

NATIONAL ACADEMY OF AGRICULTURAL RESEARCH MANAGEMENT

वार्षिक प्रतिवेदन

ANNUAL REPORT

2004-2005

भाकृअनुप  
ICAR

राष्ट्रीय कृषि अनुसंधान प्रबंध अकादमी  
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## Contents

Preface	
Executive Summary	6
Introduction	12
Training Achievements	20
Feedback	34
Workshops, Seminars, Conferences, etc.	35
Research Achievements	42
Collaboration, Consultancy and Policy Support	66
Other Events	77
Publications	86
Faculty News	94
Awards, Honours and Recognitions	106
Visitors	108
Personnel	109



## Preface

It gives me immense pleasure to present the Annual Report of the National Academy of Agricultural Research Management for the year 2004-2005. This report details the progress and achievements of the Academy in its mandated areas of training, research, collaboration, consultancy and policy support.



The Academy kept up the tempo of its training and HRD efforts to effectively meet the expectations of its stakeholders. The focus of training during the year was on need-based programmes. In all, 51 capacity building programmes were organized for the benefit of 1415 participants. The research agenda was actively pursued during the year. The year also witnessed the successful completion of National Agricultural Technology Project (NATP) with substantial achievements. The major research achievement of NATP at NAARM were development and standardization of methodological frameworks for performance assessment of Indian National Agricultural Research Organizations (NAROs), prioritization of fisheries production constraints, and assessment of Strategic Research Extension Plan (SREP) methodology for upscaling and institutionalization to strengthen research-extension-farmer linkages. An institutional research project on NARS scientists and their management training needs was also completed and the output was used in prioritizing the training programmes of the Academy.

The year witnessed many a collaborative programmes in association with institutions and associations within and outside NARS on topical themes like Agricultural Heritage, Implications of WTO on Indian Agriculture, IP management, facilitation of Patent Application, management and technical initiatives in SAU system to support agricultural developmental goals, etc. For promoting Information and Communication Technologies (ICTs) in agriculture, the Academy organized a national dialogue on the use of ICTs for agriculture and rural development. The Academy and its staff won many laurels in the form of institutional and individual awards and recognitions in the areas of academics, sports, aesthetics, etc.

Such significant achievements were possible because of the unstinted efforts and contributions of employees of NAARM and proactive support and guidance of the ICAR. I place on record my sincere thanks and gratitude to Dr Mangala Rai, Director General, ICAR, and Secretary, DARE, Govt. of India; Mrs Sashi Mishra, Secretary, ICAR, New Delhi; and Dr J.C. Katyal, DDG (Education), ICAR, for their support, guidance, and encouragement.

I profusely thank Dr. R. K. Samanta, Joint Director (Training) for his support and cooperation. Thanks are due to the members of Editorial Board Drs D. Rama Rao, T. Balaguru, P. Manikandan and B.S. Sontakki in bringing out this Annual Report. The editorial assistance of Mr R.V.V.S. Prakasa Rao and Ms G. Aneja, and design and layout done by Mr P. Namdev are highly appreciated.

Hyderabad  
August 2005

S. Prakash Tiwari  
DIRECTOR



A photograph of a paved walkway lined with tall, weeping trees and low-lying shrubs, leading towards a building in the distance. The text "EXECUTIVE SUMMARY" is overlaid in the center of the image.

# EXECUTIVE SUMMARY



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## Executive Summary

NAARM is the prestigious Academy of the Indian Council of Agricultural Research (ICAR). Its march towards achieving excellence is focused on the core responsibility of achieving higher levels of professional management in agriculture research and education. It has been contributing to the Indian National Agricultural Innovation System (NAIS) for more than two and a half decades. The multi-dimensional programmes of training, research, consultancy and policy support were pursued with zest and zeal during the year 2004-2005. Infrastructure development too was taken up with equal attention to support the intellectual endeavours.

The Academy continued its major activity of training. A wide variety of training programmes were organized for the benefit of scientists / faculty from ICAR and State Agricultural Universities (SAUs) within the country as well as from Sri Lanka. During the reported period 51 such programmes were held which were attended by a total of 1415 scientists, teachers, administrators and finance officers. Major training emphasis during the year was on need-based twenty-one days programmes. As many as nine such programmes were organized during the year to cater to the Career Advancement requirement of 190 NARS scientists in addition to equipping them with knowledge and skills in a wide range of topics. These included four summer/winter schools sponsored by the Education Division of ICAR in the areas of Agricultural Research Project Management, GIS applications, Educational Technology and World Trade Agreement. The other five programmes were organized as refresher courses in the areas of Educational Technology, Information Technology, Multimedia Applications and Human Resource Management.

The research agenda was pursued actively during the year. The year marked the end of NATP projects and all the projects recorded impressive achievements. The major research achievement of NATP at NAARM were development and standardization of methodological frameworks for performance assessment of Indian National Agricultural Research Organizations (NAROs); prioritization of fisheries production constraints; and assessment of SREP methodology for upscaling and institutionalization to strengthen Research-Extension-Farmer (R-E-F) linkages. An institutional research project on NARS scientists and their management training needs was also completed, and the output was used in prioritizing the training programmes of the Academy.

NAARM has the distinction of introducing computer applications and information technology in research and education management through its HRD programmes. The Academy kept its tempo of promoting Information

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and Communication Technologies (ICTs) in agriculture by organizing a national dialogue on the use of ICTs for agriculture and rural development. A policy paper was developed to document the ICTs initiatives for agriculture and rural development, and to develop a policy framework and road map for integration of ICTs in technology development and transfer to empower the farming and rural communities.

Responding to the felt need for commercialization of knowledge, technology and products in agriculture, the Academy has identified development of a broad based policy as one of its objectives. Keeping this in view, a National Workshop on Commercialization of Agricultural Technologies was organized with an aim to sensitize the Directors of various ICAR Institutes on the procedures, problems, issues, and prospects pertaining to commercialization of agricultural knowledge, technologies and products.

NAARM has been constantly endeavoring in training NARS scientists on the importance of traditional knowledge in agriculture. These efforts were duly recognized as the Academy was invited by ICAR and Asian Agri-History Foundation as a collaborator to organize an International Conference on Agricultural Heritage of Asia. Acharya N.G. Ranga Agricultural University, another collaborator hosted this event which brought together several international and national scientists, scholars, and others interested in Asian agricultural heritage to exchange views to stimulate scientific research based on traditional knowledge and technologies; and discuss ways and means to document, validate and use agricultural heritage in promoting sustainable development of agriculture. The entire faculty of the Academy played key role in organizing this event.

