes in general are useful to all the professionals.

Second highest rating of 4.48 was recorded for two dimensions namely, ‘Programme/Course Directors’ Skill and Support’ and ‘Training Methodology’. This indeed is a complement to the efforts of the NAARM Faculty Members and Officers who plan and conduct these programmes as Programme/Course Directors. It also reflects on the higher levels of ‘training management’ competence. The Academy follows a ‘holistic training
methodology’ using a combination of relevant training methods to enable comprehensive learning by the participants, which is clearly evidenced from the rating on ‘training methodology’ dimension recorded.

The finding that ‘relevance to needs’ securing the mean rating of 3.81 calls for realigning the training programmes as per the needs of NARES professionals. Some of the programmes organized are as per the needs of the system and their relevance may not be appreciated by individual trainees. Yet, there is a need to explicitly communicate how such ‘system-related’ training programmes are relevant to concerned professionals in the NARES.

![Indicators of design and delivery of Capacity Building Programmes](image)

**Figure 2.2: Mean Rating of Capacity Building Programmes Organized during 2015-16**
3.1 Overview of Research Projects
During the reported period, 22 research projects were in operations, out of which 14 were funded by the Academy and 8 were externally funded - one by IFPRI and 7 by various ICAR Schemes. In addition, there were 5 Consultancy Projects - 3 funded under RKVY by the State Governments of Andhra Pradesh and Telangana, and one each by RIS and NITI Ayog, Government of India. The research projects were taken up under following major themes:

- Leadership and governance of agricultural innovation systems.
- Mobilizing science and technology for innovation and sustainable development.
- Information and knowledge management for promoting innovation and good governance.
- Education systems management for enhancing educational environments, continuous learning, faculty excellence, learner empowerment, and expanding reach.
- Extension systems management for sustainable livelihoods security and farmer empowerment.
- Agribusiness management for efficient, responsive and sustainable agri-food systems.

3.1.1 Institute Funded Projects
There were 14 Institute funded research projects (Table 3.1).

Table 3.1: List of Institute Funded Projects

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Project Title</th>
<th>Principal Investigator</th>
<th>Co-Principal Investigator</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Information System for All-India Coordinated Research Project on Vegetables Crops</td>
<td>A.Dhandapani</td>
<td>-</td>
<td>April 2014-Sep 2015</td>
</tr>
<tr>
<td>Sl. No.</td>
<td>Project Title</td>
<td>Principal Investigator</td>
<td>Co-Principal Investigator</td>
<td>Duration</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------------------------------------------------------</td>
<td>---------------------------------</td>
<td>-----------------------------------</td>
<td>------------------------</td>
</tr>
</tbody>
</table>

# On deputation to ICRISAT

3.1.2 Externally Funded Projects

There were 8 externally funded research projects (Table 3.2).

**Table 3.2: List of Externally Funded Projects**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Project Title</th>
<th>Principal Investigator</th>
<th>Co-Principal Investigator</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Funding Agency:</strong> International Food Policy Research Institute (IFPRI), New Delhi</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Amount:</strong> Rs 21.00 Lakh</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>IP Management and Transfer/ Commercialization of Agricultural Technology Scheme (ITMU) and Zonal Technology Management Centre (ZTMC)</td>
<td>Manoj P.Samuel</td>
<td>-</td>
<td>April 2014- March 2017</td>
</tr>
<tr>
<td></td>
<td><strong>Funding Agency:</strong> ICAR Scheme</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Amount:</strong> Rs 4.38 Lakh</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Funding Agency:</strong> ICAR Scheme</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td><strong>Amount:</strong> Rs 79.15 Lakh</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>4.</td>
<td>Enhancement of Teaching Competency through Distance Learning</td>
<td>Senthil Vinayagam</td>
<td>G.R.K.Murthy</td>
<td>Feb 2016- March 2017</td>
</tr>
<tr>
<td></td>
<td><strong>Funding Agency:</strong> ICAR, Extramural Res.</td>
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<tr>
<td></td>
<td><strong>Amount:</strong> Rs 14.50 Lakh</td>
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<tr>
<td>5.</td>
<td>Impact of ICT on Agricultural Education in India</td>
<td>Surya Rathore</td>
<td>S.Ravichandran</td>
<td>Jan 2016- March 2017</td>
</tr>
<tr>
<td></td>
<td><strong>Funding Agency:</strong> ICAR, Extramural Res.</td>
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<td></td>
<td><strong>Amount:</strong> Rs 16.00 Lakh</td>
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<tr>
<td></td>
<td><strong>Funding Agency:</strong> ICAR Head Quarters</td>
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<td></td>
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<tr>
<td></td>
<td><strong>Amount:</strong> Rs 90.93 Lakh</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td><strong>Funding Agency:</strong> ICAR, Education Division under Niche Area of Excellence (NAE) Scheme</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td><strong>Amount:</strong> Rs 425.00 Lakh</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Socio Economic Analysis of Finger Millets in India</td>
<td>B.Ganesh Kumar</td>
<td>N.Sivaramane</td>
<td>April 2015- March 2018</td>
</tr>
<tr>
<td></td>
<td><strong>Funding Agency:</strong> DBT, Govt. of India</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td><strong>Amount:</strong> Rs 15.49 Lakh</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Professor, Dept. of Plant Breeding, College of Agriculture, PJTSAU, Hyderabad
3. Director, Dr D Rama Naidu Vignana Jyothi Institute of Rural Development, Tuniki, Medak
3.1.3 Consultancy Research Assignments
There were 5 consultancy research assignments (Table 3.3).

Table 3.3: List of Consultancy Research Assignments

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Project Title</th>
<th>Principal Investigator</th>
<th>Co-Principal Investigator</th>
<th>Funding Agency</th>
<th>Amount</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Impact Evaluation of RKVY Funded Research Projects Implemented by Agricultural Universities in Telangana State</td>
<td>N.Sivaramane</td>
<td>Bharat S. Sontakki</td>
<td>Govt. of Telangana</td>
<td>Rs. 24.89 Lakh</td>
<td>Jan 2015-Dec 2015</td>
</tr>
<tr>
<td>2.</td>
<td>RKVY-State Agriculture Infrastructure Development Plan – Andhra Pradesh</td>
<td>K.Kareemulla</td>
<td>S.Ravichandran</td>
<td>Govt. of Andhra Pradesh</td>
<td>Rs. 16.00 Lakh</td>
<td>August 2015-Feb. 2016</td>
</tr>
<tr>
<td>4.</td>
<td>State Agriculture Infrastructure Development Programme (SAIDP) Plan for Agricultural Research &amp; Extension through Strengthening of KVKs, TRCs, ATMA &amp; KCCs under RKVY in XII Plan of Telangana State.</td>
<td>S.K.Soam</td>
<td>P.Venkatesan</td>
<td>Govt. of Telangana</td>
<td>Rs. 24.72 Lakh</td>
<td>Jan 2015-March 2016</td>
</tr>
<tr>
<td>5.</td>
<td>Developing Guidelines and Methodologies for Socio-Economic Assessment of LMOs</td>
<td>K.Srinivas</td>
<td>P.C.Meena</td>
<td>Research and Information System (RIS), New Delhi</td>
<td>Rs 5.00 Lakh</td>
<td>Feb 2015-July 2016</td>
</tr>
</tbody>
</table>

3.2 Institute Funded Projects

Accounting Framework for Water-Energy-GHG Emission Nexus in Peri-Urban Agriculture

The objectives of this project were to develop an accounting and modeling framework to account for water, energy use and greenhouse gas emissions in peri-urban areas of Hyderabad; to study the socio-economic dynamics in water-energy trade off; and to develop Geographic Information System (GIS) based vulnerability maps for areas affected by high energy use, water scarcity, quality deterioration and increased emissions.

Achievements:

Two sites where peri-urban agriculture is practiced (Jukal village in Ranga Reddy district and S.Lingotam village in Nalgonda district) were selected, in consultation with officials of the Department of Agriculture. Data on climate, land use and cropping pattern, agriculture production and productivity were collected both on macro- and micro-scale and analyzed. Graphs/charts were generated on changes in rainfall variability, distribution, existing cropping pattern, energy usage (Figure 3.1), water source, land use and cropping pattern. The change in energy use and extent of change in greenhouse gas (GHG) emission were also studied using empirical formulae. The variations in GHG emissions and carbon credit in the identified sites were also calculated with reference to the change in land use (Table 3.4) and energy usage (Table 3.5). Subsequently an accounting framework for GHG emission calculation was developed with graphical interpretations (Figure 3.2). The developed framework can be utilized for prediction of GHG emission and carbon foot print with respect to climate change and urbanization in peri-urban areas.
Apart from these, a research paper was presented in an International Conference organized by ISWM and University of Melbourne at Delhi. Six students of the Kerala Agricultural University have also taken up their field training as part of the project.

Table 3.4: CO2 Emission due to Change in Land Use Pattern

<table>
<thead>
<tr>
<th>Change in Land Use Pattern (2005-2015)</th>
<th>CO2, kg CO2-eq. ha⁻¹*</th>
<th>Land Change in Jukal Village (ha)</th>
<th>Total Emission (kg CO2)</th>
<th>Land Change in S.Lingotam Village</th>
<th>Total Emission (kg CO2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop land to fallow land</td>
<td>-2000</td>
<td>10.0</td>
<td>-20000</td>
<td>35</td>
<td>-35000</td>
</tr>
<tr>
<td>Fallow land to crop land</td>
<td>2000</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>10000</td>
</tr>
<tr>
<td>Forest to crop land</td>
<td>5050</td>
<td>3.4</td>
<td>17170</td>
<td>4</td>
<td>20200</td>
</tr>
<tr>
<td>Forest to fallow land</td>
<td>3050</td>
<td>2.0</td>
<td>6100</td>
<td>5</td>
<td>15250</td>
</tr>
<tr>
<td><strong>Total CO2 Emission</strong></td>
<td></td>
<td><strong>3270= 3.27 MT</strong></td>
<td></td>
<td></td>
<td><strong>10450 =10.45MT</strong></td>
</tr>
</tbody>
</table>

* (Rajaniemi et al., 2011; USEPA, 2014; Houghton et al., 2012)

Table 3.5: CO2 Emission due to Change in Energy Use

<table>
<thead>
<tr>
<th>Change in Energy use</th>
<th>Jukal Village</th>
<th>S.Lingotam Village</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pump sets</strong></td>
<td>2005</td>
<td>2015</td>
</tr>
<tr>
<td>Diesel</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td><strong>Change in CO2 Emission (kg CO2)</strong></td>
<td>-312.90</td>
<td>3</td>
</tr>
<tr>
<td>2005</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>2015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td><strong>Change in CO2 Emission (kg CO2)</strong></td>
<td>-391.125</td>
<td>58668.750</td>
</tr>
<tr>
<td><strong>Electrical</strong></td>
<td>3</td>
<td>21</td>
</tr>
<tr>
<td><strong>Tractors</strong></td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td><strong>Change in CO2 Emission (kg CO2)</strong></td>
<td>25032.00</td>
<td>7509.600</td>
</tr>
<tr>
<td><strong>Tillers</strong></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total CO2 Emission</strong></td>
<td>24756.33=24.76 MT</td>
<td>65817.5=65.82 MT</td>
</tr>
</tbody>
</table>
This project aims at developing an automation system to create, manage and report Coordinated Trials conducted by the All-India Coordinated Project on Vegetable Crops (AICRPVC). This system is expected to help in creation of a centralized data repository with all the details of the trial conducted, reduce time in trial creation, and uniformity in reporting and statistical analysis.

**Achievements:**

Along the lines of All India Coordinated Sorghum Improvement Programme (AICSIP), automation system (www.aicsip.naarm.org.in) created by the Academy in collaboration with IASRI, IIIMR (formerly DSR), information system for AICRP on Vegetable Crops was developed and made available at www.iasri.res.in/aicrpvc (Figures 3.3 and 3.4). As compared to AICSIP which deals with a single crop, AICRPVC deals with all vegetable crops. The information system was successfully tested with the past trials, and is now ready for implementation after training to the users. Using this information system, different trials can be generated with randomized layouts for each Centre as well as the datasheets for the trials in MS-Excel format. The analysis module of the system provides easy way of analyzing the data and the tables are automatically generated as per the requirement. Owing to automation of trials, time can be saved as well as errors can be minimized.
Figure 3.3: Homepage of Information System for AICRP on Vegetables

Figure 3.4: Experiment Creation of Information System for AICRP on Vegetables
The project aimed to identify various factors leading to conflict among people, study the various styles of conflict management prevalent among researchers/teachers/non-academicians in the system; and to document the issues of conflicts in the system through a few caselets.

Achievements:
Three individual cases were prepared which brought out different conflicts that arise in Institutes due to diverse reasons. One case pertained to the conflicts that developed because of incomplete sharing of research information; the second case to system-related factors leading to conflict between specialization and the Institute where posted; and the third as a result of personal ego, power, and structure-related issues. A critical look at these three cases indicated that conflicts pass through the following stages:

- Potential opposition or incompatibility
- Cognition and personalization
- Intentions
- Behaviour
- Outcomes

If the conflicts are approached and resolved effectively, they could lead to beneficial results; otherwise, it would lead to a long-term loss for the individual as well as for the system.

The present study was conducted during 2014-16 mainly to investigate the use pattern of social media across the National Agricultural Research & Education System (NARES); to identify problems and prospects of social media use in three major domains, i.e. teaching, research and extension; and to formulate guidelines and policy on utilization of social media in the NARES. Out of 603 samples, majority (33%) was from research group, followed by teaching (25%) and extension (18%). About 11 per cent of the sample was represented by students and the remaining by multifunctional respondents and others; the average age of all the respondents was 33.86 years.

Achievements:
Out of the total sample, 96 per cent were aware and using social media tools viz. Face Book, WhatsApp, Google+, Myspace, LinkedIn, YouTube, Blogs, Wikis, Twitter, etc., with variation in number and time spent on each social media. Maximum (79.10%) had account in Facebook, followed by YouTube, WhatsApp, etc. But the time spent was high on WhatsApp (88.26 min), followed by Google+ (82.68 min) and YouTube (59.10 min), as shown in Figure 3.5. However, majority had medium level of attitude towards social media.

Utility of social media networking services had shown distinct trend, i.e. seeking behaviour exhibited more than sharing behaviour in all classes, except in students where sharing of educational materials was higher than other parameters (Figure 3.6). Research group dominated social media use intensity in terms of likes, comments, photos, posts, friends, groups, etc., and networking. Attributes of social media use varied across categories: teaching (socialization and visibility), research (sharing of experience and networking), extension (socialization and networking) and students (visibility and socialization).
Figure 3.6: Seeking and Sharing Dynamics

Under education component, respondents foresee social media utilization in academic communication, sharing of educational resources (lecture notes presentations, etc.), sharing of photos, videos links, and networking. Items like sharing of research communications, networking and collaboration were important under research component. Social media can be utilized effectively for dissemination of information, sharing of photos, videos, announcements, answering queries on regular to always basis under extension. On an average, each respondent had membership in about 15 virtual communities owing to its relevancy, interest, sharing of knowledge, networking, queries, up-to-date and visibility, etc.

- Based on the nature of work, the use of social media tools vary as per extension system, and students mostly used smart phones and laptops, research system preferred desktops, and teaching fraternity used all the social media (SM) tools. This portrays that the SM tools should be made available as per the nature of work.

- Personal use of SM dominates professional use, which points to the need to encourage them for better use for professional activities.

- Official procedures, restrictions, security, apprehensions and IPRs, etc. are restricting widespread sharing of information/product/process.

- The major problems in the use of social media are (i) connectivity problem (ii) apprehensions about the privacy (iii) decrease in effectiveness of oral communication (iv) lack of support from organization (v) lack of knowledge on implications of use of social media (vi) wastage of time, (vii) lack of familiarity (viii) hindrance of organizational policy.

Only very few organizations have a policy on social media use, and implementation of policy was affected by organizational hindrances. Issues that need to be addressed through development of guidelines and policy include creation of enabling environment, proactive role by authorities, development of infrastructure, social media literacy and capacity building, ethics in use, establishment of a separate social media Cell, attitudinal change, strengthening of networking, incentivizing social media activities of organizations/individuals, clarity on objectives/platform/governance/communication strategy of social media, institutionalization and compliance with existing legislations.
This study aimed at assessing the level of aptitude/attitude for teaching and research and personality types among Agricultural University faculty; and suggesting recruitment, placement and training strategies. Faculty members (500: 280 from Veterinary and 220 from Agricultural Universities) from different States participated in this study. They were Assistant Professor (n= 368), Associate Professor (n= 80) and Professor (n= 52). Among the participants 28 per cent were female (n= 141) and 72 per cent were male (n= 359). The age of participants ranged from 25 to 57 years, with an average of 39.5 years. Data were collected on the academic, teaching and research achievements of faculty besides their personality types, teaching aptitude, and attitude of faculty towards research by administering standard psychometric tests. Correlation and regression analysis were carried out to establish relationship among the selected variables in the study.

**Achievements:**

**Teaching aptitude of faculty:** Teaching Aptitude Test (TAT) scores of faculty members (n=500) varied from 16 to 33, with an average of 25.7. Above average teaching aptitude was found in 71 per cent faculty members, followed by average and below average level of teaching aptitude (Figure 3.7).

**Attitude towards research:** Attitude Scale towards Research (ASTR) scores of faculty members varied from 123 to 199, with an average of 167. Out of the total 77 per cent have moderately favourable attitude, 23 per cent have unfavourable attitude towards research (Figure 3.8).

**Personality types of faculty:** Based on the Myers-Briggs Type Indicator (MBTI) test, the predominant personality type of faculty of Agricultural Universities was found to be Extraversion-Sensing-Thinking-Judging (23.2 %), followed by Extraversion-Sensing-Feeling-Judging (16.6 %) and Extraversion-Intuition-Thinking-Judging (11.0 %); Figure 3.9.
**Figure 3.8: Levels of Research Attitude of Faculty**

EU = Extremely Unfavourable, HU = Highly Unfavourable, U = Unfavourable, MF = Moderately Favourable, AA = Above Average, HF = Highly Favourable, EF = Extremely Favourable

**Figure 3.9: Myers-Briggs Personality Type Preferences of Faculty**

**Correlation and regression analysis:** A significant positive correlation was found between the teaching aptitude and teaching achievement ($r = 0.446^{**}$), research attitude and research achievement ($r = 0.457^{**}$). Regression analysis revealed that a combination of academic achievement and teaching aptitude was a better predictor of teaching achievement ($R^2 = 0.327$) compared to either the academic achievement ($R^2 = 0.255$) or teaching aptitude ($R^2 = 0.198$) of the faculty. Similarly, research achievement was better predicted by the combination of academic achievement and research attitude ($R^2 = 0.344$) as compared to either academic
achievement ($R^2 = 0.312$) or research attitude ($R^2 = 0.208$) of the faculty.

**Practical implications related to HRD:** The present study showed that the personality traits *viz.* teaching aptitude and research attitude should be considered significant along with the academic achievements of faculty for improved quality of teaching and research. Based on the findings of this study, the following recommendations were made:

- There is a need to recruit faculty members of Agricultural Universities (especially those engaged exclusively for teaching or research) based on a minimum level of aptitude for teaching or favourable attitude towards research, besides their academic and professional proficiencies.
- Educational administrators may consider deployment of faculty members in different functional areas of the University *viz.* teaching and research based on scores obtained by them in teaching aptitude/research attitude tests, so that they may be more productive and effective in their pursuits.
- There is a necessity to take up appropriate capacity building initiatives periodically through need-based trainings for improving faculty members’ interpersonal, pedagogical, team building, and leadership skills to improve their personality besides enhancing their commitment to the organization and the profession.

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### Knowledge Platform for Farmers

The objectives under this project were to implement integrated ICT model for participatory needs, assessment, prioritization, media research, content and ICT management and sustainability initiatives; and to sensitize farmers about soil health, crop and animal production and protection; and updating for quality information dissemination using appropriate ICT tools like hand held devices, and updating the rural ICTs Website for information dissemination.

**Achievements:**

Based on the needs assessed, knowledge gaps for major crops (major gap in pest management for cotton and rice), and results of media research on media usage, preference (TV followed by mobile phones and Newspaper), the content formats (video format followed by voice and textual formats for agriculture) were developed. Vernacular information modules in text, audio and video were developed for major crops, vegetables, nutrient management, dairy management, and homestead products (total no. 307). The content organizations also shared information through mobile platform. The mobile platform was extended to 49 farmers of S.Lingotam and 56 farmers of Tallasingaram villages, wherein 3,150 messages were sent through ‘Cotton Information System’ from IICR including 1,575 drought management messages, 1,260 plant protection messages and 315 harvest and post-harvest messages. Thirty direct calls were made by the farmers to the subject experts at KVK, Kampasagar for information on cotton, paddy, red gram and vegetable crops, and fertiliser management. The ‘Voice Information System- VIS’ using participatory approach was linked to KVK Kampasagar IIDS (Annapurna Dissemination System) for further information transfer to farmers. There was 15 per cent increase in listening pattern of farmers after adopting participatory approach. VIS is available at link below:

http://aged.icrisat.org/gallery/Krishi%20Vani%20Information%20System/

The farmers’ database was developed to connect to the Web application indicating the soil analysis results and to provide push-based Agro advisories directly to the farmers’ mobile. The Rural ICTs Website was re-designed to include the clickable cadastral maps of the selected villages *viz.* S.Lingotam and Tallasingaram villages (Figure 3.10) linking the survey number-wise macro- and micro-nutrient soil analysis results, adding Web pages on nutrient management, compost making and backyard poultry, and uploading vernacular text, audio and video based modules.
The objectives of this project were to document operational mechanism of selected producer companies, delineate the challenges and critical success factors, capture the profile of producer members and the perceived impact, and to suggest policy strategies for promoting this model.

**Achievements:**
Farmer Producer Organizations (FPOs), six each, from Tamil Nadu and Kerala were documented as case study. The companies were analyzed for their business operations/services offered, organization structure, financial support and handholding by development departments, infrastructure and year-wise business performance to understand its critical success factors and constraints faced. The perceptions of producer members towards the company performance and effectiveness were assessed on a 5-point scale. The results of Nachalur and Marutham are presented in Tables 3.6 and 3.7.
### Table 3.6: Perception Value towards Performance of the Company (n=30)

<table>
<thead>
<tr>
<th>Performance indicators</th>
<th>Nachalur FPO</th>
<th>Marutham FPO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heterogeneity in membership</td>
<td>6.9</td>
<td>6.2</td>
</tr>
<tr>
<td>Member cohesiveness</td>
<td>6.5</td>
<td>5.3</td>
</tr>
<tr>
<td>Eliminating political intervention</td>
<td>7.0</td>
<td>6.2</td>
</tr>
<tr>
<td>Avoiding domination of specific group of people</td>
<td>6.6</td>
<td>5.3</td>
</tr>
<tr>
<td>Transparency of activities</td>
<td>6.1</td>
<td>5.9</td>
</tr>
<tr>
<td>Transparency of financial transactions</td>
<td>4.8</td>
<td>6.4</td>
</tr>
<tr>
<td>Selection/ election of leaders/ board of directors</td>
<td>4.7</td>
<td>5.9</td>
</tr>
<tr>
<td>Adhering to rules and regulations</td>
<td>5.1</td>
<td>5.6</td>
</tr>
<tr>
<td>Record maintenance</td>
<td>5.3</td>
<td>6.0</td>
</tr>
<tr>
<td>Opportunity for participation in decision making</td>
<td>6.3</td>
<td>6.3</td>
</tr>
<tr>
<td>Business activities of the company</td>
<td>4.2</td>
<td>6.0</td>
</tr>
<tr>
<td>Ways of raising funds</td>
<td>3.1</td>
<td>4.2</td>
</tr>
<tr>
<td>Dovetailing of govt. schemes</td>
<td>3.9</td>
<td>2.6</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>5.4</strong></td>
<td><strong>5.5</strong></td>
</tr>
</tbody>
</table>

*Note: Excellent-7; Very Good-5; Good-3; Average-2; Poor-1*

### Table 3.7: Perception Value towards Effectiveness (n=30)

<table>
<thead>
<tr>
<th>Effectiveness indicators</th>
<th>Nachalur FPO</th>
<th>Marutham FPO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in utilization of farm mechanization and power</td>
<td>6.8</td>
<td>5.5</td>
</tr>
<tr>
<td>Increase in input availability</td>
<td>6.4</td>
<td>6.0</td>
</tr>
<tr>
<td>Adequate access to credit availability</td>
<td>4.7</td>
<td>5.6</td>
</tr>
<tr>
<td>Increase in cropping intensity</td>
<td>6.1</td>
<td>5.2</td>
</tr>
<tr>
<td>Increase in productivity of commodity</td>
<td>6.6</td>
<td>5.6</td>
</tr>
<tr>
<td>Increase in net returns</td>
<td>5.7</td>
<td>5.6</td>
</tr>
<tr>
<td>Assured buy-back</td>
<td>3.1</td>
<td>4.3</td>
</tr>
<tr>
<td>Assured market price</td>
<td>3.1</td>
<td>5.3</td>
</tr>
<tr>
<td>Value addition linkage and related infrastructure</td>
<td>3.0</td>
<td>3.7</td>
</tr>
<tr>
<td>Increase in knowledge of improved production technology</td>
<td>6.8</td>
<td>5.8</td>
</tr>
<tr>
<td>Increase in adoption towards production technology</td>
<td>6.5</td>
<td>5.6</td>
</tr>
<tr>
<td>Enhanced access to training programmes</td>
<td>5.8</td>
<td>6.1</td>
</tr>
<tr>
<td>Enhanced bargaining power for input purchase</td>
<td>5.3</td>
<td>5.6</td>
</tr>
<tr>
<td>Enhanced bargaining power for output marketing</td>
<td>5.0</td>
<td>4.5</td>
</tr>
<tr>
<td>Reduced social conflicts</td>
<td>6.3</td>
<td>5.2</td>
</tr>
<tr>
<td>Access to benefits for socially backward people</td>
<td>6.1</td>
<td>4.8</td>
</tr>
<tr>
<td>Access to benefits for women</td>
<td>6.7</td>
<td>5.9</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>5.3</strong></td>
<td><strong>5.4</strong></td>
</tr>
</tbody>
</table>

*Note: Strongly agree-7; Agree-5; Undecided-3; Disagree-2; Strongly Disagree-1*
The objective of this project was to strengthen the existing PME mechanism by streamlining its functioning within the ICAR System.

Achievements:
Objectives were achieved by identifying suitable parameters/indicators for each of the three project management functions and objectively scoring the individual research projects against the parameters/indicators identified for the purpose. As an outcome, a manual was developed based on scientific principles and wide consultations in the project mode. The methodology was conceived keeping in view PME mechanism focused on research at the micro-level, particularly the individual research projects in the Institutes. The PME Cells in the Institutes need to be strengthened/empowered. Further, help from ICAR is envisaged for incentivizing PME Cell persons. The whole PME process is meant for incentivizing the good performance and not for punishing the poor performance. And it should help to pull up the “not up to the mark performance”. It is believed that through this process, poor performers will be indirectly motivated to perform better.

The objectives of this project were to develop a geospatial framework for assessing vulnerability and adaptive capacity of livelihood systems to climate and market stressors, and to develop knowledge discovery and knowledge management tools to characterize livelihood systems.

Achievements:
A prototype web-based interactive geospatial village knowledge system was developed for guiding possible technological, institutional and other interventions for enhancing agricultural incomes and livelihoods in villages adopted by institutions of ICAR and others under the village development programmes. This simple and robust tool assists decision-makers to generate various biophysical and socioeconomic thematic map views for prescriptive, participatory, and executive level planning. The prototype system was developed for the agricultural and livelihood systems in Tallasingaram village in Nalgonda district of Telangana State (Figure 3.11). The architecture of the Geospatial Village Information system (GSVIS) is given in Figure 3.12. The village was adopted by NAARM for village developmental studies. The geospatial knowledge system has the potential to be integrated into ‘Digital India’ initiatives for agricultural knowledge services and targeted benefit transfers.

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**Figure 3.11: Location of Tallasingaram Village**

**Figure 3.12: Architecture of Geospatial Village Information System- GSVIS**
The spatial data comprises several layers—(i) cadastral maps of village showing layout of farmers’ fields by survey numbers, (ii) soil maps of the village with various soil attributes and soil health card information, (iii) land use, (iv) locations of nearby APMCs, (v) locations of wells and other water sources, (vi) topography, and (vii) micro-watersheds in the village. The attribute data collected from the village by household survey by NAARM (including demographics, income, education, livelihoods sources, etc.) is linked with the cadastral map information to connect farmers/households with their land resources. All of these are integrated into a Web GIS application to enable interactive queries about soils, crops, resources and thematic mapping for decision support and customized knowledge services. The GSVIS was developed using only open source software viz., Quantum GIS (QGIS), PostgreSQL, PostGIS, GeoServer and Expression Web (HTML, JavaScript, Leaflet, GeoJSON) software (Figures 3.13 to 3.15).
The purpose of the NAARM Climate Information System (NCIS) is to manage complex flow of data and information from climate data sources to agricultural scientists in NAARM who require data at finer spatial and time scales. The NCIS is unique because it focuses on producing user-driven, value-added geospatial products for defined areas (map). This will alleviate the burden of climate information management from agricultural scientists and make value-added climate information available at the scales and time periods applicable to their areas of operation. It will also provide better insights into local/regional climate risks to design and manage climate-smart resilient crops, livestock, and livelihood strategies more effectively.

Version 1 of the NAARM CWS is based on MODIS daily climate data (Maximum Temperature, Minimum Temperature, Average Temperature) on 1 x 1 degree latitude-longitude for India. In this version:

User interactively inputs:
- Area of interest by selecting one grid or even a map of India States and Districts
- Date period of interest (hence any period from 1951 to 2013)
- Climate variable for which data is sought
- Value added output desired (monthly, seasonal, annual averages, Variance and a link provided to trend significance)

The NCIS output is:
- Map extent based on grid boundaries of the user-defined area of interest
- The daily climate data set corresponding to all the grids in the selected region (raw data)
- Extraction of selected geo-referenced grid as a Microsoft Excel file with grid coordinates along with the selected feature of attributes to enable portability to user GIS applications
- Value added data at monthly, seasonal, annual average, trend, and for each grid
- Thematic map of value added data to view in NCIS or port to user GIS application

Subsequent versions of NCIS will include AVHRR and other finer resolution climate data.

Figure 3.13: Geospatial Village Information System (GSVIS) - Homepage

Figure 3.14: Geospatial Village Information System (GSVIS) - Climate Data Grids

Figure 3.15: Geospatial Village Information System (GSVIS) - Weather Report
The objectives of the project were to identify interpersonal styles of people in ICAR; to identify the factors affecting the interpersonal relationships between people in ICAR; and to find the compatibility issues due to interpersonal relations between people and their effect, in turn, on job performance in ICAR.

Achievements:
Data from 606 participants were collected including 88 from ICAR-IIOR (for case study purpose) through Myers – Briggs Type Indicator and FIRO-B instruments. Study on interpersonal relationships involving 35 scientists, 23 administrative staff members, 17 technical staff, and 13 supportive service staff of ICAR-IIOR indicated that Originator incompatibility, Reciprocal incompatibility and Interchange incompatibility exist with reference to inclusion, control and affection among the Institute staff (Tables 3.8 & 3.9).

Originator Compatibility:
- In the inclusion, 28 persons revealed competitive incompatibility and 60 complete compatibility and none with apathetic incompatibility.
- In the control, 6 persons revealed apathetic incompatibility, 1 competitive incompatibility and 81 complete compatibility.
- In the affection, one person revealed competitive incompatibility and 87 complete compatibility.

Reciprocal Compatibility:
- In the inclusion, 20 persons showed compatibility with more than 50 per cent of the remaining 87 people, while 68 people had incompatibility with more than 50 per cent of the remaining 87 people.
- In the control, 69 persons have compatibility with more than 50 per cent of the remaining 87 people, while 19 people have incompatibility with more than 50 per cent of the remaining 87 people.
- In the affection, 70 persons have compatibility with more than 50 per cent of the remaining 87 people, while 18 people have incompatibility with more than 50 per cent of the remaining 87 people.

Interchange Compatibility:
- In the inclusion, 74 persons have compatibility with more than 50 per cent of the remaining 87 people, while 14 people have incompatibility with more than 50 per cent of the remaining 87 people.
- In the control, 81 persons have compatibility with more than 50 per cent of the remaining 87 people, while 7 people have incompatibility with more than 50 per cent of the remaining 87 people.
- In the affection, 70 persons have compatibility with more than 50 per cent of the remaining 87 people, while 18 people have incompatibility with more than 50 per cent of the remaining 87 people.

Inferences and Implications:
- Much of the conflict was found in inclusion need satisfaction with respect to originator and reciprocal compatibility rather than control and affection in IIOR.

This also goes with the trend that people do not want to control others and people have fewer problems with others in respect of satisfaction of affection need in IIOR.

Table 3.8: Correlation between Individual Performance and FIRO-B and MBTI

<table>
<thead>
<tr>
<th>Performance Appraisal Score</th>
<th>Pearson Correlation Coefficients, N = 88</th>
<th>Prob &gt;</th>
<th>r</th>
<th>under H0: Rho=0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Express Inclusion</td>
<td>0.17659</td>
<td>0.1003</td>
<td>-0.17633</td>
<td>0.0998</td>
</tr>
<tr>
<td>Wanted Inclusion</td>
<td>0.11939</td>
<td>0.0998</td>
<td>0.01988</td>
<td>0.2679</td>
</tr>
<tr>
<td>Express Control</td>
<td>0.13606</td>
<td>0.2062</td>
<td>0.12339</td>
<td>0.2679</td>
</tr>
<tr>
<td>Wanted Control</td>
<td>0.09821</td>
<td>0.3627</td>
<td>0.13764</td>
<td>0.0362</td>
</tr>
<tr>
<td>Express Affection</td>
<td>-0.11032</td>
<td>0.0562</td>
<td>-0.20432</td>
<td>0.3062</td>
</tr>
<tr>
<td>Wanted Affection</td>
<td>-0.11300</td>
<td>0.2945</td>
<td>0.22725</td>
<td>0.2945</td>
</tr>
<tr>
<td>Extrovert</td>
<td>0.05447</td>
<td>0.0286</td>
<td>-0.23343</td>
<td>0.6142</td>
</tr>
</tbody>
</table>
Individual Performance and Personality Types and Interpersonal Relationships

- There was a positive correlation between individual performance and expressed inclusion of interpersonal relationships.
- There was a positive correlation between individual performance and judging type of personality type.
- There was negative correlation between individual performance and feeling and perceiving type of personality types.

Table 3.9: Correlation between FIRO-B and MBTI

|                          | Pearson Correlation Coefficients | Prob > |r| under H0: Rho=0 | Number of Observations |
|--------------------------|----------------------------------|--------|------------------|------------------------|
|                          | Extroversion-Introversion | Sensing-Intuition | Thinking-Feeling | Judging-Perceiving |
| Expressed Inclusion      | 0.03738                        | -0.04466        | 0.02321          | -0.00905               |
|                          | 0.1782                         | 0.1076          | 0.4033           | 0.7444                 |
|                          | 1299                           | 1299            | 1299             | 1299                   |
| Wanted Inclusion         | 0.07079                        | -0.00352        | 0.04693          | 0.01573                |
|                          | 0.0107                         | 0.8991          | 0.0909           | 0.5711                 |
|                          | 1299                           | 1299            | 1299             | 1299                   |
| Expressed Control        | -0.01462                       | 0.03776         | 0.00265          | 0.01352                |
|                          | 0.5985                         | 0.1737          | 0.9240           | 0.6263                 |
|                          | 1299                           | 1299            | 1299             | 1299                   |
| Wanted Control           | 0.00948                        | 0.07192         | 0.05613          | 0.02857                |
|                          | 0.7329                         | 0.0095          | 0.0431           | 0.3036                 |
|                          | 1299                           | 1299            | 1299             | 1299                   |
| Expressed Affection      | -0.00040                       | 0.03364         | 0.05922          | 0.00406                |
|                          | 0.9884                         | 0.2257          | 0.0328           | 0.8838                 |
|                          | 1299                           | 1299            | 1299             | 1299                   |
| Wanted Affection         | 0.08192                        | 0.00486         | 0.01267          | 0.03889                |
|                          | 0.0031                         | 0.8612          | 0.6482           | 0.1613                 |
|                          | 1299                           | 1299            | 1299             | 1299                   |

Quality of Work Life in National Agricultural Research System

An individual’s life cannot be compartmentalized and any disturbance in the personal life will affect his/her professional life and vice-versa. Therefore, organizations have started to focus on the overall development and happiness of the employee and reducing his/her stress levels without jeopardizing the objectives and economic health of the company. An attempt was made to identify the factors influencing quality of work life and to assess the status among scientists and faculty members in the National Agricultural Research and Education System.

Achievements:

The data collected from 220 respondents from NARES were analyzed for different parameters of quality of work life. Factors influencing general wellbeing, homework interface, job career satisfaction, control at work, working conditions and stress-induced quality of life were explored through personal interviews.

The efforts to explore extrinsic and intrinsic factors influencing the quality of work life revealed that the stability of the job and salary / pay are the most important determinants of job satisfaction having direct bearing on quality of work life. The physical facilities (laboratory and office) and the autonomy given by the head of the institution at the work place perceived to be adding more value to the work life. Among the intrinsic factors of an individual, the level of technical and managerial skills, the ability to take the challenge of the assignment, the individual commitment, and his/her discretionary power influenced the quality of work life. The leadership support and his/her supervisory
style played a determining role in perceiving the quality of work life. The dissatisfaction in the interpersonal relations between the cadre (scientific – administration interface) and no proper grievance handling procedure adopted among the employees perceived to affect the job satisfaction negatively and, in turn, the quality of work life. Many respondents felt that the flexi-timing with accountability and responsibility would help to attain work-life balance (Figure 3.16).

![Figure 3.16: Quality of Work Life (QWL) Performance Model](image)

**Figure 3.16: Quality of Work Life (QWL) Performance Model**

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**Development of Knowledge Management Portal for Agrobiodiversity**

The objective of the project was to develop a knowledge management portal for the agricultural biodiversity of Andhra and Telangana. The portal development was aimed at developing the website - AKMP - Agrobiodiversity Knowledge Management Portal.

**Achievements:**

The portal provides a databank of agricultural biodiversity resources of Andhra Pradesh and Telangana States and contains information such as phylum, class, tribe, order, common name, scientific name, habitat, distributions, Telugu name, seed traits, and economic importance of cultivable crops in Andhra Pradesh.
and Telangana; and data on crops grown, source of irrigation, yield particulars, input use, cropping pattern, incidence of pests and diseases, employment pattern, constraints faced, etc. The AKMP is rich in information. The AKMP provides the administrator to create users with permissions to access and upload the data of their respective area of work.

The portal is targeted to a wide range of users which includes State Biodiversity Boards and Line Departments of Andhra Pradesh and Telangana, policy makers, scientists, researchers, and general public. The Web page interface is interactive and is designed keeping general public in mind for easy access of their desired data. The database is very rich and up-to-date with information from latest State-wise statistical Census and other data from Line Departments, IIMR and IIRR. The details of the information contained in the portal are shown in Figures 3.17 and 3.18.

The database page provides general information, agricultural biodiversity resource information, research and publication. The database contains more than 3,500 records and the details such as endemic species, threatened species, cultivated crop species, and passport information for sorghum and minor millets. This portal would be updated on a regular basis, so that it will provide current status about the agro-biodiversity resources, which could be useful to scientists, research scholars, researchers, academicians and policymakers.

The objectives of this project were to collect information on price forecasting models utilized for different agricultural commodities used at present; to identify parameters influencing commodity-wise price forecasting; and to test these models under market conditions using live datasets. Thereafter, development of case studies on price forecasting for use in training programmes, and to recommend suitable models for price forecasting.

Achievements:
The generalized autoregressive conditional heteroskedastic process (GARCH) and its predecessor, the autoregressive conditional heteroskedastic process (ARCH) were useful for modelling a variety of time-series phenomena because many time-series variables exhibit autocorrelation as well as dynamic heteroskedasticity. Soybean, sorghum, and wheat prices were estimated and their forecasting performance was evaluated in comparison to Bollerslev's normal-error (N-GARCH) and t-GARCH Models. It was proved that prices of agricultural commodities are more volatile than those of the non-farm commodities. These commodities are less elastic to price and income and inherently unstable due to weather and institutional risks.
A study was undertaken to understand the competitiveness in the major onion markets considering area, production and productivity trends, analysis of market structure, market margins, cost of production, institutional support, price volatility, etc. Various time series models such as ARIMA Time Series Models, Structural Time Series Models (STM), Non-Linear Time Series Models, ARCH, GARCH, TAR, STAR, and SETAR family of models were utilized for forecasting of agricultural commodities wherein lot of volatility is present. These models of time series family were developed by identifying the relevant parameters such as production, support price, procurement, rainfall, irrigation, technology, etc. that influence the price. Here, yield is a function of rainfall, fertilizer consumption, irrigation, technology, and other influencing parameters that determine the prices of commodities. Development of case studies for teaching in various training programmes is in under process.

3.3 Externally Funded Projects

Implementing Agricultural Science and Technology Indicators (ASTI) Data Collection and Policy Analysis in India

The objectives of this project were to assess the role of agencies involved in agricultural R&D in India, including those in the Government, non-profit and private for-profit sectors; to identify the output and performance indicators of key agricultural R&D agencies in India; to provide a short overview of the institutional and agricultural science and technology policy developments in recent years, including the institutional changes that various agencies have undergone; and to collect the input survey data in the ASTI data management tool and prepare a country note on recent trends in agriculture R&D inputs, outputs, and performance in India.

Achievements:

Agriculture Science and Technology Indicators (ASTI) from the International Food Policy and Research Institute (IFPRI) is an initiative to globally address the problem of availability of information on trends in public R & D investments. Since 2000, IFPRI is solely working on periodic survey rounds on agricultural science and technology indicators, which is widely considered as the most authentic source of information. The present study is a collaborative initiative of ICAR-NAARM and IFPRI to understand and assess the role of agencies involved in agricultural R&D in India, including those in the Government, non-profit, and higher education sectors with the help of identified indicators in agricultural science and technology. This is the third round (2009-10 to 2013-14) of the survey being conducted in India. The indicators abbreviated as ‘ASTI’ include attributes pertaining to: (i) human resources; (ii) financial resources; (iii) research focus, and (iv) research outputs.

**Human Resources in Public Agricultural R&D Institutions:**

- The total share of the doctorates is more in ICAR Institutions (84%), as compared to Universities (62%). Results also indicated that ICAR has more researchers with doctorate degree at the early stages of their career; while in agricultural universities (AUs), the researchers qualified with master’s degree at the entry and they undergo doctorate programmes later in service (Figure 3.19).

- The share of female researchers is 21 per cent in AUs and 19 per cent in ICAR System. The maximum share of researchers in ICAR is in 41-50 age category (39%), and in AUs they are below 31-40 years (49%) category.

- ICAR research staff is mostly (62.7%) engaged in research, whereas AUs staff devote equal time in teaching and research that accounts for 35 per cent each, followed by training & extension (17.4%), Figure 3.20. The ratios of technical, administrative and other support staff to research staff in ICAR (0.64, 0.63, and 1.22, respectively) are better than in AUs (0.11, 0.29 and 0.42, respectively).
The trend in capacity building programmes per researcher in ICAR increased (National: 0.22 to 0.31; International: 0.04 to 0.07), while in AUs it fluctuated during the period (National: 0.47 to 0.32; International: 0.11 to 0.06).

Financial Resources in Public Agricultural Research:
- The expenditure of ICAR has progressively increased by about 31 per cent during the period 2009-14; while in AUs, it increased by 7.38 per cent (Table 3.10).
• In ICAR, the share of expenditure on salaries of researchers was 61 per cent, and in AUs 66 per cent. Conversely, the share on operating and programme costs was higher in ICAR (24%) than in AUs (17%).

• Resource generation was more through the sale of farm produce, diagnostic kits, etc. and other commercializable products in AUs (66%), while in ICAR this was (61%) mainly through the grant of research projects (institutional charges), as indicated in Figure 3.21.

**Research Focus in Public Agricultural Research System:**
Researchers devote more time on agricultural crops including horticultural crops (49.7%), followed by livestock and poultry (18.6%), non-commodity categories (14.8%), and fisheries (8.1%) in ICAR Institutions. ICAR researchers devote considerable time on research in non-commodity categories such as natural sources, social sciences, frontier sciences, etc., as they have separate Institutions working on these aspects. Similarly, in AUs, research faculty devote more time on agricultural crops (40.4%), followed by livestock and poultry (32.7%), fisheries (9.6%), and non-commodity categories (6.3%). Closer look at crop sector data revealed that AU researchers devote more time on cereals (13.6%) and pulses (7.5%) than their colleagues in ICAR.

**Research Outputs from Public Agricultural Research:**
• As a whole, 15.41 crop varieties, 4.44 animal/fish breeds and lines, 15.00 microbes/ transgenics, and about 11.67 technologies/ non-crop products were developed and released by an ICAR Institute in respective SMDs during the period 2009-14.
Similarly, in AUs 20.1 crop varieties, 2.4 animal/fish breeds and lines, and 20 technologies/ non-crop products were released/ developed.

The productivity of researchers in terms of research papers in National and International Journals and e-publications/open access articles in ICAR witnessed a positive trend. On an average, the researcher in ICAR produces 1.97 and 0.87 papers in National and International Journals per annum, respectively.

**IP Management and Transfer/ Commercialization of Agricultural Technology Scheme (ITMU) and Zonal Technology Management Centre (ZTMC)**

The objectives of this project were to develop a modelling framework to valuate intellectual assets and technology developed in public research systems (in general) including NARES (in particular); to develop a Decision Support System for Technology Valuation in various platforms (Excel, VB, Visual C++ etc.); to assist needy scientists in NARES for IP search, analysis and filing; and to facilitate technology transfer and commercialization under NARES.

**Achievements:**

A research sub-project on ‘Development of Decision Support System for Strategic Management of Technology’ was taken up as part of the ITMU project. The collected data through ‘Google Forms’ and personal visits were sorted and categorized into 22 sub-divisions under 5 major divisions - Agricultural Engineering and Electronics, Horticulture, Crop Science, Animal Science and Fisheries. The data were further analyzed and charts were made (Figure 3.22). A pyramid type valuation framework approach was proposed with four different levels- (i) Foundation level (ii) IP Profile level (iii) Methodology level(iv) Solution or Deliverance level. Five case studies were also developed for testing this valuation pyramid with several levels of qualitative and quantitative approaches. Two novel technologies were valuated for ICAR’s Agrinnovate India Ltd., and also recommended pricing strategy for the same.

In this study, three major types of quantitative analysis for technology valuation, viz. Cost Method, Market Method and Income Method, were used. The subcategories of the Income Method-Royalty and Profit-Spilt methods, were employed. Therefore, four methods were used in...
the software decision making tool.

Based on the proposed framework, four flowcharts were developed (Figure 3.23) using a third party app; draw.io. (https://www.draw.io/) and subsequently a Web-based tool for technology valuation was designed, coded and developed (Figure 3.24). The software tool provides value of the technology in INR using three standard methods of technology valuation. The required input data may be filled by the user or can be fetched from the database based on the technology category. The software was tested and uploaded in the Web for public usage as it will be of immense use for researchers, licensors, licensees, and business/technology firms to arrive at the value of the newly developed technology.
Application for grant of Copyright was filed for this software.

With respect to other activities of ITMU/ZTMC, prior-art search services were undertaken from diverse stakeholders of NARES. During the period under report, preliminary prior-art searches were conducted and reports generated for the following Institutions:

- KVK, Reddipalli, Ananthapuram, Andhra Pradesh
- ICAR-VPKAS, Almora, Uttarakhand
- ICAR-NIANP, Adugodi, Bengaluru
- Mahatma Phule Krishi Vidyapeeth (MPKV), Rahuri, Maharashtra
- ICAR-IIOR, Hyderabad

Apart from these, filing for patents and copyrights was facilitated for several clients (ICAR, SAUs and grassroots innovators in the various IP Offices), as under:

- Facilitated Trademark filing for a start-up Company.
- Assisted in filing a Copyright application for NAARM-TBI client.
- Assisted in filing 3 Patent applications for different organizations including a grassroots innovator.
- Assisting in filing “request for examination” for one published Patent application.

As part of ZTMC activities, organized a “Grassroots Innovators Meet” on 19.03.2016 at NAARM, Hyderabad, in collaboration with Pallesrujna (NIF), Hyderabad, with a participation of more than 30 grassroots and rural innovators. The following activities were also undertaken as part of the ITMU/ZTMC projects:

- Visit to ITMU and Centre of Excellence- Millet-based Food Products at IIMR, Hyderabad, as part of PGDTMA contact session
- Conducted an Off-Campus Training programme on “Priority Setting, Monitoring & Evaluation & Technology Management” at Central Eri & Mugu Research Institute (Central Sericulture Board) at Jorhat, Assam.
- Conducted IP search practical for FOCARS scientists and PGDMA students.
- ITMU Team participated in Roving Seminar on the Patent Cooperation Treaty (PCT) organized by WIPO at Hyderabad.