Intellectual property (IP) management has assumed critical significance in our system. In view the growing importance of this area, the Academy has flagged it as a key issue to focus its HRD and research focus. As an initiative in this direction, a workshop was organized to sensitize the NARS scientists on the tangible benefit of IP in the post WTO era in collaboration with the Indian Science Congress Association (Hyderabad Chapter), Acharya N.G. Ranga Agricultural University (ANGRAU), and Farm and Rural Science Foundation (FRSF). A policy document was developed about the role of IPR in agriculture in post WTO era.

A workshop on Management of Research Institutes with participation of all the Directors of Hyderabad-based ICAR institutes was organized to analyze the utility of foreign training programmes and other capacity building measures, in addition to developing human resource planning for the Council. Similarly, the Sub-committee on 'Professionalizing skill management to provide administrative support to R&D and suggest ways for weaning

management from Civil Services bureaucracy' of the Task Group of the Planning Commission of India on Revamping and Refocusing of National Agricultural Research convened a meeting of the Directors of Hyderabad-based ICAR Institutes at the Academy and discussed on the assessment and promotion policies to attract and retain brilliant scientists in NARS and also to encourage the Indian scientists, working abroad, to return to India and work with NARS.

Planning commission asked IAUA to develop proposal for higher allocation to agricultural universities in order to effectively translate rural developmental activities. A strategic proposal was developed for IAUA to upsurge agricultural sector for accelerating growth for rural employment generation and boosting farm income and in the process leapfrog agricultural universities through a mix of technical and management initiatives.

The Academy always believes in collaborative ways of working for the overall benefit of NARS. The bygone year witnessed many a collaborative programmes in association with institutions and associations within and outside NARS on topical themes like Agricultural Heritage, Implications of WTO on Indian Agriculture, IP management, facilitation of Patent Application, management and technical initiatives in SAU system to support agricultural developmental goals, etc. Keeping up its commitment in building new partnerships the Academy entered in to a Memorandum of Understanding with the Andhra Pradesh Technology Development and Promotion Centre (APTDC) to initiate a project-mode approach for "Building IP portfolio for traditional knowledge-holders of Kalamkari art".

Several individual and institutional awards and recognitions in professional, sports and aesthetic areas crowned NAARM during the year. It won the Rajbhasha Puraskar Shield (Third place), for the year 2003-2004, for the best work done in the implementation of official language, in the category of central government organizations in southern region. Dr R. Kalpana Sastry, Principal Scientist, was awarded the second best paper award by Indian Dairy Association, New Delhi, for the paper "Implications of WTO Agreements on Indian Dairy Industry. Dr G.R.K. Murthy, Senior Scientist, NAARM, received the Hari Om Ashram Prerti Research Award on Renewable Energy for Young Scientist for the period 2000-02 instituted by Sardar Patel Renewable Energy Research Institute (SPRERI). The award was given in recognition of his contribution to the field of renewable energy, for his work on solar ponds. The Academy bagged the Best Institution Rose Garden Rolling Shield in the XIX Rose Show conducted by Horticulture Society and Cantonment Board, Secunderabad. It also bagged Rolling Trophies for Best Red Rose, Best Roses Displayed by Institution. The Academy won the team championship in the ICAR inter-zonal sports meet

held at National Research Centre for Grapes, Pune. The sports contingent secured twelve individual prizes at ICAR inter-institutional tournament (Zone III) organized at Hyderabad.

Infrastructure development was taken up to add to the existing state-of-the-art facilities. A newly-built International Guest House was inaugurated by Dr Mangala Rai, Secretary, DARE, and Director General, ICAR. The International Guest House having ten air-conditioned suites, with well-furnished ultramodern facilities, provides excellent support for organizing various international training programmes at the Academy.



A photograph of a well-maintained garden. In the foreground, there are various plants, including a large green plant with white and pink flowers. In the middle ground, there is a concrete path leading towards a hedge and a gate. In the background, there are tall, narrow cypress trees and a palm tree on the right. The sky is blue with some clouds. The word "INTRODUCTION" is written in a stylized, outlined font across the center of the image.

# INTRODUCTION



## Introduction

Science and technology are increasingly being harnessed for augmenting agricultural production in India. Agricultural scientists play a vital role in this noble endeavour. The formal university education makes the scientists specialized in their respective areas of specialization. There is a need to prepare them to be effective managers to plan, organize and conduct research, education and extension education programmes more scientifically. Most of them are yet to become conscious of the importance of scientific management in agriculture. It has, thus, become important for all those concerned with agricultural research, education and development to be familiar with the principles of scientific management.

The Government of India felt the urgent need for an institutional set-up to provide such an opportunity for the agricultural scientists. The National Commission on Agriculture first recommended establishing an All India Institute of Agricultural Administration and Management for training agricultural scientists. The expert committee, appointed by the Government in 1973, recommended the setting up of a National Staff College for Agriculture. Accepting this recommendation, the Indian Council of Agricultural Research (ICAR) established the Central Staff College for Agriculture (CSCA) at Hyderabad in September 1976. Keeping in view the importance of its role at the national level, CSCA was rechristened as National Academy of Agricultural Research Management (NAARM) in 1979.

The establishment of NAARM was a major landmark in the history and growth of the National Agricultural Research System (NARS) in India. It is remarkable that establishment of NAARM coincided with the progressive personnel policies of ICAR through the introduction of Agricultural Research Service (ARS).

Since its inception, the Academy has taken up the responsibility of organizing training programmes, workshops and seminars in the areas related to agricultural research and education management for the scientists of ICAR Institutes and State Agricultural Universities (SAUs). Research on management problems associated with agricultural research and education formed another major activity of the Academy. The results from such research efforts formed the basis for training as well as for organizing workshops and seminars. The Academy has also been functioning as a repository of ideas and information, both at the national and international levels, and acting as a clearing-house for dissemination and utilization of such information and knowledge.

The Academy is contributing significantly to generate a sense of fraternity and inculcate scientific culture among the agricultural scientists in the country. This unique institution has already established its credibility in



the national and international arena. It is looked upon as a model by the developing countries and it is fast developing into a viable Regional HRD facility in this part of the world to train agricultural scientists in agricultural research and education management.

### Mission

To enhance the performance of NARS by building capacity in research and education policy, planning and management, and to foster a scientific culture that can make the NARS highly productive globally.

### Mandate

NAARM is charged to fulfill the following mandate:

- To organize and conduct training programmes in agricultural research management for the scientists at various levels
- To build up high quality resource material in agricultural research management based on actual field experience
- To undertake systematic review and study of management problems of agricultural research institutes, programmes and systems
- To plan, organize and conduct workshops and seminars in research management and educational technology
- To organize, liaise and coordinate programmes of international cooperation in the field of agricultural research management
- To assist the State Agricultural Universities in developing Regional Centres of Management to cater to the needs on human resource development

Over the years, the Academy has created necessary expertise and infrastructure to fulfill the above mandate. As the years went by, the Academy has been able to formulate clear-cut objectives to fulfill the expectations of the National Agricultural Research System (NARS). The objectives are the clear-cut directives to canalized the activities of NAARM. Accordingly, the following objectives have been formulated as assertive guidelines to realize the potential of NAARM.

### Objectives

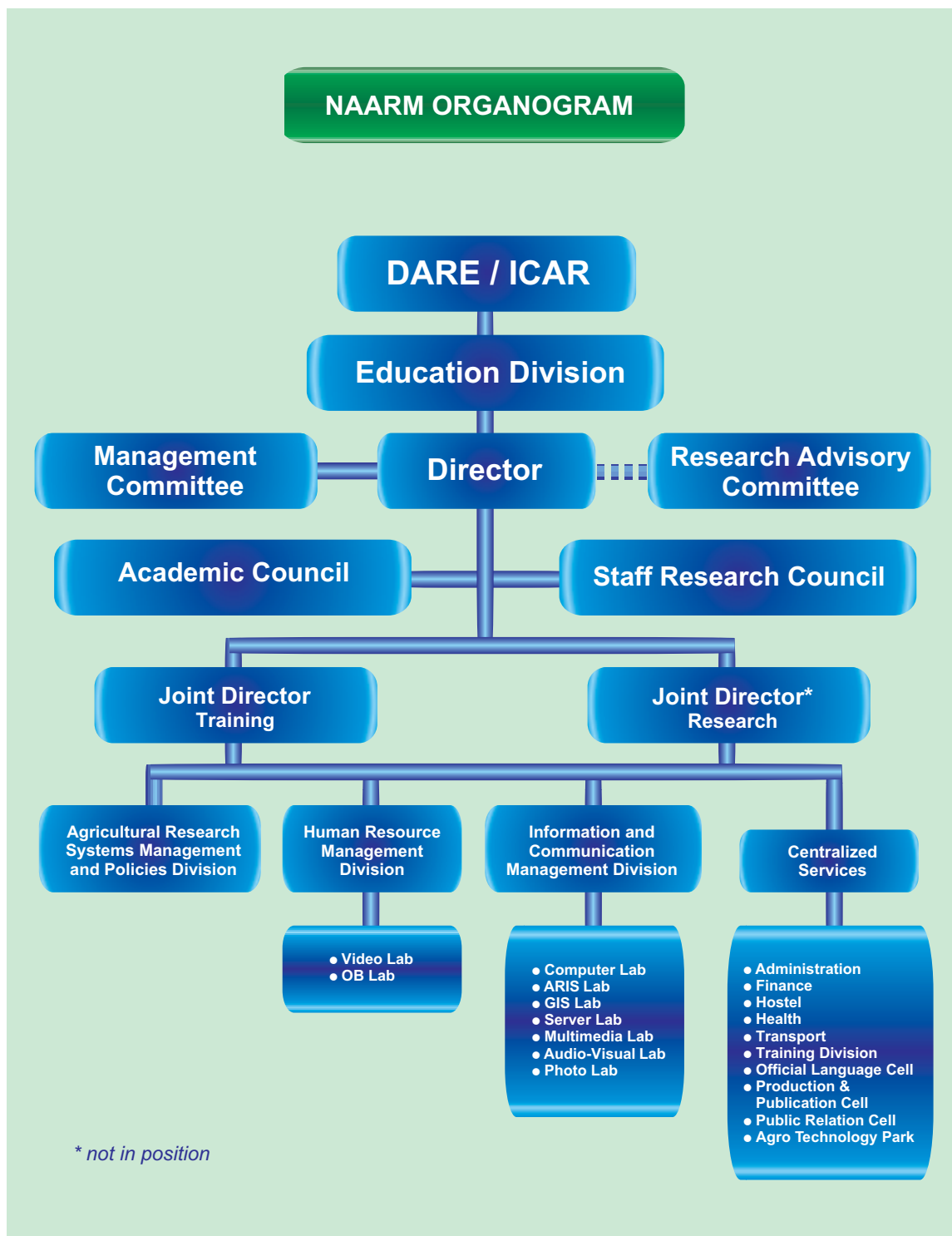
- To organize foundation courses for the scientists newly recruited into the Agricultural Research Service of ICAR
- To design and organize training programmes, workshops, and seminars, and to develop high quality material in agricultural research and education management for the senior and middle-level scientists of NARS

- To play a major role in different processes of human resource development of NARS, in the context of agricultural research and education
- To undertake policy-level studies on prioritization of research and resource allocation, and to enhance research productivity of the constituents of NARS and their programmes
- To evolve suitable management techniques for effective planning, scheduling, organizing, monitoring, and evaluation of agricultural research and development projects in NARS
- To study the management issues of various programmes and patterns of technology transfer, develop effective systems and strategies for effective communication of agricultural technologies
- To undertake development programmes for evolving more effective and efficient approaches, methods, and models in higher agricultural education for use in SAUs and Deemed Universities of ICAR
- To promote and execute academic programmes of higher learning in the specialized areas of agricultural research and education management
- To develop expertise in information technology to meet the application software needs of NARS
- To undertake systematic review and to develop appropriate systems for efficient and effective administrative and financial management in NARS
- To function as a repository of ideas and information in the form of databases in the field of agricultural research and education management, and to act as a clearing house for information dissemination through national and international networks in these areas
- To offer consultancy services in the field of agricultural research and education management, and agricultural information and communication technology.

### Organization and Management

The Director heads the Academy. The Director is assisted by two Joint Directors (currently one Joint Director is in position) and three Division Heads in the execution and implementation of various programmes. The Academy is organized into three functional divisions, viz. Agricultural Research Systems Management and Policies, Human Resource Management, and Information and Communication Management. The Institute Management Committee (IMC) guides and supports the Director by periodic review of programmes and approval of investments in new areas of research and education, training programmes, workshops and seminars. The Research Advisory Committee (RAC) and Staff Research Council (SRC) provide broad guidelines and assist in developing and implementing specific research programmes and projects.