Establishment of Agri-Business Incubation (ABI) Centers under XII Plan Scheme for National Agriculture Innovation Fund (NAIF)

The objectives of this project were to act as “Help Desk” for ABI’s in all aspects with reference to technology commercialization, incubation, entrepreneurship development, capacity building, and other facilitations required for advancing the objectives of IPTM activities including PME, innovation fund and incubation fund; and to organize capacity building programmes on Technology Transfer, IP Management, Business Incubation, and Entrepreneurship Development.

Achievements:

Acted as the ‘Help-Desk’ for ABI’s in all aspects with reference to technology commercialization, incubation, entrepreneurship development, had coordination meeting with ICRISAT, and developed procedures for ABI Help Desk services. Visited nine ABIs to prepare readiness report and develop the Standard Operating Procedures (SOP), and a draft SOP was prepared. Under this project, a Sensitization Workshop for Agri-Business Incubation Units in ICAR Institutes (21-22 March 2016) was organized at NAARM, Hyderabad, in which 22 ICAR – ABIs participated. An ABI Cell is under establishment with works/equipment worth of Rs. 17.15 lakh.

Sensitization Workshop on Agribusiness Incubation
4 **Enhancement of Teaching Competency through Distance Learning**

This project aimed at developing a suitable course for enhancing teaching competency through distance learning mode and assessing the effectiveness of distance learning. Under this project, seven courses on Educational Technology were finalized and draft resource materials were prepared to launch ‘Post Graduate Diploma in Education Technology and Management’ through distance learning mode to enhance the teaching competency of faculty in AUs.

5 **Impact of ICT on Agricultural Education in India**

This project aimed at documenting the status of various ICT tools in agricultural education, studying the impact of ICT tools in teaching and learning process, and also identifying the factors that are responsible for adoption of ICT tools in agricultural education. Based on the findings, it was decided to device a future roadmap for strengthening ICT in agricultural education in the country, and to develop suitable ICT tools. The study is proposed to be conducted in the States of Gujarat, Rajasthan, Madhya Pradesh, and Jammu & Kashmir. The expected output of the project is documentation of the ICT resources in Agricultural Education, identification of the indicators and methodology for impact assessment, and policy implications for enhanced utilization of ICT tools in Agricultural Education.

6 **KRISHI: ICAR Research Data Repository for Knowledge Management**

The project was initiated to operationalize data management policy in ICAR. The major objectives of the project were to develop repositories of proven technologies, publications, as well as research data repositories of experimental, observational and survey data. These repositories would enable ICAR to effectively manage and utilize data generated and manage the knowledge generated. Another important objective of this project was to strengthen spatial data infrastructure and create a geo-portal for visualization and analysis of spatially referenced data. The project is funded by ICAR as Plan activity with IASRI, NAARM, IARI, and NBSS&LUP as the major partners.

**Achievements:**
A Web-portal called Knowledge based Resources Information System Hub for Innovations in Agriculture (KRISHI) was created and made available at www.krishi.

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**Figure 3.25: Proposed Structure of ICAR Geoportal**

- Technology Repository
- Geoportal
- Publication Repository
- Experimental Data Repository
- Survey Data Repository
- Observational Data Repository
The objectives of this project were to develop appropriate methodology to create, edit and publish the educational information for offline and Web-based modes, and to develop the capacity building strategies to construct technology enhanced content in appropriate format.

Achievements:
- Establishment of model TEL Lab at NAARM with high end production equipment integrating hardware and software resources and three Labs at PJTSAU, TANUVAS, DRNVJIRD.
- In line with the basic purpose of Niche Area of Excellence (NAE) project, outputs and infrastructure are efficiently integrated for all the Institute mandated activities besides helping Consortia partners and others to use the facility. Institute mandated activities supported are like micro teaching, oral communication and other exercises on educational video production for different groups of trainees like Foundation Course for Agricultural Research Service (FOCARS), Foundation Course for Faculty of Agricultural Universities (FOCFAU), Management Development programme (MDP) for newly recruited PCs of KVKs, Faculty Development Programme (FDP) on Educational Technology covering 301 beneficiaries.
- Continuous live contact sessions for distance education course i.e. PGDTMA using A-VIEW, were conducted at Hyderabad and Delhi simultaneously. With this initial success, II Semester of PGDTMA contact sessions was also conducted and run successfully. The concept resulted in reduction of logistic expenses and manpower requirement, better choices for student to choose venue for contact sessions, increase in participation (48%) in distant contact session venue such as Delhi, etc.

Technology Enhanced Learning in Agriculture Education

The objectives of this project were to develop appropriate methodology to create, edit and publish the educational information for offline and Web-based modes, and to develop the capacity building strategies to construct technology enhanced content in appropriate format.

Achievements:
- Establishment of model TEL Lab at NAARM with high end production equipment integrating hardware and software resources and three Labs at PJTSAU, TANUVAS, DRNVJIRD.
- In line with the basic purpose of Niche Area of Excellence (NAE) project, outputs and infrastructure are efficiently integrated for all the Institute mandated activities besides helping Consortia partners and others to use the facility. Institute mandated activities supported are like micro teaching, oral communication and other exercises on educational video production for different groups of trainees like Foundation Course for Agricultural Research Service (FOCARS), Foundation Course for Faculty of Agricultural Universities (FOCFAU), Management Development programme (MDP) for newly recruited PCs of KVKs, Faculty Development Programme (FDP) on Educational Technology covering 301 beneficiaries.
- Continuous live contact sessions for distance education course i.e. PGDTMA using A-VIEW, were conducted at Hyderabad and Delhi simultaneously. With this initial success, II Semester of PGDTMA contact sessions was also conducted and run successfully. The concept resulted in reduction of logistic expenses and manpower requirement, better choices for student to choose venue for contact sessions, increase in participation (48%) in distant contact session venue such as Delhi, etc.

Socio Economic Analysis of Finger Millets in India

The objectives of the project were to study the consumption pattern of finger millet (ragi) in rural and urban areas, and to find out the competitive strength in supply chain in various States for socio-economic analysis.

Achievements:
During the period under report, the team has taken up the work on estimating the shift in ragi consumption among the households in rural as well as urban areas of the major States of India. The household level data on consump-
tion of *ragi*, available from 50th (1993-94), 55th (1999-2000), 61st (2004-05) and 68th (2011-12) rounds of the National Sample Surveys Organization (NSSO) were used for this analysis. Major findings are highlighted here.

**Consumption Pattern of Ragi:**
The consumption pattern of *ragi* across the major States over a period of time is presented in Figure 3.26. The results revealed that Karnataka was the major consumer of *ragi* in India and it accounted for 71.58 per cent, followed by Andhra Pradesh (10.66 %) and Tamil Nadu (7.52 %) during 2011-12. During 1993-94, it was 55.57 per cent in Karnataka, followed by Tamil Nadu (14.16 %) and Andhra Pradesh (10.54 %). The consumption has declined across the States over the years.

The consumption of *ragi* has declined in rural areas over the years sharply across the states; and Karnataka accounts for 67.91 per cent of the consumption, followed by Andhra Pradesh (12.26 %) and Tamil Nadu (7.62 %) during 2011-12. During 1993-94, it was 52.10 per cent in Karnataka, followed by Tamil Nadu (15.11 %) and Andhra Pradesh (10.96 %). The consumption of *ragi* in the urban areas continuously increased from 235,000 tonnes in 1993-94 to 272,000 tonnes in 2011-12 (Table 3.11).

![Figure 3.26: Consumption of Ragi in Major States of India over Years](image)

### Table 3.11: Consumption of Ragi in Rural and Urban Areas of Major States of India over Years

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Andhra Pradesh</td>
<td>198 (10.96)</td>
<td>120 (8.95)</td>
<td>106 (9.11)</td>
<td>92 (12.26)</td>
<td>17 (7.31)</td>
<td>8 (3.20)</td>
<td>14 (5.31)</td>
<td>17 (6.27)</td>
</tr>
<tr>
<td>Karnataka</td>
<td>943 (52.10)</td>
<td>728 (54.51)</td>
<td>761 (65.21)</td>
<td>509 (67.91)</td>
<td>194 (82.37)</td>
<td>216 (86.40)</td>
<td>226 (84.33)</td>
<td>222 (81.70)</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>122 (6.74)</td>
<td>134 (10.02)</td>
<td>62 (5.33)</td>
<td>35 (4.73)</td>
<td>0 (0.00)</td>
<td>0 (0.00)</td>
<td>0 (0.00)</td>
<td>2 (0.00)</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>274 (15.11)</td>
<td>176 (13.17)</td>
<td>149 (12.78)</td>
<td>57 (7.62)</td>
<td>16 (6.82)</td>
<td>16 (6.60)</td>
<td>18 (6.77)</td>
<td>20 (7.26)</td>
</tr>
<tr>
<td>Uttarakhand</td>
<td>2 (0.10)</td>
<td>0 (0.00)</td>
<td>22 (1.85)</td>
<td>12 (1.54)</td>
<td>0 (0.00)</td>
<td>0 (0.00)</td>
<td>0 (0.00)</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>All India</td>
<td>1811 (100.00)</td>
<td>1336 (100.00)</td>
<td>1167 (100.00)</td>
<td>750 (100.00)</td>
<td>235 (100.00)</td>
<td>250 (100.00)</td>
<td>268 (100.00)</td>
<td>272 (100.00)</td>
</tr>
</tbody>
</table>
Table 3.12: Average Monthly Per Capita Consumption of *Ragi* in Major States of India over Years

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Andhra Pradesh</td>
<td>0.340</td>
<td>0.180</td>
<td>0.160</td>
<td>0.136</td>
<td>0.080</td>
<td>0.040</td>
<td>0.057</td>
<td>0.050</td>
</tr>
<tr>
<td>Karnataka</td>
<td>2.530</td>
<td>1.740</td>
<td>1.818</td>
<td>1.130</td>
<td>1.160</td>
<td>1.050</td>
<td>1.084</td>
<td>0.784</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>0.210</td>
<td>0.200</td>
<td>0.093</td>
<td>0.048</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>0.620</td>
<td>0.420</td>
<td>0.356</td>
<td>0.128</td>
<td>0.070</td>
<td>0.050</td>
<td>0.055</td>
<td>0.047</td>
</tr>
<tr>
<td>Uttarakhand</td>
<td>0.030</td>
<td>0.000</td>
<td>0.285</td>
<td>0.137</td>
<td>0.000</td>
<td>0.000</td>
<td>0.003</td>
<td>0.001</td>
</tr>
<tr>
<td>All India</td>
<td><strong>0.240</strong></td>
<td><strong>0.150</strong></td>
<td><strong>0.131</strong></td>
<td><strong>0.075</strong></td>
<td><strong>0.090</strong></td>
<td><strong>0.070</strong></td>
<td><strong>0.076</strong></td>
<td><strong>0.060</strong></td>
</tr>
</tbody>
</table>

*Source: NSSO*

The results revealed that the average monthly per caput consumption of *ragi* at All India level was 0.075 kg in rural areas and 0.060 kg in urban areas during 2011-12, while it was 0.240 kg and 0.090 kg, respectively, during 1993-94. State level analysis on consumption of *ragi* revealed that Karnataka was the major state in terms of *ragi* consumption in both urban and rural areas (Table 3.12). Similar pattern was observed in the production of *ragi* across the States. Nearly 66 per cent of the *ragi* was produced in Karnataka.

### 3.4 Consultancy Research Projects

During the year under report, the Academy was awarded five consultancy assignments from the Planning Commission, New Delhi; Research Information System (RIS), New Delhi; RKVY Scheme of the Government of Telangana; RKVY Scheme of the Government of Andhra Pradesh; and Guidelines for Socioeconomic Assessment of LMOs. Among these, two projects were on impact evaluation (MGNAREGA and RKVY), two were on developing SAIDP plan for the Government of Telangana and Andhra Pradesh each, and one was on developing guidelines for socioeconomic assessment of LMOs. The objectives and achievements in brief under these projects are presented in this Section.

#### Impact Evaluation of RKVY Funded Research Projects Implemented by Agricultural Universities in Telangana State

The project sponsored by the Government of Telangana under the RKVY Scheme was taken up with the objective of evaluating the impact of the RKVY projects implemented by the Agricultural, Horticultural and Veterinary Universities in Telangana.

**Achievements:**

A descriptive research design protocol method with a combination of methods like brainstorming workshops, consultative meetings, focus group discussions, structured interview surveys, and desk study of project documents formed part of methodologies followed in this study. Based on extensive literature review and discussions with a cross section of RKVY stakeholders, seven indicators were identified for evaluating the outputs and impacts. Relative performance of the 13 sampled projects was assessed using Analytical Hierarchy Process (AHP). A workshop was organized on 17 November 2015 at the Academy to share the results of the study with the stakeholders and get their feedback.

**Major Research Findings:**

- Research-oriented projects and projects with wider applicability (like watershed management, farm mechanization, and seed production) performed better than development or service-oriented projects.
- The dovetailing of research outputs with on-going schemes is a key strategy for achieving higher outcomes.
- Outputs of research projects pertaining to low-cost animal feed, value addition and marketing of millet-based products, poly-houses for horticulture offer immense potential for large-scale adoption.
by appropriate linkage and convergence with outreach wings of Universities, State Development Departments and Farmer Producer Organizations.

**Major Recommendations:**

- There is a need to evolve appropriate ‘intervention uptake pathways’ for translation of project outputs into outcomes. The interface may be with an organization, agent or entrepreneur who can take up the task of meeting the demands of stakeholders.
- There is a strong need for Competitive Mode of Research Funding under RKVY Scheme so as to fund the high priority projects.
- There is a need for consolidation of projects. Several projects were taken up (split to sub-project level) with meagre budget and without noticeable impact. There should be only one or two big projects in each University with limited duration of 2 to 3 years which have direct impact on stakeholders like farmers, agents or entrepreneurs in the short-run.
- Technology commercialization by appropriate partnership arrangements is essential to scale-up the intervention for large-scale impacts.

**RKVY- State Agriculture Infrastructure Development- Andhra Pradesh**

The study was sponsored by the Government of Andhra Pradesh and aimed at preparing the agricultural infrastructure development plans for strengthening the sector, district wise and pooled State agricultural infrastructure development for the State of Andhra Pradesh.

**Achievements:**

A diligent process of stakeholder involvement in a bottom-up approach was adapted as part of methodology. Farmers and all players in the Line Department and markets were involved in this exercise. The present state of infrastructure was reckoned first, then the assistance provided under RKVY in the past and the requirement to fill the gaps in the next four years, i.e. up to 2018-19 were estimated. Based on results, 13 District Reports and one State Plan Report were prepared.

The State Agriculture Infrastructural Development Plan for the period 2015-16 till 2018-19 was calculated to be Rs 3,41,714 million, of which the District Plan component was 78 per cent and the State Plan component was 22 per cent (Figure 3.27).

![Figure 3.27: State and District Plan Outlay under RKVY](image-url)
The District Agricultural Infrastructure Development Plan Report comprised General Profile of the District, Agricultural Profile, Agricultural Infrastructure Status, Infrastructure Developed in the first 3 years of XII Five Year Plan, Proposed Infrastructure Development, Strategies Proposed for Agricultural Infrastructure Development, and Conclusions and Recommendations. The infrastructure across the sectors viz. Agriculture (Pure Field Crops), Horticulture, Sericulture, Animal Husbandry, Dairy, Fisheries, Marketing, etc. were assessed; and demand for augmenting the same with financial implications were estimated depending on the status, past assistance and the future potential and need. These plans will form the basis for assistance of funds on a project mode under Rashtriya Krishi Vikas Yojana (RKVY) for the Districts and the State of Andhra Pradesh.

### Evaluation Study on Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) in Gujarat State

The study was funded by the Government of India, and it aimed at assessing how the MGNREGA Schemes implemented in the selected project areas of Gujarat State have been effective in providing livelihood support to the families on a sustained basis and checking distress migration.

**Achievements:**

Field study was undertaken in two Districts spread over in South Gujarat Region covering four Blocks, twelve Gram Panchayats, 670 beneficiary and non-beneficiary families, and 767 respondents. Investigations and queries revolved around mainly on the MGNREGA Schemes for which data were available in the study areas. In the course of conducting field work, the research team solicited the opinion and feedback of various stakeholders involved in implementation of the MGNREGA Schemes on different issues/aspects starting from grassroots level planning in the project areas.

#### Table 3.13: Asset Verification at Gram Panchayat (GP) Level for Gujarat State

<table>
<thead>
<tr>
<th>District</th>
<th>GP Gram Panchayat</th>
<th>No. of Sample Assets Selected and Visited</th>
<th>No. of Assets Found Missing</th>
<th>% of Missing Assets at GP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Completed</td>
<td>On-going</td>
<td>Total</td>
</tr>
<tr>
<td>Bharuch</td>
<td>Danda</td>
<td>5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Shrikothi</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Tegva</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Bhadkodara</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Gajera</td>
<td>5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Tankari</td>
<td>5</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>25</td>
<td>3</td>
<td>28</td>
</tr>
<tr>
<td>Surat</td>
<td>Ambavadi</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Boriya</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Vankal</td>
<td>5</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Bilvan</td>
<td>5</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Pada</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Umara- khadi</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>22</td>
<td>17</td>
<td>39</td>
</tr>
<tr>
<td>Grand Total</td>
<td></td>
<td>47</td>
<td>20</td>
<td>67</td>
</tr>
</tbody>
</table>

*Note: Information on village-wise missing assets were obtained from respective village Sarpanch at Taluka Development Officer (TDO); *Average Per cent
some places, on-going activities were also investigated to gather necessary information for this study.

The details of assets verified and missing assets (Table 3.13) revealed that of the 67 assets selected for the study, 47 assets were completed and 20 assets were on-going at the time of the study. It might be noted that 12 assets were missing as verified during field visits in the sample villages. These missing assets were in the category of drought proofing (Vanikaran) and rural connectivity (Kuchha road) work in the villages. The justification of the missing assets was given by the villages Sarpanch that, South Gujarat is a high rainfall zone and because of heavy rains during the last two to three years in both the Districts, assets were damaged and became almost non-existent due to run off. Rajiv Gandhi Seva Kendra (RGSK) too was included in incomplete assets list because creation of this asset required more expenditure on the materials and the Government had banned this type of project and the fund was not released accordingly.

The records on quantum of work left out under the Scheme were not reported by any of the Gram Panchayats, or Taluka in Bharuch District. Only Surat District has maintained this record, and quantum of work left out for this Surat District is given in Table 3.14.

Work completion rate of the various works vary from nil to 100 per cent (Table 3.14). Irrigation work was the only asset which has 100 per cent completion rate in the Surat District. Water harvesting is another asset which has the highest completion rate after irrigation. Obviously, these two categories of assets seemed to have contributed to increase the agriculture productivity. During the focussed group discussion villagers revealed that in the initial period of the programme more emphasis was given on drought proofing and rural connectivity work, which did not involve permanent or semi-permanent structure and hence, they got washed away by the rains over a period of time.

<table>
<thead>
<tr>
<th>Name of Assets</th>
<th>Works Taken Up (Number)</th>
<th>Completed (Number)</th>
<th>Stopped in Between</th>
<th>Completion Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural Connectivity</td>
<td>2017</td>
<td>1715</td>
<td>302</td>
<td>85.03</td>
</tr>
<tr>
<td>Flood Control</td>
<td>1277</td>
<td>503</td>
<td>774</td>
<td>39.39</td>
</tr>
<tr>
<td>Water Conservation and Water Harvesting</td>
<td>6636</td>
<td>6505</td>
<td>131</td>
<td>98.03</td>
</tr>
<tr>
<td>Renovation of Traditional Water Bodies</td>
<td>668</td>
<td>469</td>
<td>199</td>
<td>70.21</td>
</tr>
<tr>
<td>Drought Proofing</td>
<td>1945</td>
<td>1743</td>
<td>202</td>
<td>89.61</td>
</tr>
<tr>
<td>Irrigation Canal</td>
<td>49</td>
<td>49</td>
<td>0</td>
<td>100.00</td>
</tr>
<tr>
<td>Irrigation Facilities to SC/ ST/ IAY/ LR</td>
<td>840</td>
<td>422</td>
<td>418</td>
<td>50.24</td>
</tr>
<tr>
<td>Land Development</td>
<td>257</td>
<td>251</td>
<td>6</td>
<td>97.67</td>
</tr>
<tr>
<td>RGSK</td>
<td>123</td>
<td>0</td>
<td>123</td>
<td>0</td>
</tr>
</tbody>
</table>

This consultancy assignment was awarded through competitive proposal by the Department of Agriculture, Government of Telangana. The study was undertaken to assess the available research and extension infrastructure, forecast the technological and infrastructural requirements in the Telangana State, and suggest best approaches/practices for technology enabled agricultural research and extension along with financial outlay for sustainable livelihoods of the farming community. Finally, a set of recommendations for activities to be taken up under the Rashtriya Krishi Vikas Yojana (RKVY) were to be given.

Achievements:
Personal interviews, questionnaire, stakeholders’ workshops, focused group opinion analysis using
Analytic Hierarchy Process (AHP) were the major methods of primary data collection. The study approach was finalized after personal interviews with research policy functionaries including Dr A.K.Singh, DDG (Agricultural Extension), Dr S.Mauria, ADG (IPTM) and Mr Jayesh Ranjan, IAS, Secretary, Information Technology, Electronics and Communication, Government of Telangana. The expert opinion on study was taken from Dr Panjab Singh, former Secretary, DARE and DG, ICAR, Government of India.

Agroecosystem scenario in each KVK, and current status of Information Technology (IT) infrastructure, general infrastructure and IT Enabled Services (ITES) was collected through a questionnaire administered to all the 13 KVK Programme Coordinators. The KVK Websites were also evaluated on 25 parameters through online search method. The existing average score was 11-27 per cent under various sub-heads (Figure 3.28), it is suggested to increase it to the tune of 50 per cent through creating innovative service delivery mechanisms – Web-based reporting (OFT, FLD, etc.), eLearning modules, eContent, online farm advisories (crop, weather, market), ICT facilitated agripreneurship, strengthening of the Government of India ePlatforms such as ‘farmer portal’, soil health card-MIS, mkissan etc.

Based on the identified criteria for evaluation, which method is best suited for communicating the agricultural technologies to the farmers? (i) Field Demo available at Research Station or at KVK- FDRS, (ii) Field Demo available at Farmer’s Field- FDFF, (iii) Virtual Demo available on Internet or Kiosk- VDIK, and (iv) Virtual Demo in Mobile or through SD Card- VDMC. The scientists felt that top method happened to be demonstration at farmers’ field, followed by virtual demonstrations through mobile or SD cards. As presented in Figure 3.29, the opinion of both middle and senior level scientists were same in this matter.

The futuristic ICT infrastructural activities as given in Figure 3.30, interventions for skill development must be the top priority. ICT interventions for quality input and consolidation of farmers can be given more weightage in irrigated agro-ecosystems, followed by peri-urban areas and dryland areas. Therefore, ICT interventions in terms of research and extension can be designed accordingly.

On the basis of data collected through various workshops, a model for consolidation of farmers was suggested, as depicted in Figure 3.31.
Through several workshops conducted, discussions with experts under the project and primary data analysis, it emerged that ICTs use generate demand for more ICT based technological services; simultaneously, the delivery mechanisms to be developed for flow of the services through ICT applications for fulfilling the farmers’ requirements. The rich picture of stakeholders’ network generated is presented in Figure 3.32.

The comprehensive report (http://eprints.naarm.org.in/id/eprint/169) with 27 recommendations and action framework with a financial outlay of Rs 1,120 million to be implemented in phased manner was submitted to the Government of Telangana. Following are the major recommendations emanated from the study:

- Developing KVKnet as independent Website for KVKs with Web based dynamic data platform.
- Developing integrated data center with application databases for ICT enabled data access to KVKs,
Figure 3.31: Proposed Model for Farmers’ Consolidation

Figure 3.32: Stakeholders’ Networks for ICT Based Service Delivery
ATMA and DAATTCs. The facility may be named as ‘Farm Health Management System’; strengthening DAATTCs for village level information network, database development and maintenance.

- Generating demand for ICTs in agricultural research and extension, social mobilization through digital literacy, taking eContent development and validation in mission mode, and use of ICTs in agripreneurship through farm demos.
- Operationalization of value chain and supply chain based on Farm Database and Farmer's Database (village as the unit); DAATT Centre to play a major role.
- Farmers’ consolidation: Immediate initiatives for ICT applications for creating SHG/CIG/FPO, training and capacity building, and for providing forward and backward linkages; DAATT Centers and SAMETI can take lead with KVKs.
- Developing laboratories in cutting-edge technologies such as Technology Enhanced Learning in Agricultural Education (TELAgE)-cum-Video Instructions & Production Lab (VIPL) and Geographical Information System (GIS) in each of the three SAUs, i.e. agricultural, horticultural, and veterinary universities. NAARM may take up capacity building of faculty members to run these laboratories.
- Creating laboratories, experimental glass houses/polyhouses and information labs in the newly created horticultural and veterinary universities.
- Modernization of research laboratories and creating experimental glass/polyhouses at grassroots organizations such as ARI, RARS, DAATT& KVKs in PJTSAU.
- In ATMA, SAMETI, KVKs, DAATTCs, and Regional Stations, need for upgradation of IT infrastructure with latest hardware/accessories and communication tools.
- Pilot project on developing ‘Farm eLibrary’ at Village/Mandal Panchayat as Agricultural Knowledge Resource Center; each KVK to develop it at two villages and one Mandal; SAMETI/ State Institute of Rural Development (SIRD) can take this as project under PPP mode.

Developing Guidelines and Methodologies for Socio-Economic Assessment of LMOs

The project was initiated at RIS as the Lead Partner and six other institutions as Partners. ICAR-NAARM is one of the partners who is entrusted to work in Telangana Region to fulfil the objectives of the project.

Achievements:

Maize and brinjal crops were shortlisted for NAARM to assess the socio-economic acceptability by the farmers of Telangana. Data of 250 farmers revealed that the losses due to weeds in maize are high. Weed management is very difficult in early stages of the crop. Labour availability is constrained. Farmers revealed that the weeding is either very difficult or very costly. Therefore, the weed tolerant crops are required. LMOs can be one such alternative. In brinjal, the major insect is fruit borer, causing loss as high as 60 per cent. Insecticides are to be applied at proper time (flowering stage). Lack of awareness and timely availability of proper insecticide at proper time are the major constraints. There is need for crops that can have high resistant to such insect attack.

Farmers really wanted alternative crop varieties (HYV, Hybrid, GM, etc.) in different crops, which can increase the profitability of farming. These can be done either by reducing the cost of cultivation or by increasing the yield. Farmers' opinion study showed that they are ready to adopt new technologies that would enhance profitability and reduce labour requirement. Farmers also are of the opinion that the new varieties (GMOs, LMOs) should have proper environmental safety precautions and the Government should be very strict in that.
Academics
4.1 Post Graduate Diploma in Management (Agriculture)

The Post Graduate Diploma in Management (Agriculture) - PGDMA is a two year, fully residential programme approved by the All-India Council for Technical Education (AICTE). This programme is designed to contribute a new generation of young agri-business managers with a holistic perspective of agriculture and agribusiness, and with capacities to find tangible solutions to challenges faced by the stakeholders of this sector. The programme grooms students as potential managers and provides value addition in terms of functional expertise, entrepreneurial acumen, service orientation, and general management perspective so that they are better equipped to take leadership roles and steer the transformation of agriculture in India.

The Sixth Batch of PGDMA (2014-16), comprised 17 students hailing across the country. The students passed

Table 4.1: Details of Study Projects Undertaken by Students of 2014-16 Batch

<table>
<thead>
<tr>
<th>Name of the Student</th>
<th>Project Title</th>
<th>Guide / Supervisor (NAARM Faculty)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abhishek Mall</td>
<td>SCM, Forest Product Marketing, Microfinance</td>
<td>K.Srinivas</td>
</tr>
<tr>
<td>Ankit Kumar Jha</td>
<td>Guava Supply Chain in AP &amp; TS</td>
<td>K.H.Rao</td>
</tr>
<tr>
<td>Rahul Dukale</td>
<td>Understanding Consumer Behavior Towards the Water Soluble Fertilizers in Developed Fertigation Market</td>
<td>N.Sivaramane</td>
</tr>
<tr>
<td>Ananta Krishna Edara</td>
<td>Purchasing Behavior of Urban Meat Consumers</td>
<td>D.Thammi Raju</td>
</tr>
<tr>
<td>Jaison Mathew John</td>
<td>Development of Flow Charts and Database for Valuation Software on Agricultural Technologies</td>
<td>Manoj P. Samuel</td>
</tr>
<tr>
<td>Javed Akthar Khan</td>
<td>Business Profile Analysis of Agricultural Consultancy Agency</td>
<td>K.Kareemulla</td>
</tr>
<tr>
<td>Karri V.V.Gopal Naidu</td>
<td>Scope of Agri-Tourism in India: Role of Extension and Advisory Services (EAS).</td>
<td>S.K.Soam</td>
</tr>
<tr>
<td>Naga Navya Lalitha D.</td>
<td>Analyzing Agricultural Scenario of Algeria for Launching Kalgudi Mobile Application @ Vasudhaika Software Solutions Pvt. Ltd.</td>
<td>M.Dastagiri</td>
</tr>
<tr>
<td>G.Panneer Selvem</td>
<td>Value Chain Analysis of Ragi in Tamil Nadu</td>
<td>B.Ganesh Kumar</td>
</tr>
<tr>
<td>Rakesh B. R.</td>
<td>Seed Chain Analysis of Ragi in Tamil Nadu</td>
<td>B.Ganesh Kumar</td>
</tr>
<tr>
<td>Richa Kapur</td>
<td>Technology Landscape of Microbial Pesticides in India</td>
<td>R.Kalpana Sastry</td>
</tr>
<tr>
<td>Sanjana Bhowmik</td>
<td>Strengthening of Supply Chain for A2 Milk in Hyderabad</td>
<td>P.Venkatesan</td>
</tr>
<tr>
<td>S.Manikanta Reddy</td>
<td>Analyzing Agricultural Scenario of Ethiopia for Launching Kalgudi Mobile Application @ Vasudhaika Software Solutions Pvt. Ltd.</td>
<td>M.Balakrishnan</td>
</tr>
<tr>
<td>Anand Sanjay Thokal</td>
<td>Consumer Behavior Analysis for Online Grocery Retail Sector</td>
<td>A.Dhandapani</td>
</tr>
<tr>
<td>U.Bhanu Chanvder Reddy</td>
<td>Marketing Strategies for Entrepreneurs in Food Processing Industry</td>
<td>Bharat S.Sontakki</td>
</tr>
<tr>
<td>Upma Dubey</td>
<td>Analyzing Agricultural Scenario of Nigeria for Launching Kalgudi Mobile Application @ Vasudhaika Software Solutions Pvt. Ltd.</td>
<td>S.Ravichandran</td>
</tr>
</tbody>
</table>
out the programme with an average CGPA of 7.75. All of them were placed in leading agri-business companies. During the programme, they were offered 35 Courses in various areas of management, 10-weeks Summer Internships, and a Project Work in the VI Trimester.

The Project Work spans for one Trimester wherein the students take up three-month study project. The projects can be pursued with identified Private Companies or Community Based Organizations (CBOs) under the direct supervision of a faculty guide from the Academy. Details of study projects undertaken by the students of 2014-16 Batch are shown in Table 4.1.

Placements

The Academy witnessed 100 per cent placement of PGDMA (2014-16) students through Campus Placement Services. The placement process was completed before VI Trimester itself, with an average CTC reaching 6.2 lakh INR per annum. The placement process witnessed participation of 10 Companies cutting across the major sectors of agribusiness: Input (Seeds, Fertilizers and Pesticides), Micro-irrigation, Food Retail, Information Technology, Crop Advisory, and IP Consultancy Services. The list of Companies offered placements is shown in Table 4.2.

### Table 4.2: List of Companies Participated in Placement

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Company Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aditya Birla Retail Ltd. (ABRL)</td>
<td>Mordor Intelligence</td>
</tr>
<tr>
<td>Sathguru Management Consultancy</td>
<td>Nagarjuna Fertilizers (NFCL)</td>
</tr>
<tr>
<td>Tata Rallis</td>
<td>Vasudhaika Software Solutions</td>
</tr>
<tr>
<td>UPL</td>
<td>Dhanuka Agri Tech</td>
</tr>
<tr>
<td>Netafim Ltd.</td>
<td>Agriwatches</td>
</tr>
</tbody>
</table>

4.2 PG Diploma in Technology Management in Agriculture- PGDTMA

(Jointly offered by NAARM and the University of Hyderabad in Distance Mode)

Out of 404 students enrolled 134 students have successfully completed this programme, till date. Year-wise data on admissions and passed out students are given in Figure 4.1. Most of the students are in-service candidates representing various Governmental and Non-Governmental Organizations such as ICRISAT, Technology Information, Forecasting and Assessment Council (TIFAC), Planning Commission, Agricultural Universities, University of Hyderabad (UoH), Food Corporation of India (FCI), and State departments.

![Figure 4.1: Number of Admitted and Passed Students in PGDTMA](image-url)
During 2015-16, two Contact Sessions were conducted simultaneously at NAARM, Hyderabad and IASRI, New Delhi during 8-10, August 2015 and 7-9, December 2015. In these Sessions, 55 students attended the First Contact Session including 16 at the New Delhi Center, and 52 students attended the Second Contact Session including 21 at the New Delhi Centre.

Student Projects

As partial fulfillment of the Course, the students take up research study projects. These projects are done with independent research supervisors including NAARM, approved by the University of Hyderabad (UoH). The projects are evaluated by the project evaluators identified by the UoH. It is mandatory to achieve at least 50 per cent marks in project work to receive the PG Diploma. The projects with NAARM Faculty are listed in Table 4.3.

4.3 Post Graduate Degree Students Internship

NAARM Faculty Drs S.K.Soam, M.Balakrishnan and P.D.Sreekanth are guiding three PG students, i.e. Mr Naresh Kumar Jajoriya, Mr Shyoram Yadav and Mr Rajneesh Yadav pursuing M.Sc. (ICT in Agriculture) from SKN Agriculture University, Jobner in Rajasthan. The six-month project internship started in January 2016. The students are working on two projects viz. (i) Developing GIS Based Decision Support System (DSS) for Rice Production and Rice Bran Oil Industries in India, and (ii) Agro Biodiversity for Millet Crop Resources in Andhra Pradesh and Telangana. During the study period, mapping of rice production areas and rice bran consumption status would be done in geospatial environment, and DSS would be developed for suitable locations for rice bran extraction units. For Agrobiodiversity studies, the millets resources will be documented in GIS interactive database and phylogenetics for sweet orange non-ripening gene (NOR) having similar homologues protein sequences with other fruit crops would be studied. The outputs from these studies would be used in training programmes on GIS and bio-informatics.

Table 4.3: List of Study Projects with NAARM Faculty

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Project Title</th>
<th>NAARM Faculty Guide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Samtani Nisha Govind</td>
<td>Organic Farming</td>
<td>P.D.Sreekanth</td>
</tr>
<tr>
<td>Tanvi Sharma</td>
<td>Ten Years Journey of Bt-Cotton in India</td>
<td>Manoj P.Samuel</td>
</tr>
<tr>
<td>Mallesh Goud</td>
<td>A Technology Valuation Model to Support Technology</td>
<td>Manoj P.Samuel</td>
</tr>
<tr>
<td></td>
<td>Transfer Negotiations</td>
<td></td>
</tr>
<tr>
<td>Sweta Garg</td>
<td>Intellectual Property Rights Issues and Challenges for</td>
<td>R.Kalpana Sastry</td>
</tr>
<tr>
<td></td>
<td>Stem Cell Commercialization</td>
<td></td>
</tr>
<tr>
<td>S.Murali Krishna</td>
<td>Sustainable Island Aquaculture and Fish Marketing by</td>
<td>K.Kareemulla</td>
</tr>
<tr>
<td></td>
<td>Shri. Sultan Singh, Haryana</td>
<td></td>
</tr>
<tr>
<td>J.Karpagam</td>
<td>Technology Management of Sorghum Products and Byproducts</td>
<td>P.C.Meena</td>
</tr>
<tr>
<td></td>
<td>for Domestic/Export Market</td>
<td></td>
</tr>
<tr>
<td>Rajni Roop Vasudev</td>
<td>A Case Study for the Regulation of Agri-Horticultural</td>
<td>S.K.Soam</td>
</tr>
<tr>
<td></td>
<td>Products from the State of Telangana as Geographical</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indications</td>
<td></td>
</tr>
<tr>
<td>Prafulla Kumar Mandal</td>
<td>Ascertaining Effective Sequence of Pre-Sowing Pulse</td>
<td>S.Senthil Vinayagam</td>
</tr>
<tr>
<td></td>
<td>Seed Treatment with Chemical Biopesticide and Rhizobium</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Culture</td>
<td></td>
</tr>
<tr>
<td>K.S.Hooda</td>
<td>Technology Commercialization in Maize Value Chain</td>
<td>K.Srinivas</td>
</tr>
<tr>
<td></td>
<td>in India</td>
<td></td>
</tr>
</tbody>
</table>
4.4 Graduation Day

The first Graduation Ceremony for the students of PGDMA (Batch I to IV) and PGDTMA (2014-15) was conducted on 5 September 2015 at the Academy. Dr David Bergvinson, Director General, ICRISAT was the Chief Guest of the function presided over by Dr D. Rama Rao, Director, NAARM. A total of 94 students received the certificates (PGDMA- 76 students and PGDTMA- 18 students) in person, and another 26 PGDMA students received the Certificate in absence. In his graduation day address, Dr Bergvinson highlighted the role of agribusiness to strengthen agricultural research and the need for closer linkages between the two.
The key challenge for NAARM is to develop institutional policies and capacities in using ICTs for ensuring diverse data, information and knowledge flows and services among scientists, research managers, faculty members, students, farmers, and other stakeholders. ICTs can then support new ways of interaction for technology transfer, collaboration, and governance to enhance agricultural innovation and sustainable development. Hence, during the reporting period some innovative efforts were made through integrating ICTs and Yoga in training and capacity building programmes at the Academy.

5.1 MOOC in Agriculture

The Massive Open Online Course (MOOC) was offered for the first time in the ICAR by targeting those who are actively engaged in teaching or aspiring to become teachers. It is open to all without any course fee. A unique approach of MOOC on MOODLE was attempted. This is in continuation with e-learning activities of ICAR, and has been initiated and attempted successfully with 318 registered users with 62 per cent course participation and 30.82 per cent course completion rates, which is optimum enough matching with any other MOOC in any domain. This was made possible with the technical support of having the high end State - of – the- Art Technology Enhanced Learning Centre.

The programme guided participants on various dimensions of teaching and helped them develop effective teaching styles for quality education and pedagogical competencies. The Courseware comprised many background concepts, integrated questions, discussions, and assignments. Every week the students were expected to view 2 to 3 video lectures of about 10-15 minutes each along with other relevant Courseware including presentations, background and reference material on the concepts relevant for the week. Standalone point of the Course remains to be the Interactive User Forums supporting community interactions among the teachers. At the end, participants produced a teaching video as an output for evaluation by an expert panel for the award of the Certificate. This success has led to the initiation of offering MOOCs as part of NAARM regular training programmes.
5.2 IT Innovations in Training Programmes

As part of the IT innovations initiated at the Academy, two Batches of FOCARS scientist-trainees were encouraged and guided to develop their own Blogs and Websites for discussion and information sharing amongst them, as indicated below.

- 102 FOCARS blog, an online forum for discussing issues of national importance; http://102focars.blogspot.in (Figure 5.1).
- 102 FOCARS website, scientist probationers’ own independent platform for sharing information within the group and also with the rest of the world; the group also developed an Android mobile App. http://focars102.webs.com (Figure 5.2).

During training classes, frequent use of Dropbox in collaborative learning and document sharing and of Slideshare for access of PPTs was encouraged. The trainees were also encouraged to become member of OER commons. With the purpose of copyright protection and awareness, ‘creative commons’ symbols are often used for the documents from the Academy including PPTs.

5.3 NAARM Digital Repository

The Digital Repository of the Academy (eprints@naarm.org.in) was developed using open source platform ‘EPrints’, and customized as per NAARM needs such as:

- Records as per Divisions’ mandate.
- Records as per core subjects of the Academy.
Records as per specific area like project reports, student project reports, Field Experience Training (FET) reports, Research Project Proposal (RPP), Hindi documents, etc. All the documents are deposited by the scientists, which are accessible to the trainees at a click; and the use of printed documents is discouraged during case analysis in the training classes (Figure 5.3).

During 2015-16, the NAARM Digital Repository was ranked at 33rd place in India, and 2025th place at the global level by the ‘Ranking Web of World Repositories’ (Figure 5.4). The ranking Web of World Repositories is an initiative of the ‘Cybermetrics Lab’, a research group belonging to the ‘Consejo Superior de Investigaciones Científicas’ (CSIC), the largest public research body in Spain. http://repositories.webometrics.info/en/asia/india?sort=asc&order=scholar

5.4 NAARM Dataverse

A dynamic online data repository was developed utilizing the web platform of Harvard University. It is named as ‘NAARM Dataverse’, where all kinds of data can be kept with or without restrictions. It was customized to six Divisions at the Academy (Figure 5.5). All kinds of data including geospatial layers and audio...
files can be deposited. The data depositor is provided a citation doi as per its policy. It is being used in training classes to contribute data, and also access the data from others. Available at https://dataverse.harvard.edu/dataverse/NAARM

5.5 Training Management Information System (TMIS)

The Academy developed a software ‘TMIS’ (Copyright registered vide Diary No. 45962/2014-CO/L dated April 2, 2014), for complete training administration i.e. registration, approvals, programme schedules, online feedback, and data management. The prospective trainees are encouraged to register through TMIS (Figure 5.6). It was also implemented successfully in off-campus programmes. TMIS has also helped in minimizing the use of physical paper.

5.6 Web-based Expert System for Technology Valuation

A pyramid type valuation framework approach was developed and customized for valuating technologies of public research organizations, especially the NARES Institutions. Based on the proposed framework, a web-based tool for Technology Valuation was designed, coded and developed. The software tool provides value
of the technology in INR using three standard methods of technology valuation. The required input data may be filled by the user or can be fetched from the DBMS based on the technology category. The software tool will be of immense use for researchers, licensors, licensees, and business/technology firms to arrive at the value of the newly developed technology/IP. Beta version of the software was sent to all ABIs for testing, and later it will be uploaded in the web for public usage. So far, 22 Institutions have used the software. Application for grant of Copyright was filed for the developed software.

5.7 Web-based AHP Analyser for Research Project Selection

Analytic Hierarchy Process (AHP) is an internationally accepted ranking method. It has been integrated into training programmes since 2005; but it was felt that trainees are not taking much interest due to so many calculations and equations, though they appreciated the method. In order to solve this problem, web-based software named ‘AHP Analyser’ was developed by the Academy, and made available on Google search engine (www.ahpanalyser.naarm.org.in). This is being used for the selection of most appropriate research project with complete concentration on technical content only. The trainees have appreciated its easy operation. The software was integrated into various capacity building programmes at NAARM. Till now, more than 500 individuals have registered as users. Application for grant of Copyright was filed.

5.8 Yoga as Integral Component in Training

Healthy body and mind is also a major concern in capacity building. Therefore, Yoga was made mandatory in the Foundation Courses at the Academy; and this is offered in other programmes as well. Yoga sessions in the early morning hours are regularly organized by trained instructors from NAARM Health Center and recognized Yoga Centers in the city of Hyderabad.
6.1 NAARM Footprints in ‘Start-up India’ Initiatives

The Academy was granted a Technology Business Incubator (TBI) by the National Science & Technology Entrepreneurship Development Board (NSTEDB), Department of Science and Technology, Government of India. The Academy’s Technology Business Incubator was named as Association for Innovation Development of Entrepreneurship in Agriculture (a-IDEA). The Incubator has mandate in three verticals, viz. (i) Seeking to commercialize ICAR technologies; (ii) Promoting entrepreneurs’ own innovations; and (iii) Promoting grass root innovation (GRIs). The Incubator is currently focusing on following 11 core areas of operation pan India: (i) ICT & IOT in agriculture; (ii) Soil, water and weather technology; (iii) Supply chain technology; (iv) Precision farming; (v) New processing technology; (vi) Vertical farming; (vii) Post-harvest technology; (viii) Farm fresh retail; (ix) Sustainable inputs; (x) Innovative food technology; and (xi) Farm mechanization. The Incubator’s programmes include organizing (i) sensitization workshops in colleges (ii) boot camps for start-ups(iii) accelerator programme(iv) challenge programme; as well as networking with mentors and investors.

The TBI at NAARM has launched India’s first Food and Agri-Business Accelerator Programme in partnership with CIIE, IIM-A. This programme received good response, and nearly 200 applications were received from agri-tech start-ups ready to scale up. Out of these, eight Companies were shortlisted after rigorous scrutiny by industry mentors. Capacity Building Workshop of Food Agri Business Accelerator for Technology Start-Ups in Agriculture was organized during July 23-25, 2015 at a-IDEA, NAARM, Hyderabad for the shortlisted cohort of 8 start-ups. This was followed by a Demo Day on October 10, 2015 at Mumbai to provide opportunity for the start-ups to make pitch presentations before the group of empanelled investors. Kinetic Machines got CSR fund from Mahindra worth Rs 40 lakh as a part of the Food and Agri-Business Accelerator Programme for developing a Bio-mimicking Trenching Machine. Flybird Innovations got funded from the organizers worth Rs 30 lakh as a part of Food and Agri-business Accelerator Programme besides Rs 82 lakh investment from other sources. This start-up was also awarded among the top four Agri-Innovations in India by the Millennium Alliance (FICCI).

NAARM’s Business Incubator has put up its a-IDEA Stall in Krishi Unnati Mela, inaugurated by the Honourable Prime Minister, held at New Delhi during 19-21 March 2016. The a-IDEA team received overwhelming response from the visitors and observed a footfall of around 15,000 visitors on its Stall.

6.2 Brief Profile of Start-ups at NAARM

Twelve start-ups were supported by the NAARM’s TBI in the year 2015-16. NAARM’s Business Incubator has developed a strong network of start-up mentors, industry mentors and investment mentors. Till date, TBI has inducted 5 physical incubates (Table 6.1).
### Table 6.1: List of Incubates Inducted in the NAARM TBI

<table>
<thead>
<tr>
<th>Name of Incubatee Company</th>
<th>Name of Main Founder</th>
<th>Month/Year of Induction in the TBI</th>
<th>Website</th>
<th>Industry Sector</th>
<th>Company Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neelima Horticulture</td>
<td>Dr Sumita Dwivedi</td>
<td>Sep, 2014</td>
<td>NA</td>
<td>Vertical Farming</td>
<td>Urban landscaping through rock bonsai</td>
</tr>
<tr>
<td>Inner Being Wellness Pvt. Ltd.</td>
<td>Mr C.S. Jadhav</td>
<td>Oct., 2014</td>
<td><a href="http://www.innerbeing.in">www.innerbeing.in</a></td>
<td>Innovative Food Technology</td>
<td>Quinoa &amp; healthy foods supply chain &amp; branding</td>
</tr>
<tr>
<td>Input Agri Tech Pvt. Ltd.</td>
<td>Mr Subhash Lode</td>
<td>Oct., 2015</td>
<td><a href="http://www.agrowbook.com">www.agrowbook.com</a></td>
<td>ICT in Agriculture</td>
<td>ICT platform for farm input supply chain</td>
</tr>
<tr>
<td>Millets n Cereals Food Products</td>
<td>Mr K.R. Sanjay Kumar</td>
<td>Dec., 2015</td>
<td><a href="http://www.milletbowl.in">www.milletbowl.in</a></td>
<td>Innovative Food Technology</td>
<td>Millet-based value added products for social impact</td>
</tr>
<tr>
<td>SaroAgri and Dairy Pvt. Ltd.</td>
<td>Mr Srikanth Mannem</td>
<td>Dec., 2015</td>
<td><a href="http://www.sarofarmfresh.com">www.sarofarmfresh.com</a></td>
<td>Farm Fresh Retail</td>
<td>Supply chain of A2 grade cow &amp; buffalo milk</td>
</tr>
</tbody>
</table>
Start-ups’ Profile

The Incubator a-IDEA has recently started functioning and supporting the start-ups. Around 40 per cent of Agri start-ups in NAARM-TBI have started their venture 3-5 years ago. Except one, the rest could not scale up due to various factors. As far as educational qualifications of the owners are concerned, out of 12 start-ups, one holds doctorate degree, five are postgraduates, and six are graduates. This is clear that young are more amicable to take risk (Figure 6.1).

Most of the start-ups are in food technology, and three are working on supply chain technologies. There is one start-up with gross earning between Rs 30 and 100 lakh, three start-ups earning between Rs 5 and 30 lakh, and 8 start-ups earning less than Rs 5 lakh. The details of five start-ups with respect to employment generation are given below:

- Neelima Horticulture: 4 full time employees and 1 part time employee.
- Inner Being Wellness: 22 full and part time employees.
- Agrowbook: 3 full time employees and 2 part time employees.
- Millet Bowl: 2 full time employees and 1 part time employee.
- SaroAgri Pvt. Ltd: 13 part time employees.