## Human and Financial Resources

### Human Resources (as on 31.03.2005)

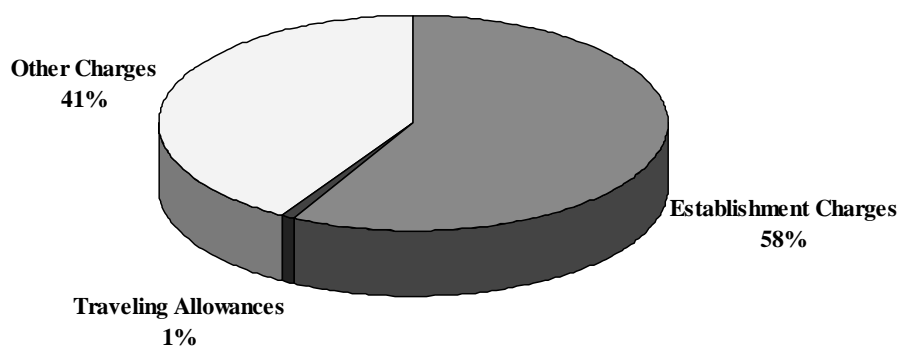
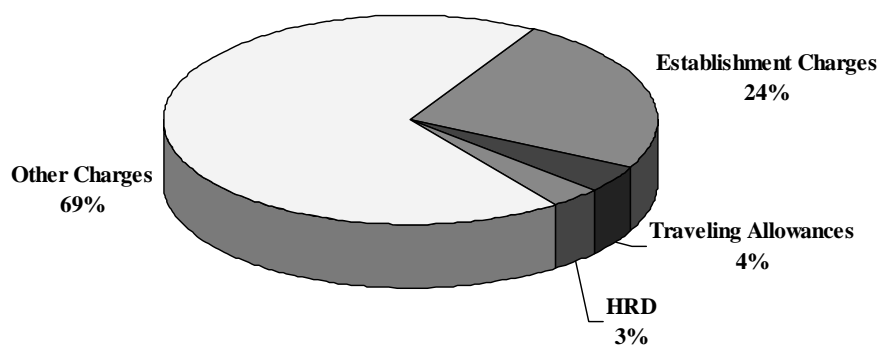
Category	Sanctioned Strength	Posts Filled	Vacant Positions
1. Research Management Positions	03	01	02
2. Scientific	40	22	18
3. Technical	56	51	05
4. Administrative	44	43	01
5. Supporting	40	40	-
<b>Total</b>	<b>183</b>	<b>157</b>	<b>26</b>

### Financial Resources (as on 31.03.2005)

The budget allocation and expenditure during 2004-05 are given in the following table. Information presented in the table below provides details on finances available from other sources and revenue generated during the period under report.

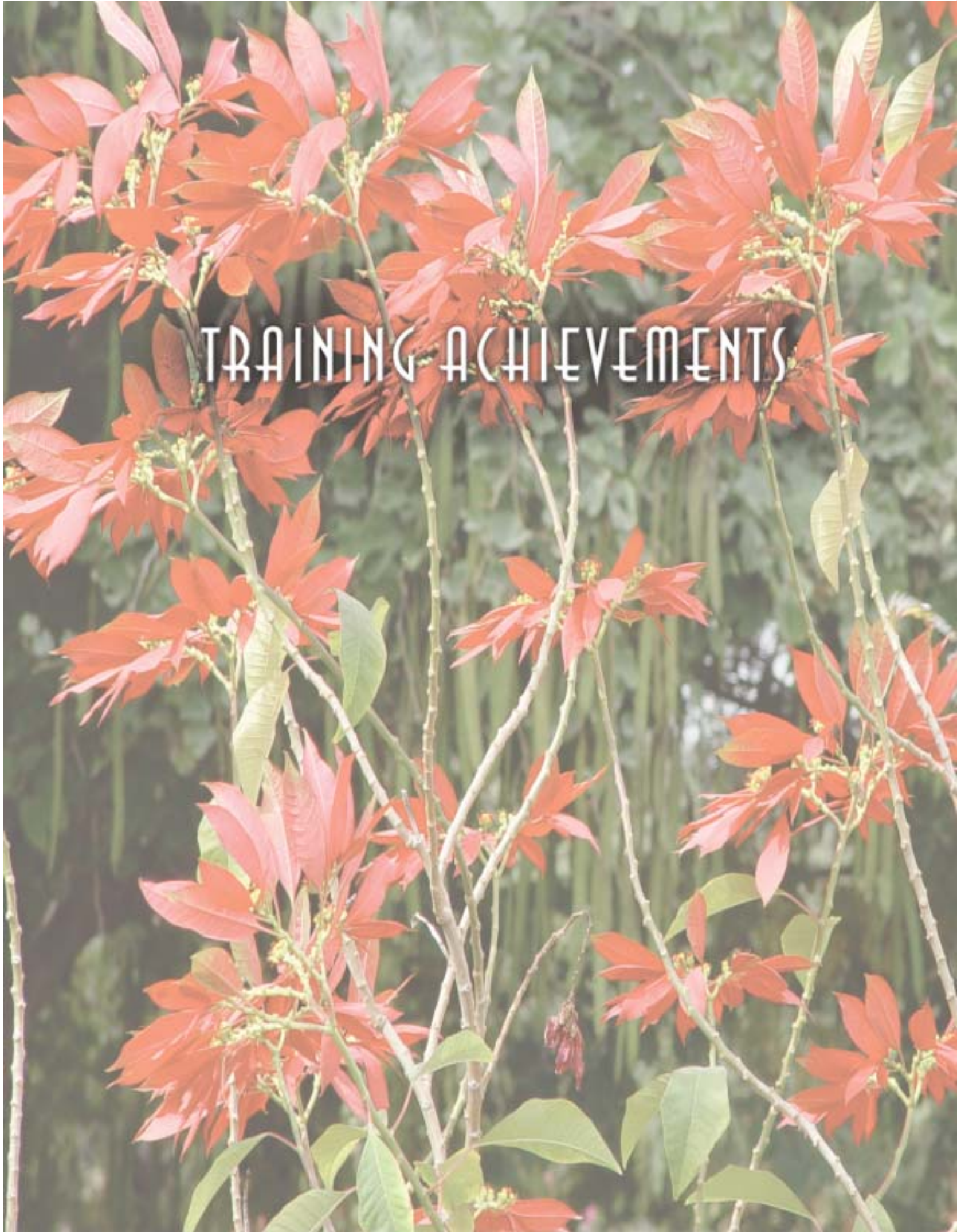
(Rs. in lakhs)