![Figure 6.1: Age-wise Distribution of Start-ups at NAARM-TBI](image-url)
6.3 Help Desk for Activities of NAIF
The Academy provided Help Desk support to Innovation Fund of XII Plan Scheme for National Agriculture Innovation Fund (NAIF). The following activities were undertaken by the Help Desk:

- Following a workshop and discussion with experts from IIM-A, NIF and IPTM-ICAR, developed guidelines for GRI Project under NAIF Scheme, and prepared Draft Policy and Operating Guidelines. Representatives from various organizations working on grassroots innovations like NIF attended the workshop.

- 73 Grassroots innovations were scouted and shortlisted for further refinement, validation and support.

- Organized a “Grassroots Innovators Meet” on March 19, 2016 at NAARM, Hyderabad in collaboration with Pallesrujna (NIF), Hyderabad with the participation of 30 grassroots and rural innovators.

6.4 Establishment of Agri-Business Incubation (ABI) Centers under Component-II of XII Plan Scheme for National Agriculture Innovation Fund (NAIF)
Acted as the ‘Help-Desk’ for ABI’s in all aspects with reference to technology commercialization, incubation and entrepreneurship development, had coordination meeting with ICRISAT, and developed procedures for ABI Help Desk services. Visited 12 ABIs to prepare Readiness Report and develop the Standard Operating Procedures (SOP); and a draft SOP was prepared. Handholding services were offered to all the ABIs, especially to the newly established ones. A sensitization workshop for Agri-Business Incubation Units in ICAR Institutes (March 21-22, 2016) was organized at NAARM, Hyderabad with a participation of 22 ICAR –ABIs. ABI Cell was established at the Academy, and works/equipment worth Rs17.15 Lakh were purchased.
Publication, Recognition and Participation

7.1 Publications

A total of 108 publications formed part of outputs from research activities of the faculty. In terms of publication/scientist ratio for refereed research journal, all time high of 1.56 was achieved. The publications were 57 per cent more than in the last year. All publications are deposited in NAARM digital repository (Eprints@naarm), and a doi (Digital Object Identifier) is generated for easy accessibility. The Academy continues to be in tune with ICAR’s Copyright policy and implements it in true spirit (Table 7.1 and Figure 7.1).

Table 7.1: NAARM Publications during 2015-16

<table>
<thead>
<tr>
<th>Category of Publications</th>
<th>Total</th>
<th>Per Scientist Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Papers</td>
<td>39</td>
<td>1.56</td>
</tr>
<tr>
<td>Book Authored</td>
<td>1</td>
<td>0.04</td>
</tr>
<tr>
<td>Books Edited</td>
<td>2</td>
<td>0.08</td>
</tr>
<tr>
<td>Book Chapters</td>
<td>11</td>
<td>0.44</td>
</tr>
<tr>
<td>Review Reports/ Policy Brief/ Popular Articles</td>
<td>6</td>
<td>0.24</td>
</tr>
<tr>
<td>Project Reports</td>
<td>5</td>
<td>0.2</td>
</tr>
<tr>
<td>Electronic/ Web Publications</td>
<td>4</td>
<td>0.16</td>
</tr>
<tr>
<td>Papers in Proceedings of Seminar/ Symposia/Workshop /Conference/Meetings</td>
<td>21</td>
<td>0.84</td>
</tr>
<tr>
<td>Training Courseware/ Compendium (developed for NAARM programmes)</td>
<td>19</td>
<td>0.76</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>108</strong></td>
<td><strong>4.32</strong></td>
</tr>
</tbody>
</table>

Figure 7.1: NAARM Publications
7.1.1 Research Papers


### 7.1.2 Book Authored


### 7.1.3 Books Edited


### 7.1.4 Book Chapters


7.1.5 Review Reports/ Policy brief/ Popular Articles


7.1.6 Project Reports


7.1.7 Electronic/ Web Publications


Thammi Raju, D. and Murthy, G.R.K, 2016. DVD on eContent Resources of 1st MOOC (Massive Open Online Course) on Competency enhancement through micro teaching methodology, 11 December, 2015 to 7 January, 2016. NAARM Library Accession No. 2347/16.

7.1.8 Papers in Proceedings of Seminar/Symposia/ Workshop/Conference/Meetings


### 7.1.9 Training Courseware/ Compendium Developed for NAARM Programmes


7.2 NAARM in Media

7.2.1 News Reports
As part of ‘Mera Gaon Mera Garauv’, several activities were done in adopted villages. Dr P. Venkatesan, Dr N. Sandhya Shenoy and Dr V.K.J. Rao coordinated these activities. Dr D. Rama Rao addressed the villagers, which was reported in Telugu national daily:

- Dr Manoj Samuel received ‘Groundwater Award’, which was reported by several national and local newspapers:
  - Global Groundwater Award for Indian Agricultural Scientist, Manorama online, 2nd August, 2015.
  - McKee Groundwater Protection, Restoration, or Sustainable Use Award- 2015 for ICAR Scientist, Malayala Manorama daily, 3rd August 2015.
  - Water Conservation- International Award for ICAR scientists, Mathrubhumi daily, 8th August, 2015.
  - Water Conservation- International Award for ICAR scientists, The Hindu daily, 8th August, 2015.
  - Dr. Manoj Samuel received Global Groundwater Conservation Award, Mathrubhumi daily, 2nd October, 2015.
- Drought-hit farmers get help from start-ups, The Times of India. 10th March, 2016.

Dr S.K. Soam conducted an off-campus programme on ‘Developing Winning Research Proposals’ at TANUVAS, Chennai, which was reported in local and national dailies:


7.2.2 Media Interviews/ Radio-TV Talk
Dr S.K. Soam did telephonic interview on ‘protecting indigenous health drinks as GI’ by Ms Aarthi Gunnupuri, Former UN Press Reporter, and Bangalore based freelance journalist, 3rd April, 2015.

Dr Dr K. Kareemulla was interviewed by TV 9 Telugu news channel on ‘hike in pulses, onions price worry consumers’. Telecast in the 30-minute news programme at 21.30 hr on 25th August 2015. Available at [https://www.youtube.com/watch?v=N2-h76QC8OQ&feature=youtu.be](https://www.youtube.com/watch?v=N2-h76QC8OQ&feature=youtu.be)

Dr K. Srinivas was interviewed by The New Indian Express about agri & social entrepreneurship. Incubation offered by Technology Business Incubator of NAARM and a brief about the start-ups incubated. It was published on 24th December 2015.

Dr K. Srinivas was interviewed by The New Indian Express regarding the funding scenario in the agri entrepreneurship ecosystem, published it on 18th February 2016.

Dr D. Rama Rao was interviewed on 29th March 2016 on ‘concepts of incubation, benefits of quinoa and other millets, and a brief about startups’ video was shot from the respective entrepreneurs along with ‘Inner being wellness’, incubatee of NAARM technology business incubator with *Palamooru* Farmers Association. It was telecasted by HMTV, a regional vernacular news channel in *nella thalli* programme at 1830 hrs on 12th April 2016.

Dr K. Srinivas was interviewed by Blog of Agricultural Extension in South Asia on Agri-Business Incubation in INDIA: Ways Forward for their June edition.

http://www.aesa-gfras.net/Resources/file/Blog%2057.pdf

Dr Manoj P. Samuel during AgriCon-2016 at Chennai on 4th March 2016 was interviewed by media on ‘drought-hit farmers get help from start-ups’, later published in The Times of India, 10 March, 2016.

Dr D. Rama Rao on the occasion of initiation of ‘agrowbook
wifi service’ was interviewed at Tallasingaram village on 21st March 2016 by ETV Telangana. It was broadcasted in JaiKisan programme of ETV-Telangana at 1800 hrs on 30th March and 1st April 2016.

Dr N. Sandhya Shenoy and Dr V.K.J. Rao were interviewed during the ‘sujalam suphalam’ programme for water conservation and harvesting at Chityal in Nalgonda district and it was broadcasted in evening news at 1800 hrs on ETV on 18th April 2016. https://youtu.be/fKUzhzuuZv0

1. News story on NAARMs village adoption in Telugu news paper
2. Newspaper coverage about award winning by NAARM faculty in Malayalam
3. Print media coverage on off campus training at Chennai in English Daily
4. Off campus training coverage in local Tamil newspaper
5. Print media coverage on A Idea
6. News story on A Idea in local Telugu news paper
7. Dr K. Kareemulla in interview with local electronic media
7.3 Awards

7.3.1 National Award for Excellence in Training for the Year-2015

The Academy has won the ‘National Award for Excellence in Training for the Year-2015’. This award has been constituted for the first time by the Department of Personnel and Training (DoPT), Ministry of Personnel, Public Grievances and Pensions, Government of India, and given annually to individuals and institutions. In the initiation year, the Academy won this award under the institutional category. The award has been presented for the innovative initiative ‘Learning & Capacity Building Initiative under the National Agricultural Innovation Project’. On behalf of the Academy, Dr D. Rama Rao, Director, NAARM, Dr N.H Rao, PI (NAIP L&CB), Dr B.S Sontakki, OIC (Training Cell), and Shri P. Vijender Reddy, ACTO (Training cell) received the award on 12th April, 2015 at the closing ceremony of the 1st National Symposium on Excellence in Training, organized by DoPT at Vigyan Bhawan, New Delhi during 11-12 April 2015.

7.3.2 McKee Groundwater Protection, Restoration or Sustainable Use Award- 2015

Dr Manoj P. Samuel, along with co-authors Dr Senthilvel and Dr Abraham C. Mathew was awarded ‘McKee Groundwater Protection, Restoration, or Sustainable Use Award- 2015’ by Water Environment Federation (WEF), Alexandria, VA, USA for their paper published in 2014:


7.3.3 Best Paper Award

Dr D. Rama Rao and other authors received ‘Best Paper Award’ for the paper published in 2014:


The award was presented by Indian Dairy Association during 44th Dairy Industry Conference (44 DIC) held at NDRI, Karnal during 18-20 February 2016.

7.3.4 Best Oral Presentation Award

Dr P. Venkatesan was presented ‘Best Oral Presentation Award’ for the paper on “A Case Study Emphasizing Current and Future Outlook of Producer Company” at the International Extension Education Conference on Education, Research and Services organized by the Department of Extension Education, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi during 27-30 January 2016.

7.3.5 Life-time Achievement Award in Agriculture Extension

Dr N. Sandhya Shenoy was presented ‘Life time Achievement Award in Agriculture Extension’ at the National Conference on “Reinvigorating Agricultural Innovations for Farmers’ Empowerment and Development, RAINFED -2015” organized by Grameen Krishi Vikas Society (Founders of Annals of Plant and Soil Research), Uttar Pradesh, on 3rd May 2015, at...
Professor Jayashankar Telangana State Agricultural University, Hyderabad.

7.4 Expert Recognition and Scholarship

The expertise of the faculty members from Academy were recognized by several national and international organizations including State and Central Government. They were involved in various academic and policy level decision making. Faculty members were also invited to Chair sessions or present invited talks in national seminars/ conferences etc., and also to deliver lectures in national and international training programmes conducted by several national level organizations in the country. Faculty members also participated in several scientific platforms such as conferences, seminars, brainstorming sessions and meetings etc. A brief summary of these activities for 2015-16 is given in Table 7.2.

7.4.1 Expert Recognition

Table 7.2: Summary of Scientific Activities

<table>
<thead>
<tr>
<th>Item</th>
<th>Total</th>
<th>Per Scientist Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert Recognition</td>
<td>110</td>
<td>4.23</td>
</tr>
<tr>
<td>Training Programmes/ Workshops/ Seminars/ Symposia Attended</td>
<td>90</td>
<td>3.46</td>
</tr>
<tr>
<td>Invited Lectures at other Institutions</td>
<td>50</td>
<td>1.92</td>
</tr>
</tbody>
</table>

Balakrishnan M
IMC Member, Project Directorate of Poultry (PDP), Hyderabad.

Honorary Member, Society for Bioinformatics and Biological Sciences (SBBS), Allahabad.

External Expert Member, Executive Committee (EC) Meeting of DBT. 22 August, 2015. Bioinformatics Centre, CCMB, Hyderabad.

Member/ Examiner, Ph.D. viva voce exam. 5 November, 2015. Nanda Engineering College (Anna University), Erode, Tamil Nadu.

Subject Expert for SAIDP Project and Guide to Develop a Technical Note on Integrated Data Management Portal at KVKs.


External Examiner, Evaluation of Ph.D. thesis by a students of Anna University. Chennai, TN.

External Examiner, Evaluation of Ph.D. thesis by a student of Karpagam University, Coimbatore, TN.

External Examiner, Paper evaluation of Ph.D. course work by the students of Bharathiar University. Coimbatore, TN.

Assistant Centre Supervisor, ARS online Examination ARS/NET. 4-10 December, 2015.

Dhandapani A


Attended, First Steering Committee Meeting of KRISHI Project. 1 March, 2016. NASC Complex, New Delhi.

Dastagiri M B
Member, National Geographical Society (1888), Washington DC.
Kalpana Sastry R
ICAR representative to serve on the Board of Management, KVAFSU, Bidar.

Expert Member, Legal Matters relating to Intellectual Property Rights Committee, and Traditional Knowledge Associated with Medicinal Plants, Conservation and Bio-prospering of Telangana State. Telangana State Biodiversity Board, Government of Telangana.

Panelist/ Speaker in platforms facilitated by CII, TERI, ABLE, RIS, ASCI Technology consortia, ICAR institutes (NDRI, DOR,), SAUs and other partners of NARS.

Empaneled member as Scientific Advisor as per Rule 103 of the Patents Rules, 2003 to offer technical assistance to various Courts in India under Section 115 of the Patents Act, 1970 since July 2010. Patent Office, Govt. of India.

External Examiner for PhD students, Faculty of Agriculture, MPKV, Rahuri and Phd Thesis, Gulbarga University, Gulbarga.

Evaluator for Thesis of 6 students of Masters in Law, NALSAR University of Law, Hyderabad.


ITMU of ICAR-NRC on Pomegranate, Solapur, invited as expert for commercialization of NRCP technology.

Invited as referee for evaluation of research papers in these journals. Elsevier Publications (TFSC; Food Policy); African Journal of Agricultural Research; Journal of Intellectual Property; Springer: Technology Analysis and Strategic Management, Expert Reviewer of project proposals in Biotechnology Ignition Grant (BIG) scheme of Biotechnology Industry Research Assistance Council-Round 7 and 8.

Resource Person at the Mentoring Workshop for 2015-2016 Fulbright Applicants, and Evaluator of 50 Applications for Senior Fellowship in Agriculture domain in United States-India Educational Foundation (USIEF).

Invited Expert Member at ZTMC (Fisheries).

Member of the Selection Committee, PG Programmes at Centre for Post Graduate Studies (CPGS) in National Institute of Rural Development & Panchayat Raj.

Member of the XXV Meeting of the National Centre for Agricultural Economics and Policy Research (NCAP) Management Committee.

Evaluator of applications for best worker award at PIJSTAU and ANGRAU.

Expert Member of Telangana State Dept of Agril and PIJSTAU Committee for filing of petition on revocation of patent no. 232681 before appellate board patent.

Chief Guest for valedictory address and presentation of certificates in programme on science governance and management, (March 4, 2016) by ASCI.

Kareemulla K
Member of the Commission on Inclusive and Sustainable Agriculture Development of Andhra Pradesh (2014-16). Acted as Convener of two sub-committees of the Commission – Rainfed Agriculture and Alternative Agriculture Technologies.

Manoj P. Samuel
Adjunct Professor, College of Agricultural Engineering, ANGRAU, Bapatla, A.P.

Member. Board of Studies, Department of Applied Mechanics and Department of Biotechnology, Vignan’s Foundation for Science, Technology and Research University, Guntur, A.P.

External examiner. SABM, Professor Jayashanker Telangana State Agricultural University, Hyderabad.

Advisory Board Member. World Research Journal of Tropical Agriculture (ISSN: 2322-0627).

Member, Scientific Advisory Committee, National Conference on Climate Change and Sustainable Water Resources Management (CSWM-2015) at NIT, Warangal (September 2015).

Peer Reviewer of two international and two national journals: CLEAN - Soil, Air, Water (A Journal of Sustainability and Environmental Safety)-1; Irrigation and Drainage -1; J. of Plantation Crops-1; Current Agriculture Research Journal (IRCC) -1.
**Rama Rao D**
Attended, Management Committee meeting of EEI. 10 April, 2015. Hyderabad.

Chaired, Grassroots Innovations meeting for finalization of general guidelines for submission of proposals. 10 June, 2015. NAARM, Hyderabad.

Attended, selection committee meeting at GBPUAT, Pantnagar for appointment of Dean, College of Agri-Business Management. 14-16 June, 2015.

Member, Selection-cum-Standing Committee of Emeritus Scientist. 13 July, 2015. ICAR, New Delhi.

Chaired, ABI Screening Committee meeting for Evaluation of Establishment of Agri Business Incubation Centres. 30 July, 2015.

Chaired, Graduation ceremony of PG Courses. 5 September, 2015. NAARM.

Chaired, session on IT use in Agriculture. September 12, 2015. Shobhit University, Modipuram.

Attended, Meeting of Search-Cum-Selection Committee for the post of Director, IICPT. 23 September, 2015, 9 November, 2015 & 19 January, 2016. MOFPI, New Delhi.

Chief Guest, Plenary session of RICAREA seminar on Sustainable Agriculture. December 13-14, 2015. NAARM, Hyderabad.

Member, Board of Management. 21 December, 2015, 4 January, 2016 & 12 February, 2016. ANGRAU, Hyderabad.


**Ramesh P**
Member, Institute Management Committee (IMC), Central Research Institute for Dryland Agriculture (CRIDA), Hyderabad.

**Rao V K J**
Reviewed the State Agriculture Infrastructure development programme SAIDP plan under RKVY for Andhra Pradesh P-63.

Evaluator, PGDAEM of MANAGE 2015-16 for course no 101,201,202, 203, and 204.


Paper setter and evaluator for MFSc of CIFE, Mumbai of FST 501.

Paper setter, PGDAEM 204 for MANAGE.

Resource person for Post Graduate Diploma in Agrl. Extn Management of Telangana and Andhra Pradesh.

Referee, Journal of Agricultural Extension Management published by MANAGEMENT Hyderabad.

**Rathore S**
Member, Editorial Board, Journal of Communication Studies.

Executive Counsellor (Central Zone), Indian Society of Extension Education, IARI, New Delhi.


Paper setter for Dynamics of Rural Leadership (Course No. EXT – 741) for Indian Veterinary Research Institute, Bareilly in May, 2015.

**Ravichandran S**

**Sanjiv Kumar**

External Examiner for Operations Research and Management course of third year of B.Tech (Dairy Technology) programme of Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar, Karnataka.
Senthil Vinayagam S

Co-Chair, Technical session during the International Conference on Good Governance in Agricultural Extension, 3-4 September, 2015. CGG, Gachibowli campus, Hyderabad.

Expert, Selection Committee for Interview of Senior Consultant and Consultant (PM&E). 26 and 30 November, 2015. NFDB


Expert Member, Selection Committee for promotion and recruitment of Professor and Associate Professor in Dept. of Extension Education. 28 January, 2016.

External examiner, Comprehensive Viva Voce. 16 February, 2016. IGKV, Raipur.

Reviewed three research articles for the journals namely, JAEM (MANAGE), JRD (NIRD) and Soybean Research (DSR, Indore).

Soam S K
Developed and maintained digital repository ‘Eprints@naarm’, which was ranked 33rd in India by International organization. http://repositories.webometrics.info/en/asia/india?sort=asc&order=scholar

Developed NAARM Dataverse, a dynamic online data repository developed utilizing web platform of Harvard University. https://dataverse.harvard.edu/dataverse/NAARM

Initiated 102FOCARSblog, an online forum for discussing issues of national importance. http://102focars.blogspot.in

Attended ‘Joint ICAR-ICRISAT Partnership Projects Review and Planning Meeting’ held at ICRISAT on 4th April 2015 and presented ICM component. Dr S. Ayyappan, DG, ICAR, Dr DJ Bergvinson, DG, ICRISAT, Director, NAARM, VC, PJTSAU and several Directors from ICAR institutes also attended the meeting.

Developed computer lab with 50 All-in-One Desktops, 50 Virtual machines, cloud based services and OFC cabling with network switches with expenditure of approximately Rs. 110 Lakhs.

As nominated by Director of MoEF&CC, attended online discussion forum of CBD. With decision BS VI/13 of COP MOP at Hyderabad an Ad-hoc Technical Expert Group (AHTEG) on Socio-economic Consideration (SEC) was established. The report of the AHTEG was considered in the seventh meeting of COP MOP at Pyeongchang, Korea in October, 2014 wherein it was decided (BS VII/13) to extend the term of the AHTEG on SEC. To facilitate the work of AHTEG, an online discussion forum on socioeconomic considerations (Article 26 of the Cartagena Protocol on Biosafety) was done during 30.03.15- 31.05.2015 by BCH established by Convention on Biological Diversity (CBD) Secretariat, Montreal, Canada.

As invited expert by Indian Institute of Foreign Trade (IIFT), New Delhi attended ‘group discussion’ on 26th September 2015 at Hotel Taj, Varanasi to discuss the draft report on ‘Marketing of GI products: Unlocking their commercial potential’, a study by Center for WTO Studies, IIFT.

As invited expert by Ministry of Environment, Forests and Climate Change (MoEF&CC), Govt. of India, attended ‘National consultation to discuss the third report on the implementation of the Cartagena Protocol on biosafety’ held on 28th October 2015 at Indira Paryavaran Bhawan, MoEF&CC, New Delhi.

As nominee of Director, NAARM attended ‘Mid-term Review meeting of 22nd ICAR Regional Committee Zone-II’ held at CIFRI, Barrackpore on 19th September 2015. The meeting was presided by DG, ICAR.

Member, Consultative Group constituted by Registrar of Geographical Indications, Govt. of India under rule 33 of Geographical Indications of Goods (Registration and Protection) Act 2002. Attended the meeting on 27-28th May 2015, and 9th July 2015 at New Delhi, 4th September 2015 at Chennai, and 15th 2016 at Mumbai. During the CG meetings the representations from the Attorney/ agent and producers were heard and appropriate decisions were made regarding GI applications received for several products i.e. Solapur chutney, Kolhapur masala, Waigon turmeric, Bhiwapur chilli, Sangli turmeric,Ajara ghansal rice, Navapur desi tur, Mulshi ambemohar rice, Mangalwedha maldandi jowar, Joha rice of Assam, Vengurla cashew, Sangali raisins, Lasalgaon onion, Jalgaon bharit brinjal, Bandar (Machilipatnam) laddu, Bhemi oil, Uttarakhand ka
tejpat, Kinnauri kala zeera and logo, Sirsi Siddapura yellapur arecanut, Alphonso mango, Devgad alphonso mango and Ratnagiri alphonso mango.

IPR Expert member, Institute Technology Management Committee (ITMC) of ICAR-Indian Institute of Millets Research, Hyderabad. Attended the meetings on 17.06.2015, 27.11.2015, 17.12.2015, 08.02.2016 and 15.03.2016. The decisions were taken about trademark of ‘eatrite’, fixation of upfront license fee and royalty for sorghum lines, hybrid seed, genetic stock and transgenic material, sharing of licensing fee from ‘Jowar puffs’, 03 invention disclosures, setting up of ABI . Several MoUs and Tripartite agreements were also finalized related to several sorghum products and roti making machine.

IPR Expert member, Institute Technology Management Committee (ITMC) of ICAR-Indian Institute of Oil Palm Research, Pedavegi, West Godavari District, AP. Attended the meeting on 4th August 2015 regarding commercialization of ‘Ablation tool for oil palm’.

Chairman, technical session ‘Molecular breeding and new interventions in biotechnology and bioinformatics’ on 22nd Sept. NAARM and IASRI collaborative national workshop on ‘Current trends in agricultural bioinformatics’ held at NAARM during 22-24 Sept 2015.

Co-Chairman, technical session ‘Agribusiness, IPR and policy option’ on 6th March. National Seminar on Integrating Agri-horticultural and allied research for food and nutritional security in the era of Global Climate Disruption’ held by Manipur Center of ICAR Research Complex for NEH regions during 4-6 March 2016 at Imphal.

Member, Flying Squad for the ICAR’s 20th All India Entrance Examination for admission-2015 for UG programmes held at JNTUH on 11.04.2015.