Scheme	Head	Budget Allocation	Expenditure
<b>Non-plan</b>	Establishment Charges	300.50	299.64
	Traveling Allowances	4.70	4.08
	Other Charges	214.80	214.50
	Works	Nil	Nil
	<b>Sub-Total</b>	<b>520.00</b>	<b>518.22</b>
<b>Plan</b>	Establishment Charges (wages)	33.00	31.26
	Traveling Allowances	7.00	5.10
	HRD	5.00	4.27
	Other Charges	95.00	88.17
	Works	10.00	nil
<b>Sub-Total</b>	<b>150.00</b>	<b>128.80</b>	
<b>Other Sources</b>	AP Cess	40.22	24.51
	NATP	102.37	64.28
	<b>Sub-Total</b>	<b>142.59</b>	<b>88.79</b>
	<b>Grand Total</b>	<b>812.59</b>	<b>735.81</b>

**NAARM Budget (2004- 05) – Non Plan Expenditure****NAARM Budget (2004- 05) – Plan Expenditure****Income generation**

(Rs. in lakhs)

Sl. No	Item	Amount
1	Training	68.70
2	Consultancy	1.34
3	Sale of books, technology, etc.	0.35
4	Sale of agricultural produces	0.62
5	a) Room rent / Licence fee	7.74
	b) Interest on loans and advances	4.06
	c) Leave salary / Pension consultancy	—
	d) Miscellaneous reports	3.00
	Sub Total (a - d)	14.80
	<b>Sub Total of 1-5</b>	<b>85.81</b>
6	Interest on short term deposits	5.67
7	Sale of vehicles / Machinery	1.84
	<b>Sub total (6-7)</b>	<b>7.51</b>
	<b>Total receipts</b>	<b>93.32</b>



# TRAINING ACHIEVEMENTS



## Training Achievements

Training is an important input for Human Resources Development in all categories of human resource-mix engaged in teaching, research, and extension. The academy imparts training in the areas of research and education management, information and communication technology, and administrative and finance management. Its client group includes scientists and faculty, administrative officers, executives, and senior research managers of the ICAR and SAUs, which form major subsystems of the National Agricultural Research System (NARS). A glimpse of the various types of programmes organized at the Academy is as follows.

Sl No.	Type of the programme	No. of programmes conducted	No. of participants
1.	FOCARS	1	36
2.	Management Development Programmes (MDP)	4	84
3.	Executive Development Programmes (EDP)	1	11
4.	Off-Campus Programmes	4	159
5.	Summer schools/Winter school	4	109
6.	International Programmes	3	42
7.	Senior level/Refresher courses	24	562
8.	Workshops/Seminars/Conferences	10	412
	<b>Total</b>	<b>51</b>	<b>1415</b>

### 1. Foundation Course:

Name of the programme	Duration	No. of participants	Coordinators
78 <sup>th</sup> FOCARS	Aug. 10 to Dec. 7, 2004	36	T Balaguru SN Saha SK Soam



The programme aims at improving the knowledge and skills of scientists at the entry level when they are inducted into the ICAR system. The 78<sup>th</sup> Foundation Course for Agricultural Research Service (FOCARS) is meant for the basic induction training imparted to all the newly recruited scientists to the agricultural research service. This four-month dura-

tion course is conducted in three specific phases namely, Phases I: Agricultural Research Systems and Management Processes - Concepts & Principles; Phase II: Field Experience Training and Phase III: Agricultural Research Systems and Management Processes - Practice and Applications. Phases I & III are organized at the Academy, and Phase II is conducted at the FET centres. The foundation course aims at exposing the participants to the various aspects of agricultural research project management, in addition to developing skills in them for managing their research by inculcating inter-disciplinary team spirit. Adequate opportunities were provided to the scientists to develop knowledge and skills in information technology, communication, organizational behaviour and administration and finance. This training also aims at developing a feeling of fraternity among the newly recruited scientists. Various topics included scenario analysis, research project management, organizational behaviour, individual and group behaviour, team building, computer applications & information management, technology transfer, educational technology including video production, administration and financial norms, and scientific communication.

**2. Management Development Programmes (MDP):** These are designed as per the managerial needs of the newly recruited Heads of Divisions, Project Co-coordinators and Zonal Co-coordinators.

Name of the programme	Duration	No. of participants	Coordinators
MDP in Agricultural Research	April 22-28, 2004	19	Jagannadham Challa RVS Rao
MDP on Performance Assessment of Agricultural Research Organizations	May 18-22, 2004	25	T Balaguru R Kalpana Sastry RVS Rao
MDP for the Directors of Research of SAU's (Under NATP)	Sept. 10-11, 2004	29	NH Rao SK Soam
MDP on Performance Assessment of Agricultural Research Organizations	Feb. 15-19, 2005	11	R Kalpana Sastry T Balaguru RVS Rao

### 2.1 MDP in Agricultural Research

The programme was held in response to the felt need for organizing a course in research management for the newly recruited Heads of Divisions and Project Coordinators of ICAR institutes and ICAR Headquarters. The programme covered broad areas such as research project management, human resource management, information and communication management, and administrative and finance management.

### 2.2 MDP for the Directors of Research of SAU's

MDP for Directors of Research was organized with an aim to provide a broad overview on the various dimensions of research management, viz.

IPR issues, PVP & Farmers' Rights, Information management in research organizations, WTO regulations and trade in agriculture, Human resource management and organizational behaviour, Management of change, and Financial management.

### 2.3 MDP on Performance Assessment of Agricultural Research Organizations



As a part of the O & M reform measures initiated by ICAR, under the World Bank-supported NATP, a basic methodology on the performance of agricultural research organizations was developed by NAARM, on the basis of extensive literature search and intensive interaction with senior-level functionaries (both in-service and retired) from the NARS as well as experts from international agencies, particularly from ISNAR (presently merged with IFPRI). The

methodology, initially developed by the Academy, was further refined through questionnaire survey and discussion in the National Workshop and specialized meetings, organized for the purpose, at the Academy. The refined methodology was then field tested, on a pilot scale, in a few selected institutes of ICAR and Agricultural University located in Hyderabad. On the basis of experience gained from the field study, the methodology has been finalized for wider adoption.

As a step towards institutionalizing the methodology in the NARS, a MDP on Performance Assessment of Agricultural Research Organizations was organized. The major objectives of this programme were to acquaint the participants with the identification and measurement of suitable research output and outcome indicators and with the methodology for assessing the performance of agricultural research organizations; and to equip the participants with techniques to identify and measure key management domains having a bearing on the performance of research organizations. In order to achieve the objectives, the programme was built around the topics, viz. performance-oriented evaluation system, identification and measurement of research output in terms of productivity ratio, identification and measurement of research output / impact, and assessment of research management process in terms of performance ratio, including the constraints ratios.

**3. Executive Development Programmes (EDP):** Newly-recruited Directors, Assistant Directors General, Joint Directors of National Institutions, who comprise the Research Management Position cadre of ICAR, participate in the Executive Development Programmes.