Expert member of ‘Selection Committee’ nominated by Director, IIMR, Hyderabad for selection of SRF in IIMR research project on 02.12.2015.

Expert member of ‘Selection Committee’ nominated by Director General, MANAGE, Hyderabad for selection of SRF in school of ABM on 14.03.2016.

Expert member of ‘Selection Committee’ nominated by Director General, MANAGE, Hyderabad for selection of SRF in ICT on 07.09.2015.

Expert member for selection of Librarian on 11.01.2016 at Central Institute for Rural electrification (CIRE), Hyderabad.

Evaluator of the PhD thesis ‘Effect of fertilizer, pesticides and their interaction on rhizospheric, microflora, vegetative growth and fruit quality of tomato’ of Vichitra Tyagi from CCS University, Meerut, Uttar Pradesh.

Sontakki B S

Attended, 1st National Symposium on Excellence in Training organized by the Department of Personnel and Training, Government of India during 11-12 April 2015, and on behalf of the Academy under institutional category (thematic track: Management of Training and Training Establishment) made presentation on ‘Learning and Capacity Building Initiative under National Agricultural Innovation Project (NAIP)’ on 11th April 2015. Based on the evaluation of facts, initiatives & outputs presented, among already short listed institutions, the Academy won ‘National Award for Excellence in Training for the Year-2015’ for innovative initiatives taken under NAIP- L&CB Project.

Served as Councilor for the journal titled Agriculture for Sustainable Development (ISSN 2347 5358).

Offered services as an expert reviewer for the journals of Karnataka Journal of Agricultural Sciences, UAS, Dharwad; Journal of Extension Management, MANAGE, Hyderabad; Journal of Oilseed Research, DOR, Hyderabad.

Served as external expert / examiner /paper setter and moderator to the ASRB, New Delhi; PJTSAU, Hyderabad; UAS, Dharwad; UAS, Bangalore; and CIFE, Mumbai.

Subhash S P


Thammi Raju D

General Secretary, Indian Veterinary Extension Forum from 2010 to 2015.

Executive Committee member, Society of Extension Professionals and IVEF.

Referee for journals: Frontier Journal of Veterinary and Animal Sciences and Journal of Agricultural Extension Management.
Expert Member, Recruitment of Research Associate. NAARM, Hyderabad.

General Secretary, IVEF organised National Seminar on Teaching, Research and Extension Gaps. 28-29 August, 2015. Puducherry.

Expert Member, Selection Committee constituted by MANAGE for selection of Assistant Director.


Member, Group Discussion committee and Scrutiny Committee for PGDMA admission.

Member, Selection Committee for engagement of Manager, aldea. 21 January, 2016.

Member, Team constituted by Indian Institute of Rice Research for Rythu Sadbhavana Yatra. Sangareddy District.


Executive Member. Society of Extension Professionals organised Professional Extension Interface as a member of Society of Extension Professionals. 5 February 2016.

Participated in Expert Committee Meeting of TELAgE project on 20-2-2016. NAARM, Hyderabad.

Venkatesan P


7.4.2 Participated in Training Programmes/Workshops/Seminars

Balakrishnan M

Workshop on Right to Information Act 2005. 27-28 April, 2015. Institute of Secretariat Training Management, DOPT, Administrative Block, JNU Old Campus, New Delhi.


Stakeholders Consultation Workshop on Strengthening of KVK’s under the SAIDP Project Sponsored by Govt.of Telangana. 8 August 2015. NAARM, Hyderabad.

Conference on NextGen Genomics, Biology and Bioinformatics and Technologies (NGBT), organized by SGRT, Chennai. 1-3 October 2015. HICC, Hyderabad.

Workshop on Strengthening of Access and Benefit Sharing and Use of Biological Resources in Research and Development, organized by TSBB and NAARM. 24 November 2015. NAARM, Hyderabad.

8th GCRA International Conference on Innovative Digital Applications for Sustainable Development. 5-7 January, 2016. UAS, GKV, and Bangalore.

National Workshop on Geospatial Analysis in Agriculture under ICAR KRISHI Project. 29 March, 2016. NAARM, Hyderabad.

National Workshop on Spatial Data Requirement for Large Scale Studies Vis-à-vis ICAR Geoportal under ICAR KRISHI Project. 30 March, 2016. NAARM, Hyderabad.

Dhandapani A
Data Management Policy Group Meeting. 22 April, 2015. ICAR, New Delhi.

7th workshop on Big Data Bench Marking. 15 Dec, 2015. India Habitat Centre, New Delhi.


Dastagiri M B

Consultation Workshop on Preparation of State and District Agriculture Infrastructure Development Plans for Andhra Pradesh (for RKVY_AP Project on SAIDP). 3 November, 2015. NAARM, Hyderabad.

Ganesh Kumar B

Kalpana Sastry R

Kareemulla K
Preparation of State Agricultural Infrastructure Development Plans (SAIDP) under RKVY-AP. 3 November, 2015. NAARM, Hyderabad

Manoj P. Samuel
Organised a brain-storming meeting on 12 April, 2015 through video conferencing to conceive a Project for ITRA funding with participation of faculty from IIT Madras, BITS Hyderabad and ANGRAU, Bapatla.

National Conference on Climate Change and Sustainable Water Resources Management. 3-5 September 2015. NIT Warangal.

National Seminar on Sustaining Hill Agriculture in Changing Climate. 5-7 December 2015. Indian Association of Hill Farming (IAHF), Agartala, Tripura.


Meena P C


Workshop on Global MDP on Contemporary area of Finance and Excellence in Research. 19-20 February 2016. Delhi Public School, New Delhi.

Murthy G R K
Review Workshop of Niche Area Projects. 25 May, 2015. NAARM, Hyderabad

Rythu sadhbhavana yatra to Karimnagar. 6 October 2015.

Rama Rao D
Vice Chancellors/Directors Conference at ICAR. 14-16 May, 2015, New Delhi.

87th ICAR-Foundation Day & Award Ceremony and National Conference on KVKs. 24-26 July, 2015. ICAR Research Complex for Eastern Region, Patna.


40th VCs conference, organized by AIUA. 1-3 December, 2015. Tirupathi

Monthly SOC meetings. ICAR, New Delhi.

Interactive meeting of Comptrollers of Agricultural Universities. 28 December, 2015. ICAR, New Delhi.


Annual Conference of Vice Chancellors of Agricultural Universities and Directors of ICAR Institutes. 22-24 January, 2016, New Delhi.
Participated as faculty / speaker in seven workshops, conferences and seminars at NAARM, Hyderabad.

**Ramesh P**
Faculty Development Programme (FDP) on Pedagogy in Management Teaching and Research. 23-28 November, 2015. IIM, Lucknow.


Brainstorming Session on Mentoring in SAUs. 7 March, 2016. NAAS, New Delhi.

**Rao K H**

**Rao R V S**

Workshop on National Training Policy. 28-29 March, 2016. ISTM, New Delhi.

**Rathore S**
National Workshop on Capacity Needs Assessment of Extension and Advisory Service (EAS) providers, organized by CRISP and ICAR. 6-7 October, 2015. NAARM, Hyderabad.

Orientation Workshop for Writers/Editors of Post Graduate Diploma in Educational Technology Management. 30 November, 2015. NAARM, Hyderabad.


**Sivaramane N**

**Senthil Vinayagam S**


**Ravichandran S**

Workshop on Geospatial Analysis under KRISHI. 29-30 March, 2016. NAARM, Hyderabad.


**Soam S K**
As invited expert attended the workshop on Use of ICT in Agriculture, organized by International Food Policy Research Institute, New Delhi and CRISP, Hyderabad. 16 October, 2015. The Park Hotel, Hyderabad.

As invited participant attended 2nd Workshop on Developing the Procedures and Guidelines for the Innovation fund for Grassroot Innovations. 10 June, 2015. NAARM, Hyderabad.

ICAR Workshop on Preventive Vigilance. 28 October, 2015, NASC, New Delhi.

Delivered lead/invited talk ‘GIs in Northeastern India-Policy issues’ at National Seminar on Integrating
Agri-Horticultural and Allied Research for Food and Nutritional Security in the Era of Global Climate Disruption. 4-6 March, 2016. Manipur Center of ICAR Research Complex for NEH regions, Imphal.

**Sontakki B S**


National Workshop on Forward Thinking for Agricultural Development in Western India by 2030, jointly organized by GFAR/FAO, APAARI, NAARM, SDAU and IAITA (participated as Workshop Facilitator). 8-10 February 2016. SDAU, Dantiwada, Gujarat.


**Sreekanth P D**

Workshop on Strengthening of KVK’s for Knowledge Sharing under SAIDP Project. 15 April, 2015. NAARM, Hyderabad.


8th GCRA International Conference on Innovative Digital Applications for Sustainable Development. 5-7 January, 2016. University of Agricultural Sciences (UAS), Bangalore.

**Srinivas K**


Startup India Inauguration by Prime Minister of India. 16 January, 2016. Vigyan Bhavan. New Delhi.


ASPEN-ANDE workshop on Social Impact Incubation. 22nd February 2016. India Habitat Center, New Delhi


Industry Meet. 20 February, 2016. IIMR, Hyderabad.

**Subash S P**

Grass Root Innovation Workshop, organised by NAARM and Palle Srujana. 19 March, 2016. NAARM, Hyderabad

**Thammi Raju D**

Workshop on Developing SAIDP Plan for Infrastructural Development of Agricultural Research and Extension through Strengthening KVKs, ATMA, Kisan Call Centers and Technology Resource Centers. 15 April 2015. NAARM, Hyderabad.


National Workshop on Capacity Needs Assessment (CAN) of Extension and Advisory Service (EAS) Providers, jointly organized by the Academy and Centre for Research on Innovation and Science Policy (CRISP). 6-7 October 2015. NAARM, Hyderabad.

Faculty Development Programme. 23-28 Nov, 2015. IIM, Lucknow.

Orientation Workshop for Writers/Editors of Post Graduate Diploma in Educational Technology Management. 30 November, 2015. NAARM, Hyderabad.


Venkatesan P

Presented research paper on Scientific Rationality and Adoption of Indigenous Field Bean (Lablab purpureus (L.) Sweet) Cultivated by Tribal Farmers of Tamil Nadu. Indian Ecological Society: International Conference Natural Resource Management: Ecological Perspectives. 18-20 Feb, 2016. Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu, India.


7.4.3 Invited Lectures at Other Institutions

Balakrishnan M


Dhandapani A
Delivered a talk, ICAR Research Data Repository for Knowledge Management. 7th Workshop on Big Data Bench Marking. 15 December, 2015. India Habitat Center, New Delhi.

Delivered a lecture, Statisticians as a last resort in the technical session, Statistics as interdisciplinary science in the service of society in 18th Annual Conference. 18 February, 2016. SSCA, Jammu.

Kalpana Sastry R
ABI -Concept of ABIs. In ZTMU-Horticulture Workshop, Jan 2015, IIHR, Bangalore.

Programme on IPR Awareness and Management. G.B. Pant University of Agril. and Technology, Pantnagar. 5 June, 2015.

Managing Technology Value Chains at ASCI-Hyderabad, on Managing the Agricultural Value Chain, using a Case Study. 26 Feb, 2016.

Invited lecture on IPRs in R&D. Training Programme on Statistical Advances for Technological Enhancement in Agricultural Research. 2 February, 2016. IASRI, New Delhi.


Kareemulla K
Delivered lectures in training programmes in NIRD, MANAGE, NCDC, EEI on topics like Watersheds Development, Promotion of Secondary Agriculture for Sustainable Development, Public Private Partnership in agriculture research, Planning for implementation of Agric. Developmental Projects etc.

Manoj P. Samuel

Invited Talk on 'Combating Climate Change: Strategies for effective harvesting, filtration and storing of rainwater in hilly terrains'in National Seminar on Sustaining Hill Agriculture in Changing Climate. 5-7 December 2015. Indian Association of Hill Farming (IAHF), Agartala, Tripura.


Invited Talk on 'Precision agriculture technologies for startup ecosystem’in Agricon 2016 Conference on Precision Agriculture Technologies. 4 March 2016. Tamil Nadu Technology Development and Confederation of Indian, Chennai.


Murthy G R K
E-teaching Techniques. Maulana Azad National Urdu University (MANUU), Hyderabad. 5 June, 2015.

E-course production. Orientation programme for courses under TELAgE at PJTSAU, Hyderabad. 26 June, 2015.


Rama Rao D
Guest Speaker in Forward Thinking Workshop at SDAU, Dhantiwada, 10 February, 2016.

As Resource Faculty - Leadership Workshop for ICAR officials at NASC, New Delhi. 29 February- 1 March, 2016.

Ramesh P

Rao V K J


Contact classes for PGDAEM of SAMETI course 101 and 102. 28 and 29 May, 2015. SAMETI, Hyderabad.

Contact classes for PGDAEM of SAMETI course 102 and 204. 28 Jan, 2016. SAMETI, Hyderabad.

Rathore S
Gender concerns and strategies for development of rural areas. International Training Programme on Empowerment of Women for Rural Development organized by Centre for Women Development and Gender Studies (CWDGS) from 12 October to 8 November, 2015, NIRD and PR, Hyderabad. 13 October, 2015

Delivered lectures on the topics: (1) Leadership styles. 20 October, 2015, (2) Delegation and coordination for good governance. 3 November 2015. International Training Programme on Good governance for Management of Rural Development programmes (sponsored by Ministry of External Affairs, Govt. of India) at NIRD and PR, Hyderabad from 12 October - 8 November, 2015.

Ravichandran S

Senthil Vinayagam S


Soam S K
Delivered seven lectures on topics ‘Implications of WTO in Indian agriculture’, ‘Logical framework approach’ and ‘Social media for effective sharing of agricultural knowledge’ in various training programmes at National Institute of Agricultural Extension Management (MANAGE), Hyderabad.

Delivered a lead/invited talk on ‘Geographical indications in Northeastern India: Research policy analysis for socioeconomic upliftment of rural communities’ at National seminar on ‘integrating agri-horticultural and allied research for food and nutritional security in the era of global climate disruption’ on 6th March. Seminar conducted by ICAR Research Complex for NEH Regions, Manipur center, Imphal, Manipur, 4-6 March 2016.

Sontakki B S

Strategies for Farmers Empowerment: Real life experiences in the ICAR Sponsored Winter School on Dynamics of Farmers Empowerment and Entrepreneurial Development at University of Agricultural Sciences. Dharwad. 29 November, 2015.

Outreach Strategies for Climate-smart Agriculture in the ICAR Sponsored Summer School on Climate Smart Agriculture: Lessons Learnt, Technological Advances and Research Priorities in Semi-arid Tropics at University of Agricultural Sciences, Raichur. 1 December 2015.


Thammi Raju D


Venkatesan P
Invited lecture in the training on “Community Forestry and JFM” for the in-service SFS officers of State Forest Department conducted by Central Academy for State Forest Services, GOI, Ministry of Environment and Forest, Coimbatore. 3-9 August 2015.
Happenings at NAARM
8.1 Special Events

During the reporting year, the Academy organized several events related to commitment of ICAR and the Government of India towards certain specific objectives. There were also particular events such as visit of Parliamentary Committee. The details are given in following paragraphs.

8.1.1 Digital India Week

The Digital India Week was celebrated during 1-7 July 2015; trainees of 102 FOCARS were exposed to ‘MyGov’ and were motivated to register with the website. A blog [http://102focars.blogspot.in] was initiated with four threads, the innovative ideas were collected and analyzed.

- Vision of India as a major global food supplier
- Making of smart villages for smart India
- Make in India a new mantra for rural entrepreneurship
- Organic agriculture

An orientation session was organized for PGDMA students, faculty and staff on use of NAARM digital initiatives. A special session was organized for NAARM faculty about recording process and use of MOODLE. Dr Kalpana Sastry, Joint Director recorded the digital lecture on ‘Introduction to Intellectual Property Systems’ on 6th July. The same day, through video conferencing Members of the Central Joint Staff Council (CJSC) and Dr D. Rama Rao, Director interacted with DG, ICAR. On 6th July, the X class students from the Bhartiya Vidya Bhavan, NIRD were exposed to smart class room and preparation of digital videos through recording of views of students about ‘Swachh Bharat’ and ‘Digital India’.

On 7th July, Mr. Jayesh Ranjan, IAS, Secretary, IT&EC, Telangana State delivering lecture to 102 FOCARS, PGDMA students and faculty

Mr. Jayesh Ranjan, IAS, Secretary, IT&EC, Telangana State delivering lecture to 102 FOCARS, PGDMA students and faculty

Government delivered a lecture on ‘ICT Applications in Rural Development’ to the 102 FOCARS, the PGDMA students and faculty. Mr. Ranjan shared the IT initiatives of Telangana Government related to supply of infrastructure and services, and generating demand for IT services with capacity enabling of citizens. During the week, 102 FOCARS developed their website [http://focars102.webs.com], and one of the 102 FOCARS scientists, Mr. Dilip Kushwaha developed an android mobile app. Reflecting special week activities, several videos were uploaded on YouTube.

The event was coordinated by Dr S.K. Soam with the team consisting of Drs A. Dhandapani, K. Srinivas, V.K.J. Rao, G.R.K. Murthy, M. Balakrishnan, P.D. Sreekanth, Ch. Janardhan Rao, Mr K.V. Kumar, Mr P. Mohan Singh and Mr S. Rajukumar.

8.1.2 Official Language Fortnight (Hindi Pakhwada)

The Official Language Implementation Meetings were held regularly in every quarter with compliance of the Official Language Policy. Constructive suggestions were given by the esteemed members on this platform for implementation of the Official Language Annual Programmes. These activities were taken up keeping in view the organizational goals.

Hindi fortnight celebration was organized in the
Academy during 2-15 September 2015 involving the faculty, officers, staff, and FOCARS and PGDMA students at the Academy. 102 & 103 FOCARS scientists were exposed to Official Language Policy of the Government of India. Various competitions such as ‘just a minute, general knowledge, elocution, jokes, memory, singing, scientific presentation’ were organized during the week. Prizes and Certificates were distributed to winners of various events (Table 8.1).

Hindi Pakhwada events were concluded with a closing ceremony on 22nd September 2015. Dr Narendra Singh Rathore, Deputy Director General (Education), ICAR was the Chief Guest and Dr Rama Rao, Director, NAARM presided the function. Dr J. Renuka, Assistant Director (OL) coordinated the event.

Table 8.1: Winners of Various Competitions

<table>
<thead>
<tr>
<th>Events</th>
<th>First prize</th>
<th>Second prize</th>
<th>Third Prize</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty &amp; Staff</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Just a minute</td>
<td>Dr K.Kareemulla, Dr R.V.S.Rao</td>
<td>Dr K.H.Rao</td>
<td>Sh. N.Raghunath, Sh. Zameer Ahmed</td>
</tr>
<tr>
<td>General Knowledge</td>
<td>Dr K.Kareemulla, Dr R.V.S.Rao</td>
<td>Dr A.Debnath, Dr K.H.Rao</td>
<td>Sh. N.Raghunath, Smt. N.Vijayalakshmi</td>
</tr>
<tr>
<td>Officers &amp; Employees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elocution</td>
<td>Dr K.H.Rao, Dr Surya Rathore, Sh. C.Julius Samuel</td>
<td>Smt Rukmani Ammal</td>
<td>Smt. Y.Anuradha</td>
</tr>
<tr>
<td>Jokes</td>
<td>Sh. Sohail Ahmed Khan</td>
<td>Sh. C.Julius Samuel</td>
<td>Sh. Sunder Raj</td>
</tr>
<tr>
<td>Just a minute</td>
<td>Smt. G.Aneeja, Sh. Sunder Raj</td>
<td>Sh. Sohail Ahmed Khan</td>
<td>Sh. N.Raghunath, Smt. V.Shailaja</td>
</tr>
<tr>
<td>Memory test</td>
<td>Sh. T.V.Ramdas</td>
<td>Smt. V.Saroja, Sh. C.Julius Samuel</td>
<td>Sh. T.Srinivas</td>
</tr>
<tr>
<td>General Knowledge</td>
<td>Sh. C.Julius Samuel</td>
<td>Sh. T.V.Ramdas</td>
<td>Smt. G.Aneeja, Sh. Sohail Ahmed Khan</td>
</tr>
<tr>
<td>Singing</td>
<td>Sh. C.Julius Samuel</td>
<td>Sh. Sunder Raj, Dr A.Debnath</td>
<td>Sh. Sohail Ahmed Khan, Sh. N.Raghunath, Smt. V.Shailaja</td>
</tr>
<tr>
<td>FOCARS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scientific Paper</td>
<td>Sh. Rajesh Bishnoi</td>
<td>Ms. Rajlakshmi Behera</td>
<td>Sh. Pankaj Kumar Sinha</td>
</tr>
<tr>
<td>Presentation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
8.1.3 Vigilance Week

The Academy celebrated Vigilance Week during 26-31 October 2015. Posters received from ICAR were displayed at various places in the Academy. Several activities were taken up during the week; the theme of the week was ‘Preventive Vigilance as Tool of Good Governance’. Several events such as vigilance pledge, competitions on identified theme, lecture by Dr S. Chakravarthy, IAS (Retd) were organized during the week.

The essay competition was organized on the identified theme; 13 staff members participated, and the winners for the best essay were:

- Mr D.D. Verma- Best Essay in Hindi
- Mr C. Julius Samuel- Best Essay in English
- Mrs N. Vijayalakshmi- Best Essay in Telugu

Debate competition was organized for the PGDMA students, and the winners were:

- Ms Sanjana Bhowmic- First Prize
- Mr Jaison Methew John- Second Prize
- Ms Pragati Mishra- Third Prize

On 31st October, Dr S. Chakravarthy, IAS (Retd) delivered a lecture on ‘Management of Change vis-à-vis Ethics and Corruption’ during the closing ceremony. He informed the importance of change with respect to ethics and combating corruption. In his address, change in LPG (Licensing-Planning-Government to Liberalization-Privatization-Globalization) was emphasized with suitable modifications in agricultural research approaches. On this occasion, Dr D. Rama Rao, Director, NAARM informed about the steps taken by ICAR under NATP and NAIP towards good governance, automation and reforms in management.

During the week, following were the major learning points;

- Definition and role of vigilance- it is a careful watch. The efforts to be made through sensitization and streamlining of the procedures, and also for reducing complaints and facilitate good governance. Enquiry as per policy, early disposal of cases, effective use of audit and public grievance system and compliance of procedures.
- Identification of possible areas for improvement, setting up appropriate system through automation, which bring transparency, minimize physical contact and reduce wasteful expenditure.
- Sensitization on major aspects, i.e. (i) No vigilance clearance, if no AIPR by 31st January, (ii) No tweaking with tender specifications, (iii) Reduce wasteful expenditure in procurement process, (iv) Mistakes and unintended actions in tender specifications and recruitment process, have attracted the highest number of vigilance cases.
Dr S.K. Soam, Vigilance Officer coordinated the event; he also attended ‘Vigilance Workshop’ conducted by ICAR on 28th October at NASC, New Delhi as part of the event.

8.1.4 World Soil Day

On 5th December 2015, the ‘World Soil Day’ was celebrated in order to realize the importance of soil as a critical component of the natural system and as a vital contributor to human well-being, as per resolution made by the International Union of Soil Sciences (IUSS). Micro-nutrient analysis of soil samples collected from the NAARM adopted villages was done, in cooperation with the local ICAR Institutes and Agricultural Universities, for the preparation and distribution of Soil Health Cards. As per ‘International Year of Soils- 2015’, all the banners of the Academy during the financial year were prepared with ‘Healthy Soils for Healthy Life’ as additional logo for awareness creation.

8.1.5 Study Visit of Parliamentary Standing Committee on Agriculture

The Parliamentary Standing Committee on Agriculture under the Chairmanship of Shri Hukmdev Narayan Yadav, 15 Members of Parliament visited Hyderabad during 14-17 January 2016. As scheduled study visit, the Committee interacted with officials and scientists from CRIDA, NAARM, MANAGE, AICI, ANGRAU, PJTSAU, Government of Telangana and Andhra Pradesh States. The Academy prepared and submitted a report on background material and list of points of discussion, and questions pertaining to NAARM. Dr D. Rama Rao, Director, NAARM presented Academy’s initiatives with respect to ‘comprehensive agricultural research based on geographical conditions and impact of climate change to ensure food security in the country’ on 16th January at Hotel Park Hyatt and at CRIDA. Dr S.K Soam was the Nodal Officer from NAARM, and Dr D. Rama Rao, Director, NAARM was the Chief Co-Liaison Officer for the entire Hyderabad visit.