Name of the programme	Duration	No. of participants	Coordinators
Good Governance in NARS	Mar. 1-5, 2005	11	NH Rao RK Samanta

### 3.1 EDP on Good Governance in NARS



The quality of governance in organizations influences, to a great extent, the level of performance and impact. The idea of and the need for good governance in organizations have taken root in many public research systems in the developed countries and in international agricultural research institutions in recent years. With the ICAR committing itself to a “growth-

oriented governance” in its Vision 2020, the need for developing an understanding of good governance and the ways by which the good governance can be embedded into the organization and management of the National Agricultural Research System (NARS) assumes a great significance. With this backdrop, an Executive Development Programme on Good Governance in NARS was organized to provide a forum for the Directors and Research Managers in the system to discuss the various issues concerning good governance and the strategies for its implementation in the institutes. The programme, organized in a workshop mode, covered various broad aspects such as governance concepts, dimensions, and framework of good governance; performance and accountability systems; value systems and organizational culture; and information technology and promotion of innovation for good governance.

**4. Off-campus Programmes:** At the request of research and educational institutions in NARS, tailor-made programmes are designed and offered by NAARM at the working place of scientists from these institutions.

Name of the programme	Duration	No. of participants	Coordinators
Faculty Development Programme on Educational Methodology and Instructional Technology (EMIT) for faculty of Marathwada Agricultural University (MAU), Parbhani	June 25 to July 2, 2004	40	A Gopalam KH Rao
Orientation Training Programme for Administrative and Accounts Staff of MAU, Parbhani	July 3-8, 2004	30	M Suresh Kumar A Gopalam
Workshop on Developing Winning Research Proposals for the faculty members of MPUAT, Udaipur	Nov. 22-25, 2004	45	D Rama Rao Jagannadham Challa
Empowerment Programme in Educational Technology for faculty members of Dr Balasaheb Sawant Konkan Krishi Vidyapeeth (KKV), Dapoli, Maharashtra	Dec. 14-20, 2004	44	KM Reddy BS Sontakki

#### 4.1 FDP on Educational Methodology and Instructional Technology (EMIT)

This programme was aimed at providing conceptual understanding of EMIT philosophies to the faculty members of MAU with a view to improving their teaching effectiveness and for enhancing the quality of agricultural education.

#### 4.2 Orientation Training for Administrative and Accounts Personnel

Various dimensions related to agricultural education, economic reforms, personnel and financial management, personality development, and other general administrative and financial issues formed the curriculum of this programme.

#### 4.3 Workshop on Developing Winning Research Proposals

The workshop was aimed at developing necessary skills among the participants for writing research proposals that can win funds from donors. The workshop covered broad areas such as how to write a concept note as a preamble to the research proposal, how to write research proposals to inform and to persuade the donors, how to sharpen writing skills indicating urgency and need, how to prepare the budget, and how to write group research proposals.

#### 4.4 Faculty Empowerment Programme in Educational Technology



The programme aimed at sensitizing the participants to the different instructional aids used for effective communication in the classroom; equipping the participants with effective classroom presentation techniques and methods of teaching; and making participants aware of behavioural aspects of teachers and learners for effectively imparting meaningful instruction. The programme covered various topics in the areas of instructional technology, teaching technology, and behavioural technology, in addition to covering aspects related to agricultural education planning and classroom management.

**5. Summer / Winter Schools:** The Education Division of ICAR sponsors summer / winter schools with a view to orienting the scientists and teachers on the recent advances in the field of agricultural research and education management.

Name of the programme	Duration	No. of participants	Coordinators
Summer School on Advances in Agricultural Research Project Management	May 27- June 16, 2004	29	Director Summer School: T Balaguru Coordinators: SK Nanda, R Kalpana Sastry, GP Reddy, SK Soam
Summer School on GIS based Decision Support Systems for Sustainable Agriculture	July 1-21, 2004	23	Director, Summer School: NH Rao Coordinators: MN Reddy, KH Rao, SK Soam, GP Reddy
Summer School on Educational Methodology and Instructional Technology in Multi-media Environment	Aug. 3-23, 2004	27	Director, Summer School: A Gopalam Coordinators: SN Saha, MM Anwer, P Manikandan, BS Sontakki
Winter School on Implications of World Trade Agreement and other Allied International Agreements on Indian Agriculture	Sept. 22- Oct. 12, 2004	30	Director, Winter School: R Kalpana Sastry Coordinators: NH Rao, T Balalaguru, SK Nanda, SK Soam

### 5.1 Recent Advances in Agricultural Research Project Management



The programme was organized to acquaint the participants with appropriate tools and techniques for efficient and effective management of research projects, and to develop in the researchers a future perspective on Indian agriculture, in response to changing global agricultural scenario. The broad themes covered in the programme included Research project planning and prioritization, Research project management, Human resource and administrative issues in research project management, and Globalization, privatization and IPR.

### 5.2 GIS based Decision Support Systems for Sustainable Agriculture

The programme was organized to introduce the concepts of GIS and related spatial technologies like remote sensing and image processing and to provide hands-on experience of GIS software and hardware; and to introduce relevant definitions, concepts, indicators, and framework to formulate and resolve questions related to sustainability of agricultural production systems.

### 5.3 Educational Methodology and Instructional Technology in Multimedia Environment



The programme was organized to develop an awareness on the EMIT philosophy among the faculty members of State Agricultural Universities and to provide skills to the participants in developing multimedia lesson modules for complementing and supplementing their instructional function. The programme was centred on the three major themes, viz. EMIT Philosophy, Computer Aided

Instruction in Agriculture and Multimedia in Agriculture, covered through lectures, demonstration, and hands-on experience.

### 5.4 Implications of World Trade Agreement and Other Allied International Agreements on Indian Agriculture



The programme was organized with a view to sensitize the participants to the implications of various international agreements in the post-WTO regime on Indian agriculture and the consequent policy and institutional imperatives for agricultural research systems and to introduce them to the appropriate instruments and methods for dealing with the intellectual property used in and arising out of their research to facilitate commercialization and technology transfer. The programme

covered the broad areas such as World Trade Organization, Agreement on agriculture, TRIPS and its implications, Protecting biodiversity in post-TRIPs regime, PPVFR and its implications for agricultural scientists, GATS and its implications on agricultural education and research, and Institutional strategies and mechanisms.

**6. International Programmes:** The Academy is being looked upon by the developing countries to provide training support for their human resource development in the areas of agricultural research and education management. The Academy has developed expertise and excellent facilities to cater to these increased demands from the NARS of various developing countries.