8.1.6 National Science Day

The Academy celebrated National Science Day on 29th February 2016, and various activities were conducted on the occasion. More than 100 school students from the Bhartiya Vidya Bhavan, NIRD participated in lab visits and science quiz competition. A debate competition was also held for the PGDMA students of NAARM. Prizes were distributed to the winners. Dr Manoj p. Samuel coordinated the event with Drs A. Dhandapani, G.R.K. Murthy, M. Balakrishnan, Ch. Janardhan Rao, and Mr K.V. Kumar.

8.2 Reaching Out to Farmers

The Academy engaged with primary stakeholders (farmers and rural youth) in its own unique ways, as detailed in this Section.

8.2.1 Village Adoption under ‘Mera Gaon Mera Gaurav’

The Academy has adopted two villages, S. Lingotam and Tallasingaram in Chautuppal Mandal, Nalgonda...
district of Telangana State from 2nd October 2014 in partnership with Pratistha Industries. Initiated under the Government of India’s ‘Sansad Adarsha Gram Yojana’, these villages are now part of the ‘Mera Gaon Mera Gaurav’ and ‘Pradhan Mantri Kaushal Vikas Yojana’ to improve the livelihoods, integrate market linkages, and initiate faster, cheaper and efficient ICT-based transfer of technology. All the faculty and students were actively involved in: (i) farmers’ need assessment through baseline survey (ii) knowledge tests on major crops for assessing knowledge gaps (iii) focused group discussions on livelihoods, animal husbandry and crop husbandry (iv) ICTs access, usage and preference for agriculture (v) digitization of cadastral maps indicating village boundary and survey numbers. A knowledge platform for farmers was developed, which is being used to advise farmers on crop plan and socioeconomic interventions. The Academy in association with other Research and Development Departments also organized general health camps and skill development programmes for women.

Participatory Rural Appraisal (PRA) was conducted to notify the actual needs of the farming community. Integrated ICT Model was used for participatory needs assessment. Focused group discussions were organized in the project villages for finding the contingent needs and knowledge gaps on major crops. The results are listed below.

- Focused group discussion pertaining to livelihood, livestock and crop husbandry was organized and convened in both villages to sort out the felt needs.
- Vernacular information modules in text, audio and video formats were developed for major crops and vegetables, nutrient management, dairy management, and homestead products (no. 307). The content organizations also shared information through mobile platform.
- The mobile platform was extended to 49 farmers of S.Lingotam and 56 farmers of Tallasingaram, wherein 3,150 messages were sent through Cotton Information System from IIOR including 1,575 drought management messages, 1,260 plant protection messages, and 315 harvest and post-harvest messages.
- Thirty direct calls were made by the farmers to the subject experts at KVK, Kampasagar for information on cotton, paddy, red gram and vegetable crops and fertilizer management.
- The Voice Information System (http://aged.icrisat.org/gallery/ Krishi%20Vani%20Information%20System/) using participatory approach was linked to Kampasagar KVK IIDS (Annapurna Dissemination System) for further information transfer to farmers. There was 15 per cent increase in listening pattern of farmers after adopting participatory approach.
- Soil Health Card was distributed to the individual farmer beneficiaries of the adopted villages. The farmers’ database was developed to connect to the web application indicating the soil analysis results and to provide push-based Agro advisories directly to the mobiles of farmers. The Rural ICTs website was re-designed to include the clickable cadastral maps of the selected villages, viz. S.Lingotam and Tallasingaram, linking the survey number-wise macro- and micro-nutrient soil analysis results, adding web pages on nutrient management, compost making, backyard poultry, and uploading vernacular text, audio and video-based modules.
• Nominal, ordinal and functional linkage was facilitated with the KVK Kampasagar and Frontline demonstration on improved samba mahsuri paddy, PRG176 red gram and nutritional gardening was performed in the adopted villages.

• Conducted Farmers Field School (Polambadi) in adopted villages on PRG176 red gram, paddy varieties KNM-605 and JGL-21002, and imparted skill training on homestead products, besides field visits and market survey to PGDMA Course on Ag in/out marketing

• Survey of 30 women in village Tallasingaram was conducted. Based on their information needs, messages on nutrition and composting were developed in English, Hindi and Telugu for SMS.

8.2.2 Field Experience Training (FET)

Since beginning, FET - in various forms and varying duration, has been an integral part of the foundation training of ARS Scientists. Currently, this is spread over 21 days in the Second Phase of FOCARS at NAARM. Interdisciplinary teams of 5-8 ARS Scientist-probationers of FOCARS Batch are posted at KVKs/NGOs/ICAR Institutes/Research Stations of AU/s/other relevant Institutions. ‘Know your farmer and farming’ is the key tenet driving the structure and activities of FET. Using participatory methodologies like PRA, FET teams carry out focused study in a village around their FET Center to understand the field realities and problems of primary stakeholders. Based on thorough analysis of PRA data/information collected and stakeholder consultations, the teams then develop field- and need-based research projects to address the identified problems. The teams conduct a Village Seminar to share the village study findings and observations for review and triangulation, and an Institute Seminar to ground truth the problem analysis and action plan besides peer review. They prepare a ‘FET Report’, and submit it to FET Center for feasible action. The performance of trainees in FET is closely watched by the FET Center Head and Local Coordinator. Identified Faculty Members from NAARM monitor the FET including on-site facilitation for 2-3 days.

As a part of the FOCARS training, the 102nd and 103rd FOCARS Scientist-trainees were posted to Research Stations/KVKs (19 and 34 FET Centers, respectively) during the Second Phase of their training (FET) for 21 days (Tables 8.2 and 8.3).

Table 8.2: FET Centers of 102nd FOCARS (Duration: 08.08.2015-28.08.2015)

<table>
<thead>
<tr>
<th>FET Center</th>
<th>FET Village with District</th>
<th>NAARM Monitoring Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>KVK, HalsiLakhsarai, Bihar</td>
<td>Manpur village, Halsi district</td>
<td>M.Balakrishnan</td>
</tr>
<tr>
<td>KVK, Harnaut, Bihar</td>
<td>Preman Bigha village, Harnaut district</td>
<td>M.Balakrishnan</td>
</tr>
<tr>
<td>KVK, Kandali, Karnataka</td>
<td>Doddachakanahalli village, Kandali district</td>
<td>Bharat S.Sontakki</td>
</tr>
<tr>
<td>KVK, Dharwad, Karnataka</td>
<td>Somapur village, Dharwad district</td>
<td>Bharat S.Sontakki</td>
</tr>
<tr>
<td>Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala</td>
<td>Kazhakkuttam village, Thiruvananthapuram district</td>
<td>Manoj P.Samuel</td>
</tr>
<tr>
<td>KVK, Tavanur, Malappuram, Kerala</td>
<td>Vattamkulam village, Malappuram district</td>
<td>Manoj P.Samuel</td>
</tr>
<tr>
<td>KVK, Morena, Madhya Pradesh</td>
<td>Bisangpura village, Morena district</td>
<td>S.K.Soam</td>
</tr>
<tr>
<td>KVK, Pal Katori, Madhya Pradesh</td>
<td>Khiria Mau village, Ashoknagar district</td>
<td>S.K.Soam</td>
</tr>
<tr>
<td>KVK, Jalgaon, Maharashtra</td>
<td>Tahakali village, Jalgaon district</td>
<td>D.Thammim Raju</td>
</tr>
<tr>
<td>KVK, Mohol, Solapur, Maharashtra</td>
<td>Konheri village, Mohol district</td>
<td>K.H.Rao</td>
</tr>
<tr>
<td>ICAR - Central Institute for Women in Agriculture, Baramunda, Bhubaneswar, Odisha</td>
<td>Raipur village, Cuttack district</td>
<td>A.Dhandapani</td>
</tr>
<tr>
<td>KVK, Churu, Rajasthan</td>
<td>Badhasar village, Churu district</td>
<td>P.C.Meena</td>
</tr>
<tr>
<td>KVK, Virinjipuram, Vellore, Tamil Nadu</td>
<td>Thattaparai village, Vellore district</td>
<td>P.Venkatesan</td>
</tr>
<tr>
<td>FET Center</td>
<td>FET Village with District</td>
<td>NAARM Monitoring Faculty</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------------------------------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>KVK, Jalandhar, Punjab</td>
<td>KotBadal Khan village, Jalandhar district</td>
<td>A.Dhandapani</td>
</tr>
<tr>
<td>KVK, Rampur, Una, Himachal Pradesh</td>
<td>Jankaur village, Una district</td>
<td>A.Dhandapani</td>
</tr>
<tr>
<td>KVK, Begusarai, Bihar</td>
<td>Paharpur village, Begusarai district</td>
<td>A.Gopalam, Guest Faculty</td>
</tr>
<tr>
<td>KVK, Muzaffarpur, Bihar</td>
<td>Matlipur village, Muzaffarpur district</td>
<td>A.Gopalam, Guest Faculty</td>
</tr>
<tr>
<td>KVK, Kolhapur, Maharashtra</td>
<td>Nagaoon village, Kolhapur district</td>
<td>Bharat S.Sontakki</td>
</tr>
<tr>
<td>KVK, Vijayapura (Bijapur), Karnataka</td>
<td>Honnalli village, Vijayapur district</td>
<td>Bharat S.Sontakki</td>
</tr>
<tr>
<td>KVK, Ernakulam, (ICAR-CMFRI), Kerala</td>
<td>Nayarambal village, Ernakulam district</td>
<td>S.K.Soam</td>
</tr>
<tr>
<td>KVK, Khurda (Khurda) (ICAR-CIFA), Odisha</td>
<td>Rajas village, Odisha district</td>
<td>D.Thammi Raju</td>
</tr>
<tr>
<td>KVK, Dhule, Maharashtra</td>
<td>Japi village, Dhule district</td>
<td>K.H.Rao</td>
</tr>
<tr>
<td>KVK, Nagpur (ICAR-CICR), Maharashtra</td>
<td>Mangali village, Nagpur district</td>
<td>K.H.Rao</td>
</tr>
<tr>
<td>KVK, Alwar, Rajasthan</td>
<td>Hajipur village, Alwar district</td>
<td>K.Kareemulla</td>
</tr>
<tr>
<td>ICAR-IIHR, KVK, Hirehalli, Karnataka</td>
<td>Kolihali village, Tumakuru district</td>
<td>B.Ganesh Kumar</td>
</tr>
<tr>
<td>KVK, Haridwar, Uttarakhand</td>
<td>Sawatwali village, Haridwar district</td>
<td>K.Srinivas</td>
</tr>
<tr>
<td>KVK, Kashipur, Uttarakhand</td>
<td>Bannaker Sani village, Udham Singh Nagar district</td>
<td>K.Srinivas</td>
</tr>
<tr>
<td>KVK, Kannur, Kerala</td>
<td>Cheruthazham village, Kannur district</td>
<td>Manoj P.Samuel</td>
</tr>
<tr>
<td>KVK, Thrissur, Kerala</td>
<td>Chitilappilly village, Thrissur district</td>
<td>Manoj P.Samuel</td>
</tr>
<tr>
<td>KVK, Jaunpur, Uttar Pradesh</td>
<td>Majhaul village, Jaunpur district</td>
<td>M.Balakrishnan</td>
</tr>
<tr>
<td>KVK, West Champaran, Bihar</td>
<td>Rulhi Nizamat village, West Champaran district</td>
<td>M.Balakrishnan</td>
</tr>
<tr>
<td>KVK, Ruur, Nizamabad, Telangana</td>
<td>Hangara village, Nizamabad district</td>
<td>M.B.Dhathagiri</td>
</tr>
<tr>
<td>KVK, Haripuram, Visakhapatnam, AP</td>
<td>Pallapu Somavaram village, Visakhapatnam district</td>
<td>N.Sandhya Shenoy</td>
</tr>
<tr>
<td>KVK, Jorhat, Assam</td>
<td>NeuliGaon village, Jorhat district</td>
<td>N.Sivaramane</td>
</tr>
<tr>
<td>KVK, Morabadi (Ranchi), Jharkhand</td>
<td>Burhakocha village, Ranchi district</td>
<td>P.D.Sreekanth</td>
</tr>
<tr>
<td>Central Institute for Sub Tropical Horticulture, Lucknow, Uttar Pradesh</td>
<td>Mithenagar village, Lucknow district</td>
<td>P.Ramesh</td>
</tr>
<tr>
<td>KVK, Erode, Tamil Nadu</td>
<td>Andipalayam village, Erode district</td>
<td>P.Venkatesan</td>
</tr>
<tr>
<td>KVK, Palakkad, Kerala</td>
<td>Anakkara village, Palakkad district</td>
<td>P.Venkatesan</td>
</tr>
<tr>
<td>KVK, North Goa (ICAR-CCARI), Ella, Goa</td>
<td>Ibrampur village, North Goa district</td>
<td>S.Ravichanan</td>
</tr>
<tr>
<td>KVK, Wynad, Kerala</td>
<td>Appad village, Wayanad district</td>
<td>S.Ravichanan</td>
</tr>
<tr>
<td>KVK, Bilaspur, Chhattisgarh</td>
<td>Birgahni village, Bilaspur district</td>
<td>S.Senthil Vinayagam</td>
</tr>
<tr>
<td>KVK, Shadol, Madhya Pradesh</td>
<td>Senduri village, Shahdol district</td>
<td>S.Senthil Vinayagam</td>
</tr>
<tr>
<td>KVK, Ashoknagar, West Bengal</td>
<td>Srimontapur village, North 24 Parganas district</td>
<td>P.Ramesh</td>
</tr>
<tr>
<td>KVK, Birbhum, West Bengal</td>
<td>Durgapur village, Birbhum district</td>
<td>P.D.Sreekanth</td>
</tr>
<tr>
<td>KVK, Jodhpur (ICAR-CAZRI), Rajasthan</td>
<td>Kherapa village, Jodhpur district</td>
<td>Surya Rathore</td>
</tr>
<tr>
<td>KVK, Tonk, Rajasthan</td>
<td>Palei village, Tonk district</td>
<td>Surya Rathore</td>
</tr>
</tbody>
</table>
During FET, the scientist-trainees interacted with the farming community, understood their problems, and triangulated issues with other stakeholders, farmers, scientists, Development Department personnel, input agencies, and related industries. This enabled them to apply the concepts learnt at NAARM, identify and prioritize problems, and formulate viable projects on interdisciplinary consortia mode.

**Rythu Sadbhavana Yatra (Farmers Integration Tour)**

To repose confidence in farmers of Telangana State to deal with mounting distress due to drought, all the Heads of ICAR Institutes/other Institutes met and made an Action Plan. Accordingly, “Rythu Sadbhavana Yatra-Scientists Advice” was planned and inter-institutional teams were constituted to visit select villages in the nine districts of Telangana State to interact with the farmers to address their problems and offer agri-techno-advisories. Nine teams constituted for the above purpose, and NAARM Faculty visited all the selected districts during 5-6 October 2015; Table 8.4. These efforts helped in creating awareness among farmers about contingent farm/crop plans, and various programmes and schemes being implemented by the Central and State Governments for farmers’ welfare, and agro-techno-advisories. Media support was evoked to enable responsible reporting of the situation for public awareness and opinion.

### Table 8.4: Districts Covered under Rythu Sadbhavana Yatra in Telangana State

<table>
<thead>
<tr>
<th>District</th>
<th>Team as on 5th October 2015</th>
<th>Team as on 6th October 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mahbubnagar</td>
<td>Directors of ICAR Institutes, VC (PJTSAU), and VC (ANGRAU), V.K.J.Rao (NAARM), R.M.Kumar, A.P. Padma Kumari (IIRR), S.S.Rao (IIMR), Chari Appaji, G.Nirmala (CRIDA), Ranganadh (IIOR)</td>
<td>P.Ramesh (NAARM)</td>
</tr>
<tr>
<td>Medak</td>
<td>D.Thammi Raju (NAARM), A.S.Hariprasad, Amtul Waris (IIRR), Niranjan (DPR), R.Chapke (IIMR), Basappa (IIOR)</td>
<td>K.H.Rao (NAARM)</td>
</tr>
<tr>
<td>Nizamabad</td>
<td>M.S.Prasad, Jeyakumar (IIRR), U.Raj Kumar (DPR), P.Venkatesan (NAARM), Shashidhar Reddy (IIMR), Ramakrishna (NRCM)</td>
<td>K.Kareemulla (NAARM)</td>
</tr>
<tr>
<td>Adilabad</td>
<td>T.Vidhan Singh, Y.Sridhar (IIRR), B.Prakash (DPR), Umakanth (IIMR), Ravishankar (CRIDA), R.D.Prasad (IIOR)</td>
<td>---</td>
</tr>
<tr>
<td>Karimnagar</td>
<td>G.Katti, M.B.B.Prasad Babu, N.Srinivasmane (NAARM), Naga Sri (CRIDA), P.Mukesh (IIMR)</td>
<td>G.R.K.Murthy (NAARM)</td>
</tr>
<tr>
<td>Warangal</td>
<td>K.Surekha, L.V.Subba Rao (IIRR), S.K.Bhanja (DPR), Surya Rathore (NAARM), B.Subba Rayudu (IIMR), G.D.Satish Kumar (IIOR)</td>
<td>---</td>
</tr>
<tr>
<td>Nalgonda</td>
<td>D.Subrahmanyam, B.Sreedevi (IIRR), Rajasasina (DPR), S.Ravichandran (NAARM), Venugopal (NRCM), Ali (ABF)</td>
<td>P.D.Sreekanth (NAARM)</td>
</tr>
<tr>
<td>Ranga Reddy</td>
<td>C.N.Neeraja (IIRR), M.R.Reddy (DPR), G.Padmavathi, Padmaiah (IIOR), D.Balakrishna (IIMR), Prasanna (ABF), K.Sridevi (CRIDA)</td>
<td>---</td>
</tr>
<tr>
<td>Khammam</td>
<td>D.V.K.Nageswara Rao, V.Jhansi Lakshmi (IIRR), Shyam Prasad (IIMR), G.Suresh (IIOR), Dattaru (ATARI), Dhanraj Boina (NIPHM)</td>
<td>K.Srinivas (NAARM)</td>
</tr>
</tbody>
</table>
8.3 Empowering Women in Agriculture

8.3.1 International Women’s Day
On 8th March 2016, International Women’s Day was celebrated by organizing specific events. In the first phase, various competitions were organized in NAARM Campus for the staff as well as for the Scientist-Probationers of 103 FOCARS. There was good participation of women in various competitions such as Rangoli, extempore speech, essay writing, quiz, etc. All these events were on the very theme of ‘Women Empowerment’. This year’s Theme was ‘Gender Equity 50+50 by 2030’. Also, two women entrepreneurs were called to put up the exhibition of their home-made products. Dr C.Suvarna, IFS, Member Secretary, Telangana State Biodiversity Board delivered a lecture to the NAARM staff. On this occasion, she also distributed Certificates and prizes to the winners of various events.

8.3.2 Capacity Building: Home-based Activities
The concept of ‘Nutrition Garden’ was explained to the rural women in village Tallasingaram, which can be developed on available land near to home. The seeds were distributed to nine women for the establishment of nutrition gardens. It is interesting to note that Mrs T. Ettemma, a farm woman among these nine has done very well in her endeavour; she has saved Rs 3,500/month by consuming home grown vegetables and also earned Rs. 900/- per month out of the sale from her nutrition garden. Nearing Deepawali festival on 21st November 2015, the women of this village and another adopted village, i.e. S. Lingotam were also trained in candle and Diya making, so that they can earn some money from additional non-farm activities.

8.3.3 Capacity Building: On Farm Activities
‘Women in Agriculture Day’ was celebrated at the Tallasingaram village on 10th December 2015. It was organized in collaboration with the Krishi Vigyan Kendra, Kampasagar (PJSTAU, Hyderabad). About 30 women attended the demonstration which was given by Ms. Krishnaveni, Subject Matter Specialist (Home Science) and Ms. K. Mamatha, Research Associate (Crop Production). They made the women aware of drudgery reducing technologies, such as cotton harvest bag, seed and fertilizer bag and ‘bhendi plucker’. Rural women were explained how these tools reduce drudgery and increase efficiency of farm women, and also would help in health protection. The women empowerment activities were coordinated by Drs Surya Rathore and N.Sandhya Shenoy.
8.4 Health and Cleanliness Drive

8.4.1 Health Camp

Health checkups for the staff and employees of the NAARM Campus were conducted at regular intervals. On the occasion of the celebration of World Diabetic Week, a mega Health Camp was conducted at the Academy’s Health Center on 18th November 2015. In the Camp, a series of investigations viz. FBS/ RBS/ PPBS, Biothesiometry (diabetic neuropathy) test, Spirometry, ECG, and HbA1C test were carried out. Another mega Health Camp was held on 9th March 2016. In this Camp also, various tests such as FBS/ PPBS/ RBS, HbA1C, diabetic neuropathy, BMD, Spirometry, and ECG were conducted. Traditionally, Blood Donation Camps are organized in each and every FOCARS Batch, and one was also held on 28th March 2016. A team of doctors and staff from ‘Red Cross’, Hyderabad facilitated the Blood Donation Camp.

8.4.2 Swachh Bharat Abhiyan

In line with ‘Swachh Bharat Abhiyan’ of the Government of India, a cleanliness drive involving faculty, staff, students, and scientist-trainees was successfully conducted across the Campus on 25th September 2015. In another programme, more than 200 participants including faculty, staff, students, and scientist-trainees took part in the Swachh Bharat Abhiyan conducted across the Campus on 27th March 2016. Dr Trilochan Mohapatra, Secretary (DARE) & Director General (ICAR) and Shri Chhabilendra Roul, IAS, Additional Secy. (DARE) & Secretary, ICAR also participated actively in this event. In addition, the Academy organized mini ‘Clean the Campus’ programmes, on an average once a month, taking up cleaning of specific areas of the Campus with a motive to remove plastics and other waste materials.
8.5 Sports, Yoga and Meditation

8.5.1 Sports

Physical training was made an integral component of the Course for the first time for FOCARS. As a part of the physical training, Yoga, meditation and sports were organized in four groups. In respect of sports activity, trainees were exposed to shuttle badminton, table tennis, volleyball, football, and some athletic events. The sports tournaments were organized for 102 FOCARS on 11th and 12th July 2015. Many events including marathon, shuttle, table tennis, carom, cricket, and volleyball were successfully organized. A sports meet was organized on the occasion of Republic Day between NAARM staff, PGDMA students and 103 FOCARS Scientist-trainees, in which events like volleyball, shuttle badminton, and table tennis were conducted. Prizes were distributed on January 26, 2016.

NAARM team participated in ICAR South Zone Sports Meet held at CIFT, Kochi during 25-29 May 2015. More than 600 Sports Contingents from 25 ICAR Institutes of Southern States comprising Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, and Telangana participated in the Sports Meet. Mr M.K. Samson of NAARM won 1st prize in Discus and Carom (Singles), and 2nd prize in Shot put and Javelin. He was also adjudged as the Best Athlete of the Tournament along with Mr Paulose Jacob Peter of CMFRI, Kochi. Mrs Rukmini Ammal of the Academy won 1st prize in Shuttle Badminton (Singles) and Carom (Singles), and 2nd prize in Shot put, Discus throw and Table Tennis (Singles). Dr Manoj P. Samuel was the Chief de Mission for the NAARM Contingent. Sh. T.C. Yohannan, Olympian and Arjuna Awardee was the Chief Guest for closing Ceremony.

The Academy participated in the ICAR Inter-zonal Final Sports Meet held at CAZRI, Jodhpur during 8-12 February 2016. More than 450 Sports Persons and Officials from 45 ICAR Institutes from Central, East, South, West, and North Zones participated in the Meet. Mr M.K. Samson of NAARM won 3rd prize in Discus throw; and Mrs Rukmini Ammal won 1st prize in Shuttle Badminton (Singles) - this is her 10th Winner title at the Inter-zonal level; 2nd prize in Discus throw and 3rd in Shot put. Mr Zameer Ahmed was the Chief de Mission for the Jodhpur event.
8.5.2 Yoga

Yoga is a mandatory component of Foundation Courses, and participants of other Programmes were also encouraged to join Yoga sessions in the early morning. As per the Government of India policy, ‘International Yoga Day’ was celebrated on 21\textsuperscript{st} June 2015; the staff, trainees and school children participated in this event with full zeal and enthusiasm.

8.5.3 Meditation

The Spiritual and Meditation Lectures are often organized in various training programmes. On the Academy’s Foundation Day on 1\textsuperscript{st} September 2015, Swami Bhitiharananda of Rama Krishna Math, Hyderabad delivered a lecture on this Theme for the benefit of faculty, staff, trainees, and students.
8.6 Visitors at NAARM

In view of the uniqueness of its leadership role in the area of Agricultural Research, Education and Extension Management, NAARM attracts visitors from different parts of the country and abroad. During the period under report, several Senior Officials from the National and International Organizations visited the Academy and interacted with the Faculty and Officers (Table 8.5).