Name of the programme	Duration	No. of participants	Coordinators
Training in Agricultural Research Management for Deans of Agriculture Faculties from Sri Lanka (Under ICAR-CARP work plan)	June 22 to July 3, 2004	07	T Balaguru SK Nanda
Short-term Overseas Comparative Studies on Community Empowerment for Rural Development organized by SEARCA, Philippines (For Indonesian participants)	Aug. 30 to Sept. 3, 2004	34	RK Samanta GRK Murthy
International Training Programme on Video Production/ Graphics (For Srilankan participant)	Oct. 11 to 23, 2004	01	KR Prabhakar

### 6.1 Agricultural Research Management for Deans of Agriculture



The programme was meant for exposing the Sri Lankan scientists to modern tools and techniques on research management in agriculture, as well as for sharing the Indian experience in effective management of agricultural research.

### 6.2 Short-term Overseas Comparative Studies on Community Empowerment for Rural Development organized by SEARCA, Philippines (For Indonesian participants)

The programme was organized to widen the horizons of participants by observing and closely studying various ways of decentralized development activities, community empowerment strategies and microenterprise development and management in other countries. Thirty four participants, who are key officials involved in implementation of the project, short overseas comparative studies under the Director General of Community and Village Empowerment (DGCVE) of Indonesia. The study tour was organized by four representatives from SEARCA, Philippines in collaboration with NAARM, India.

### 6.3 Video Production / Graphics

As a part of the international agreement with Sri Lanka, NAARM organized an international programme on Video Production / Graphics for a participant from Council for Agricultural Research Policy (CARP), Sri Lanka. The programme provided a lot of hands-on experience to the participant in various aspects of video production like script preparation, editing, audio recording, special effects, etc.

**7. Senior-Level / Refresher Courses:** For the benefit of the middle-level scientists and faculty members of ICAR and SAU systems, advanced programmes are conducted on various aspects related to agricultural research management, human resource management, and information and communication management. Some of these programmes are recognized by ICAR for the Career Advancement Scheme of scientists and faculty members.

Name of the training programme	Duration	No. of participants	Coordinators
Advances in Educational Technology	May 6-26, 2004	21	MN Reddy Jagannadham Challa
Agricultural Research Prioritization Techniques	May 21-27, 2004	21	GP Reddy SK Soam
Leadership and Personality Development	June 17-23, 2004	18	P Manikandan MM Anwer
Gahan Prashikshan Va Karyashala	July 13-17, 2004	47	Pradeep Singh A Gopalam
Improving Administrative Efficiency and Financial Management	July 22-29, 2004	39	M Suresh Kumar SK Pathak
ERNET Training on LAN/WAN Technologies (9 Batches)	Aug. 2 to Oct. 1, 2004	139	D Rama Rao KVS Rao MN Reddy GRK Murthy
Prioritization Techniques in Fisheries Research	Aug. 5-11, 2004	16	GP Reddy BS Sontakki
Faculty Development Programme in Advances in Educational Technology	Oct. 5-25, 2004	19	Jagannadham Challa MN Reddy MM Anwer
GIS Applications in Agriculture (Under NATP)	Nov. 1-10, 2004	13	MN Reddy NH Rao
Special Training Programme for Administrative and Accounts Personnel of ICAR Headquarters	Nov. 22 to Dec. 1, 2004	42	M Suresh Kumar SK Pathak
Computer based Multimedia Presentation	Jan. 5-25, 2005	14	KM Reddy VKJR Rao
Human Resource Management in Agricultural Research and Education	Jan. 5-25, 2005	12	KH Rao RVS Rao MM Anwer
Effective Technical Assistance in Management of Agricultural Research	Feb. 3-9, 2005	37	SK Soam R Kalpana Sastry
Information Technology in Agriculture	Feb. 3-23, 2005	15	KM Reddy D Rama Rao
Special Training Programme for Administrative and Accounts Personnel of ICAR Headquarters	Feb. 7-20, 2005	37	M Suresh Kumar SK Pathak
Gahan Prashikshan Va Karyashala	Feb. 21-25, 2005	72	J Renuka A Gopalam

### 7.1 Advances in Educational Technology

The programme, a new HRD initiative, was meant exclusively for the teachers of agricultural education involved in UG and PG courses. The programme was organized to develop need-based knowledge, skills, and competencies among teachers for agricultural education and to systematically apply the principles of instructional design and development to the planning and preparation of teaching aids. The programme covered the following three theme areas. 1) Educational technologies and their application: Concepts and technical terms, media systems, instructions, pedagogy, psychological basis for learning, motivation, leadership, and vocationalization of education. 2) Innovative and modern learning approaches and processes: Trends, teacher's role, technology-based teaching-learning, computer-based technology, instructional design, individualized learning, group learning, and experiential learning. 3) Personality development: Dimensions, communication skills, reading skills, counseling, monitoring and evaluation skills, self-assessment and teacher-effectiveness exercises.

### 7.2 Agricultural Research Prioritization Techniques

To familiarize the scientists with the various techniques used for prioritizing agricultural research projects and to share with them the practical experiences of priority setting at different levels the programme was organized. The content covered the need and importance of research prioritization, congruence method, domestic resource cost ratio method, checklist and scoring models, benefit-cost analysis, PRA tools, ICRA approach, decentralized research prioritization, SREP applications, etc.

### 7.3 Leadership and Personality Development

The course aimed at equipping the researchers and teachers in the National Agricultural Research System with the knowledge and tools to help them identify personal impediments to develop effective leadership capacities. The course covered broad areas such as basic concepts of leadership, leadership development, common leadership pitfalls, leadership and organizational culture, power and influence, women and leadership, emotional intelligence, personality exploration, personality typing, personality development and positive personality, personal effectiveness, and Indian perspectives on personality and leadership development.

### 7.4 Gahan Hindi Prashikshan Va Karyashala

The major objective of the programme was to discuss about the experiential usage of Hindi. This programme was especially tailor-made for the employees of ICAR who are not directly connected with the official language section but are interested in working in Hindi. The training programme



focused on effective and easy use of official language and on facilitative issues needed for following the official language policy. The topics covered were effective implementation strategy of official language in ICAR institutes, the grammatical correctness in the usage of Hindi, importance of grammar, technical terminology, etc. More importance was

given on practical exercises in order to enable the participants to learn the use of Hindi in discharging their duties. The programme facilitated deliberations on official language correspondence, more specifically coming under the purview of act 3 (3), in day-to-day functioning of government institutions along with the clarifications on a number of points in effective implementation of official language policy in their institutions

### 7.5 Improving Administrative Efficiency and Financial Management



To strengthen the existing administrative and financial management processes in ICAR institutions and to improve the skills and efficiency of the administrative personnel in discharging their functions more effectively, the programme was organized.