Table 8.5: Distinguished Visitors during 2015-16

<table>
<thead>
<tr>
<th>No.</th>
<th>Name and Designation</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Dr Suresh Babu, Head of Capacity Strengthening, IFPRI, Washington DC, USA.</td>
<td>29th May 2015</td>
</tr>
<tr>
<td>2.</td>
<td>Dr Arvind Kumar, Ex- DDG (Edn); Vice Chancellor, CAU, Jhansi.</td>
<td>30th May 2015</td>
</tr>
<tr>
<td>3.</td>
<td>Dr Ranjini Warrior, Advisor, Department of Environment, MoEF &amp; CC, Government of India.</td>
<td>3rd June 2015</td>
</tr>
<tr>
<td>5.</td>
<td>Dr C. Prasad, Former Director, NAARM &amp; Former DDG (Extn), ICAR, New Delhi.</td>
<td>16th July 2015</td>
</tr>
<tr>
<td>7.</td>
<td>Dr S. Ayyappan, Secy. (DARE) &amp; DG, ICAR, New Delhi.</td>
<td>13th December 2015 and 7th January 2016</td>
</tr>
<tr>
<td>9.</td>
<td>Dr David Bergvinson, Director General, ICRISAT, Hyderabad.</td>
<td>5th September 2015</td>
</tr>
<tr>
<td>10.</td>
<td>Dr N.S. Rathore, DDG (Edn.), ICAR, New Delhi.</td>
<td>22nd September 2015</td>
</tr>
<tr>
<td>11.</td>
<td>Dr Panjab Singh, Ex-Secy. (DARE) &amp; DG, ICAR, New Delhi.</td>
<td>30th September 2015</td>
</tr>
<tr>
<td>12.</td>
<td>Dr Johannes Keizer, FAO, Rome.</td>
<td>6th October 2015</td>
</tr>
<tr>
<td>13.</td>
<td>Shri Bandaru Dattatrey, Hon’ble. Minister for Labour &amp; Employment, Govt. of India, New Delhi.</td>
<td>20th October 2015</td>
</tr>
<tr>
<td>15.</td>
<td>Dr Daniel Gustafson, DDG (O), FAO, Rome.</td>
<td>5th March 2016</td>
</tr>
<tr>
<td>17.</td>
<td>Dr Trilochan Mohapatra, Secy. (DARE) &amp; DG, ICAR, New Delhi.</td>
<td>26th March 2016</td>
</tr>
<tr>
<td>18.</td>
<td>Shri Chhabilendra Roul, IAS, Additional Secy. (DARE) &amp; Secretary, ICAR, New Delhi.</td>
<td>26th March 2016</td>
</tr>
</tbody>
</table>
8.6.1 Foreign Delegates

A delegation of 40 Scientists and Managers from African Countries viz. Kenya, Malawi and Liberia visited the Academy on August 4, 2015. The delegates were briefed about the Academy’s activities and current trends in ‘Agricultural Research Management’ in India, and also services it can provide in the areas of capacity development, technology commercialization and education management. The visit was facilitated by MANAGE, Hyderabad.

Besides, 15 delegates from Bangladesh visited on 15th June 2015; and 7 delegates from Nepal visited the Academy on 7th September 2015.

A team of delegates from the Michigan State University, USA visited the Academy on October 5, 2015 and held discussion with the Director, Joint Director and Faculty Members. They also visited the Centre for Agri Innovation and TELAgE Lab. The team comprised Prof. Karim Maredia, Dr Ruth Mbabazi and Dr. Hashini Galhena.

8.6.2 Agricultural Students

The Academy hosted the visit of 26 Batches of students from various Agricultural Universities in the country at different dates (Figure 8.1). Out of the total 1,799 student visitors, the maximum number (844) was from Tamil Nadu. The students were exposed to the latest technological advancements in the agricultural research, education and extension education in the country.

Figure 8.1: Student Visitors at NAARM during 2015-16
Training & Capacity Building of Staff
Training and Capacity Building of Staff

The HRD budget of Rs 15 Lakh was 100 per cent utilized during the period of reporting. For the Faculty Members, the details of trainings, Conferences, Seminars and Symposia attended by them are also given in the Chapter on Publication, Expert Recognition and Participation. The list for Scientists, Administrative and Financial Staff, Technical Staff, and SSGs who have undergone training and capacity building programmes is given in Tables 9.1 to 9.5.

9.1 Annual Training Plan: Physical Targets and Achievements

Table 9.1: Annual Training Plan: Physical Targets and Achievements during 2015-16

<table>
<thead>
<tr>
<th>Category</th>
<th>Total No. of Employees</th>
<th>No. of Trainings Planned</th>
<th>No. of Employees Undergone Training</th>
<th>% Realization of Trainings Planned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific</td>
<td>28</td>
<td>13</td>
<td>13</td>
<td>100.00</td>
</tr>
<tr>
<td>Technical</td>
<td>38</td>
<td>15</td>
<td>8</td>
<td>53.30</td>
</tr>
<tr>
<td>Administrative &amp; Finance</td>
<td>38</td>
<td>8</td>
<td>22</td>
<td>275.00</td>
</tr>
<tr>
<td>SSS</td>
<td>36</td>
<td>18</td>
<td>19</td>
<td>105.50</td>
</tr>
<tr>
<td>Total</td>
<td>140</td>
<td>54</td>
<td>41</td>
<td>75.93</td>
</tr>
</tbody>
</table>

9.2 Training/Workshops Attended by Scientists

Table 9.2: Training/Workshops attended by Scientists during 2015-16

<table>
<thead>
<tr>
<th>Scientist Name, Surname</th>
<th>Program Name</th>
<th>Dates</th>
<th>Name &amp; Address of Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>M. Balakrishnan</td>
<td>National Seminar on Harmonizing Biodiversity and Climate Change: Challenges and Opportunity</td>
<td>17-19 April 2015</td>
<td>CIARI, Port Blair</td>
</tr>
<tr>
<td>M. Balakrishnan</td>
<td>Right to Information Act 2005</td>
<td>27-28 April 2015</td>
<td>ISTM, New Delhi</td>
</tr>
<tr>
<td>M. Balakrishnan</td>
<td>Training Workshop on Innovative/Best Practices in NeGP-Agriculture &amp; Allied Sectors</td>
<td>30 July-1 August 2015</td>
<td>UAS, Dharwad</td>
</tr>
<tr>
<td>M. Balakrishnan M</td>
<td>NextGen Genomics &amp; Bioinformatics Technologies</td>
<td>1-3 October, 2015</td>
<td>HICC, Hyderabad</td>
</tr>
<tr>
<td>M. Balakrishnan</td>
<td>International Conference</td>
<td>5-7 January 2016</td>
<td>India</td>
</tr>
<tr>
<td>Bharat S. Sontakki</td>
<td>National Workshop on Forward Thinking for Agriculture Development in Western India by 2030</td>
<td>8 February-10 March 2016</td>
<td>SDAU, Dhanewada</td>
</tr>
<tr>
<td>A. Dhandapani</td>
<td>Training programme ArcGIS Server</td>
<td>7-10 July 2015</td>
<td>NAARM, Hyderabad</td>
</tr>
<tr>
<td>A. Dhandapani</td>
<td>18th Annual Conference on Statistics and Computer Application</td>
<td>18-20 February 2016</td>
<td>Jammu</td>
</tr>
<tr>
<td>R. Kalpana Sastry</td>
<td>Innovation Workshop</td>
<td>30 June 2015</td>
<td>Hotel Taj Gateway, Bengaluru</td>
</tr>
<tr>
<td>Manoj P. Samuel</td>
<td>Conference on Climate Change and Sustainable Water Resources</td>
<td>3-4 September 2015</td>
<td>NIT-Warangal, Warangal</td>
</tr>
<tr>
<td>Manoj P. Samuel</td>
<td>Society for Technology Management</td>
<td>26-27 November, 2015</td>
<td>Hyderabad</td>
</tr>
<tr>
<td>P. C. Meena</td>
<td>Rural Conclave</td>
<td>25 November 2015</td>
<td>New Delhi</td>
</tr>
<tr>
<td>P. C. Meena</td>
<td>FDP on Contemporary Area in Finance</td>
<td>19-20 February 2016</td>
<td>DPS SR, New Delhi</td>
</tr>
<tr>
<td>P. Venkatesan</td>
<td>Faculty Development Workshop</td>
<td>26-28 August 2015</td>
<td>India</td>
</tr>
</tbody>
</table>
### 9.3 Training/Workshops attended by Administrative & Finance Staff

**Table 9.3: Training/Workshops Attended by Administrative & Finance Staff**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Title of Training/Workshop</th>
<th>Dates</th>
<th>Name &amp; Address of Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.D.Verma</td>
<td>Comptroller</td>
<td>Analysis of Financial Statements</td>
<td>3-5 February 2016</td>
<td>NIFM, Faridabad</td>
</tr>
<tr>
<td>N.Vijayalakshmi</td>
<td>Junior Accounts Officer</td>
<td>Management Development Programme on Accrual Accounting in Autonomous Bodies for Officers in ICAR System</td>
<td>22-27 June 2015</td>
<td>NIFM, Faridabad</td>
</tr>
<tr>
<td>P.Srinivasu</td>
<td>Assistant</td>
<td>Training Programme on Pension &amp; Other Retirement Benefits</td>
<td>21-24 September 2015</td>
<td>ISTM, New Delhi</td>
</tr>
</tbody>
</table>
### 9.4 Training/Workshops Attended by Technical Staff

**Table 9.4: Training/Workshops Attended by Technical Staff**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Title of Training/Workshop</th>
<th>Dates</th>
<th>Name &amp; Address of Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.A.Basith</td>
<td>Chief Technical Officer</td>
<td>International training on Regional Plant Health Systems Analysis (NIPHM-USDA Collaboration)</td>
<td>23 November 2015 - 07 December 2015</td>
<td>NIPHM, Hyderabad</td>
</tr>
<tr>
<td>K.V.Kumar</td>
<td>Asst. Chief Technical Officer</td>
<td>Training programme ArcGIS Server</td>
<td>7-10 July 2015</td>
<td>ESRI India</td>
</tr>
<tr>
<td>P.Vijender Reddy</td>
<td>Asst. Chief Technical Officer</td>
<td>ICAR Sponsored Short Course on Communication Skills and Management Skills for Extension Professionals</td>
<td>1-10 June 2015</td>
<td>NAARM, Hyderabad</td>
</tr>
<tr>
<td>P.Vijender Reddy</td>
<td>Asst. Chief Technical Officer</td>
<td>Training Workshop on Competency Development for HRD Nodal Officers of ICAR</td>
<td>10-12 February 2016</td>
<td>NAARM, Hyderabad</td>
</tr>
<tr>
<td>P.Vijender Reddy</td>
<td>Asst. Chief Technical Officer</td>
<td>Workshop on National Training Policy</td>
<td>28-29 March 2016</td>
<td>ISTM, New Delhi</td>
</tr>
<tr>
<td>L.M.Ahire</td>
<td>Senior Tech.Offer</td>
<td>Short Course on Communication and Management Skills for Extension Personals</td>
<td>1-10 June 2015</td>
<td>NAARM, Hyderabad</td>
</tr>
<tr>
<td>M.Sreenivasa Rao</td>
<td>Technical Assistant</td>
<td>Electrical Pumps Maintenance</td>
<td>10-11 April 2015</td>
<td>Andhra Pradesh Bankers Institute of Rural and Entrepreneurship Development, ARI Campus, Hyderabad</td>
</tr>
<tr>
<td>B.Venkatram</td>
<td>Senior Technician</td>
<td>Electrical Pumps Maintenance</td>
<td>10-11 April 2015</td>
<td>Andhra Pradesh Bankers Institute of Rural and Entrepreneurship Development, ARI campus, Hyderabad</td>
</tr>
<tr>
<td>K.Daniel</td>
<td>SSS</td>
<td>Electrical Pumps Maintenance</td>
<td>10-11 April 2015</td>
<td>Andhra Pradesh Bankers Institute of Rural and Entrepreneurship Development, ARI campus, Hyderabad</td>
</tr>
</tbody>
</table>

### 9.5 Training Attended by Administrative, Finance, and Skilled Support Staff at NAARM

**Table 9.5: Training Attended by Administrative, Finance, and Skilled Support Staff at NAARM**

<table>
<thead>
<tr>
<th>Training Programme</th>
<th>Dates</th>
<th>Name &amp; Address of Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-day Training Programme on ‘How to Operate AV Aids &amp; LCD Projectors’ for Skilled Support Staff (23rd November 2015)</td>
<td>Ashok Basetty, Balraj Pustakala, Daniel K, Ganesh Kumar Manne, Jangaiah Suniganti, S. Nayab Rasool, Satyanarayana Kumba, Satyanarayana Kyasam, Venkatesham Chilumula, Yadaiah P</td>
<td></td>
</tr>
</tbody>
</table>
Personnel
Personnel

Research Management Positions
1. Dr D.Rama Rao, Director
2. Dr R.Kalpana Sastry, Joint Director

Faculty
HoDs
1. Dr I.Sekar, HoD-RSM (w.e.f 18.03.2016)
2. Dr P.Manikandan, HoD-HRM (up to 31.12.2015)
3. Dr S.K.Soam, HoD-ICM

Principal Scientists and l/c HoDs
1. Dr B.Ganesh Kumar, I/c HoD-ABM (w.e.f. 01.01.2016)
2. Dr K.Kareemulla, I/c HoD-RSM (01.01.16 to 17.03.2016)
3. Dr N.Sandhya Shenoy, I/c HoD-XSM
4. Dr P.Ramesh, I/c HoD, ESM & ABM Divisions
5. Dr. R.V.S.Rao, I/c HoD-HRM (w.e.f. 01.01.2016)

Principal Scientists
1. Dr A.Dhanda
2. Dr Bharat S.Sontakki
3. Dr D.Thammi Raju
4. Dr G.P.Reddy
5. Dr G.R.K.Murthy
6. Dr K.Srinivas
7. Dr K.H.Rao
8. Dr M.Balakrishnan
9. Dr M.B.Dastagiri
10. Dr Manoj P.Samuel
11. Dr N.H. Rao
12. Dr Ranjith Kumar (on deputation with ICRISAT)
13. Dr S.Ravichandran
14. Dr S.Senthil Vinayagam
15. Dr Surya Rathore
16. Dr V.K.J.Rao

Senior Scientists
1. Dr N.Sivaramane
2. Dr P.Venkatesan
3. Dr P.D.Sreekanth
4. Dr P.C.Meena

Scientists
1. Dr Sanjiv Kumar
2. Shri S.P.Subash
3. Dr V.V.Sumanth Kumar (on deputation with ICRISAT)

Administration and Finance
Chief Admn. Officer
1. Sh. B.D.Phasal
2. Sh. Debasis Moitra

Comptroller
4. Sh.J.Renuka

Asst. Director (OL)
5. Sh.P.G.Kohad
6. Sh.P.Neelakantam

Private Secretaries
7. Sh.N.Raghunath
8. Sh.P.Anand Kumar
9. Smt.A.Mercy

Junior Accounts Officer
10. Mrs.N.Vijayalakshmi

Assistants
11. Sh.M.Dinesh
12. Sh.T.Srinivas
13. Sh.G.Raj Reddy
14. Sh.C.Phani Raj
15. Smt.B.Padma Saroja
16. Sh.P.Srinivasu
17. Smt.G.Jessie Ecclicia
18. Sh.R.Chandra Babu
19. Sh.C.Julius Samuel
20. Sh.K.R.Ghanshyam

Personal Assistants
21. Sh.M.Venkatesh
22. Sh.T.V.Ramadas
23. Smt.T.Vanisri (on deputation with UIDAI )
24. Smt.Y.Anuradha
25. Smt.S.Sesha Sai
26. Smt.RukmaniAmmal

Upper Division Clerks
27. Sh.M.Sridhar (on deputation with UIDAI )
28. Smt.Y.Gayathri
29. Sh.P.Venkatesh
30. Sh.M.K.Samson
31. Smt.RajashriBokde
32. Sh.K.Suryanarayana

Stenographers Grade III
33. Smt.K.Radha Sujatha
34. Smt.S.Shanthi
35. Smt.V.Shailaja

Lower Division Clerk
36. Sh.P.Swamy
37. Sh.M.Narsing Rao
38. Sh.M.Ashok
39. Sh.C.Bikshapathi

Technical

Grade T-9 (Category-III)
1. Dr.V.Murali, Chief Technical Officer (Garden Superintendent)
2. Dr.A.Debnath, Chief Technical Officer (Medical Officer)
3. Sh.Zameer Ahmed, Chief Technical Officer (Manager {HS})
4. Dr.Ch.Janardhan Rao, Chief Technical Officer (Video cameraman)
5. Dr.M.A.Basith, Chief Technical Officer (Jr. Farm Superintendent)

Grade T(7-8) (Category-III)
6. Sh.K.V.Kumar, Assistant Chief Technical Officer (Statistical Assistant)
7. Sh.P.Namdev, Assistant Chief Technical Officer (Graphic-cum-visualizer)
8. Sh.P.Vijender Reddy, Assistant Chief Technical Officer (Research Assistant)
9. Sh.Sohail Ahmad Khan, Assistant Chief Technical Officer (Junior Engineer-Civil)
**Grade T-6 (Category-III)**
- 10. Smt. G. Aneeya, Sr. Technical Officer (Assistant Editor)
- 11. Sh. P. Mohan Singh, Sr. Technical Officer (Computer Assistant)
- 12. Sh. Sham Bahadur, Sr. Technical Officer (Catering in-charge)
- 13. Sh. M. Shekhar Reddy, Sr. Technical Officer (Dark Room Assistant)
- 14. Dr Ahire Laxman Maharu, Sr. Technical Officer (Horticultural Technical Assistant)
- 16. Sh. Ravi Viswanathan, Sr. Technical Officer (Editor-cum-Information Officer)

**Grade T-5 (Category-II)**
- 17. Sh. L. Ramesh, Technical Officer (Technical Assistant (Electrical))
- 18. Sh. N. Naresh Kumar, Technical Officer (VCR-cum-Telecine Operator)
- 19. Smt. Savithri Murali, Technical Officer (Catering in-charge)
- 20. Sh. B. S. N. Murthy, Technical Officer (Technician Electrical)
- 21. Sh. K. Obulapathi, Technical Officer (Technician Electrical)
- 23. Sh. M. K. Sonkusare, Technical Officer (Technician Electrical)
- 24. Sh. K. Shivaiah, Technical Officer (Technician)
- 25. Sh. D. Rajagopal Rao, Technical Officer (Media Operator)

**Grade T-4 (Category-II)**
- 27. Sh. ACRPN. Rao, Sr. Technical Assistant (Lineman)
- 28. Sh. P. Srinivas, Sr. Technical Assistant (Proof Reader)
- 29. Sh. T. Laxman, Sr. Technical Assistant (Driver)
- 30. Sh. S. Sunder Raj, Sr. Technical Assistant (Media Operator)

**Grade T-3 (Category-II)**
- 31. Sh. G. Muthyalu, Technical Assistant (Driver)
- 32. Sh. N. Ashok, Technical Assistant (Driver)
- 33. Sh. P. Gaikwad, Technical Assistant (Binder)
- 34. Sh. N. Prabhakar, Technical Assistant (Plumber)
- 35. Sh. M. Srinivasa Rao, Technical Assistant (Pump Driver)
- 36. Sh. K. V. Narasaiah, Technical Assistant (Carpenter-cum-Painter)

**Grade T-2 (Category-I)**
- 37. Sh. B. K. Venkatram, Sr. Technician (Pump Driver)
- 38. Sh. R. Siva Prasad, Sr. Technician (Driver)

**Skilled Support Staff**
- 2. Sh. Sirigiri Venkatesh, Xerox Machine Operator
- 3. Sh. Phool Kumar
- 4. Sh. Khaliad
- 5. Sh. P. Balraj
- 6. Smt. B. Santhamma
- 7. Smt. S. Shakuntala
- 8. Smt. B. Bharathamma
- 9. Sh. S. Jangaiah
- 10. Sh. Kumba Satyanarayana
- 11. Sh. K. Pentaiah
- 12. Sh. T. Jangaiah
- 13. Sh. P. Yadaih
- 14. Sh. G. Pentaiah
- 15. Sh. J. Chandraiah
- 16. Sh. M. Krishnaiah
- 17. Sh. R. Subbaiah
- 18. Smt. G. Anasuya
- 19. Smt. Indirapati Bharatamma
- 20. Sh. C. Chandramouli
- 21. Sh. G. Dasaratha
- 22. Smt. Nazia Parveen
- 23. Sh. L. Satyanarayana
- 24. Smt. S. Sukunamma
- 25. Smt. M. Yadamma
- 26. Smt. C. Narasibai
- 27. Smt. C. Kaalaiah
- 28. Sh. M. Ganesh Kumar
- 29. Sh. Chiilumula Venkatesh
- 30. Sh. Sirigiri Narasimha
- 31. Sh. Kyasam Satyanarayana
- 32. Sh. B. Premdas
- 33. Smt. V. Saroja
- 34. Sh. S. Nayab Rasool
- 35. Sh. B. Ashok
- 36. Sh. K. Daniel

**Transfer**
1. Shri Sanjay Kant, Joint Director (Admn.) & Registrar relieved in the A/N of 20.06.2015 on his transfer to Personnel Division, ICAR Headquarters, New Delhi

**Appointments**
1. Dr S. Senthil Vinayagam, Principal Scientist joined the Academy in the A/N of 16.04.2015 on transfer from Indian Institute of Millets Research (formerly known as NRC for Sorghum), Rajendranagar, Hyderabad.
2. Shri B. D. Phansal joined the Academy as Chief Admn. Officer on 20.06.2015 against the post of JD (A) & R on his transfer from NBSS&LUP, Nagpur.
3. Dr M. B. Dastagiri, Principal Scientist joined the Academy on 01.09.2015 subsequent his transfer from ICAR-NCAP, New Delhi.
4. Dr I. Sekar joined as Head of the Department, Research System Management (RSM) division on 18.03.2016 on selection from Indian Agricultural Research Institute (IARI), New Delhi.
5. Shri S. P. Subash, Scientist joined the Academy on 09.10.2015 after completion of 102 FOCARS.
6. Dr Sanjiv Kumar, Scientist joined the Academy on 12.10.2015 after completion of 102 FOCARS.

**Promotions**
1. Dr Ranjit Kumar promoted from Senior Scientist to Principal Scientist under CAS w.e.f. 01.05.2013
2. Dr B. Ganesh Kumar, promoted from Senior Scientist to...
6. Smt.A. Mercy, Personal Assistant has been promoted as Private Secretary w.e.f. 10.02.2016

Retirement
1. Dr N.H. Rao, Principal Scientist, retired w.e.f. 31.03.2016 on superannuation after attaining the maximum age of 62 years
2. Dr P. Manikandan, Head, HRM Division superannuated on 31.12.2015 on attaining the maximum age of 62 years.
3. Shri N.R. Nageswar Rao, T-5

Foreign Deputation
5. As given in Table 10.1, two scientists visited abroad for professional meetings.

Table 10.1: Foreign Deputation of NAARM Scientists

<table>
<thead>
<tr>
<th>Name</th>
<th>Theme of the Visit</th>
<th>Country</th>
<th>Host Institute</th>
<th>Duration No. of Days (Dates)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr R. Kalpana Sastry</td>
<td>High Level Policy Dialogue on Investment in Agricultural Research for Sustainable Development in Asia and the Pacific</td>
<td>Thailand</td>
<td>Asia-Pacific Association of Agricultural Research Institutions (APAARI), Bangkok, Thailand</td>
<td>2 days (8-9 December 2015)</td>
</tr>
<tr>
<td>Dr B. Ganesh Kumar</td>
<td>Socio-economic Methodology Workshop in the DBT funded Project on ‘Socio-economic Analysis of Finger Millets in India under the ISCB Network Project on Genetic Enhancement and Nutrient Availability in Finger Millet’</td>
<td>Switzerland</td>
<td>Bern University of Applied Sciences School of Agricultural, Forest &amp; Food Sciences (HAFL) and the Research Institute of Organic Agriculture (FiBL)</td>
<td>3 days (20-22 April 2015)</td>
</tr>
<tr>
<td>Dr B. Ganesh Kumar</td>
<td>High Level Policy Dialogue on Investment in Agricultural Research for Sustainable Development in Asia and the Pacific</td>
<td>Thailand</td>
<td>Asia-Pacific Association of Agricultural Research Institutions (APAARI), Bangkok, Thailand</td>
<td>2 days (8-9 December 2015)</td>
</tr>
</tbody>
</table>
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