### 7.6 ERNET Training on Local Area Network (LAN) / Wide Area Network (WAN) Technologies

Under NATP, NARS institutions are being provided Internet connectivity through Education and Research Network (ERNET). As a part of this, the Academy, in association with ICAR Headquarters, trained ARIS and Library personnel from NARS institutes in southern states on LAN / WAN technologies in nine batches. The training also equipped the participants to access the electronic journals available through INFLIBNET.

### 7.7 Prioritization Techniques in Fisheries Research

The programme was organized to familiarize the participants with various techniques used for prioritization of fisheries research programmes / projects and to share with the participants the practical experience of priority setting at different levels.

### 7.8 Faculty Development Programme in Advances in Educational Technology

Value-based agricultural education has been gaining importance over time. There is, therefore, a need for bringing about change in the attitude and behaviour of learners, teachers, and administrators of agricultural education, with a strong emphasis on building up a foundation of value system. Keeping this in view, this was organized to develop need-based knowledge, skills, and competencies among teachers for agricultural education and to facilitate them systematically apply the principles of instructional design and development to the planning and preparation of teaching aids. The programme covered the broad theme areas such as educational technologies and their application, innovative and modern learning approaches and processes, and personality development.

### 7.9 GIS Applications in Agriculture

Geographical Information System (GIS) has proved to be a versatile tool in recent years in dealing with spatial data for realistic understanding and efficient management of agricultural processes. The application of GIS in agricultural research, management, and extension is growing. There is an increasing need to build the capacity of scientists in NARS in making effective use of GIS-based technologies in agricultural research and management. Keeping this in view, this programme was organized to create an understanding of the present and possible future applications of GIS in agricultural research and management, and to provide hands-on experience in the use of various GIS software (Arc Info, Arc View, Geomedia, Idrisi, etc.) and associated hardware. The programme covered the broad areas like map projections and scales, vector and raster spatial data formats, vector digitization of maps, thematic mapping, spatial analysis, GIS and remote sensing databases, GIS and statistical analysis, GIS and simulation models, etc.

### 7.10 Special Training for Administrative and Accounts Personnel

At the behest of council, this programme aimed at improving the skills and efficiency of the administrative and accounts personnel in discharging their functions and in providing constructive administrative support to their superiors in meeting the organizational priorities and needs. This programme was aimed at orienting the administrative and accounts personnel to their roles and responsibilities, provided them opportunities to enhance their skills and understanding on various issues that would facilitate them in discharging their support functions more meaningfully in the organization. The programme was conducted in two phases. The first phase, which

consisted of the orientation training at NAARM, covered various topics like conduct rules, office automation, maintenance of service book, pay fixation and pension rules, reservation policy, service rules, accounting and auditing, disciplinary matters, personality development, communication skills, etc. The second phase of the programme involved a study tour to some of the ICAR institutes in Mumbai and Bangalore, to understand and learn from the administrative and accounts practices being followed in different institutes. Two batches of this programme were organized during the year in which a total of 79 administrative, and finance and accounts personnel of ICAR, New Delhi, were trained.

### 7.11 Computer-based Multimedia Presentation

Multimedia tools have become very effective in producing various learning modules that help enhance teaching-learning effectiveness. Multimedia-based web environments facilitate effective technology development and transfer. There is a felt need to expose the scientists and teachers of ICAR and SAUs, who are involved in information development and its effective communication, to computer-based multimedia presentation tools and techniques. With this backdrop, the refresher programme was organized to provide an understanding and appreciation of use of multimedia in technology development and transfer and to familiarize the participants with multimedia production tools and techniques that will enable them develop multimedia presentation modules.

### 7.12 Human Resource Management in Agricultural Research and Education



To sensitize agricultural professionals to the issues of human resource management in the organization, to expose the participants to the theories and practices of human behaviour in agricultural research and education environment, and to develop skills of participants for effective management of people at work, the refresher course was organized.

The course covered broad areas such as human resource development, human resource servicing, human resource utilization which deals with individual, group, and organizational behaviour, and on-site practical case studies in HRM.

### 7.13 Effective Technical Assistance in Management of Agricultural Research



NAARM has taken up a Cess fund project to assess the training needs of technical personnel in ICAR system. Based on the high-priority areas of training identified through the study, a training programme was organized for the first time. The programme enabled

the technical personnel to understand the wider perspectives of NARS and agricultural research and for developing skills and personality that would help them in the effective execution of research and other responsibilities.

### 7.14 Information Technology in Agriculture

Agricultural professionals need to use IT developments for effective use and management of information and data, and for planning and decision-making. The programme was organized to empower agricultural scientists and teachers with the knowledge and skills in the use of internet and other information technologies and to make them aware of the emerging IT-based agriculture technologies which can be absorbed into agricultural education, research, and technology transfer. The programme covered various aspects that included database management systems, internet applications, networking technologies for information exchange, concepts of publishing via internet, decision support systems using GIS concepts, and emerging technologies covering e-commerce, bio-informatics, etc., and their use in agriculture.



## Feedback

The feedback loop is an important mechanism, which makes the training programmes dynamic in nature. Irrespective of the nature, gathering feedback through structured questionnaire from the participants, on conduct, content, relevance and applicability is a regular feature of each training programme. Comments/suggestions, thus received are collated and synthesized into recommendations for revising prevalent methodologies/ approaches on organization and delivery of various courses and to introduce future improvements. A brief account of the feedback received on various training programmes, conducted by the Academy during 2004-05 is presented below:

Programme	Feedback	
	Evaluate	Corrective
<b>FOCARS</b>	<ul style="list-style-type: none"> <li>➤ Good opportunity for learning new skills</li> </ul>	<ul style="list-style-type: none"> <li>➤ Less time for coverage of administrative and financial rules</li> <li>➤ Guest lecture proportion inadequate</li> <li>➤ Visits to more institutes need to be arranged</li> <li>➤ Shorter duration and its consequent telling on tight schedule</li> </ul>
<b>Senior Programmes</b>	<ul style="list-style-type: none"> <li>➤ Good educational experience</li> <li>➤ Content and training material were good</li> <li>➤ Softwares were relevant and useful</li> <li>➤ Usefulness of exercise sessions and hands-on-practice sessions</li> </ul>	<ul style="list-style-type: none"> <li>➤ More training resource materials may be provided</li> <li>➤ Need for more involvement of the trainees in every lecture</li> <li>➤ More time is desirable for the topics like finance, purchase procedures, etc.</li> <li>➤ Duration should be three to five days more</li> <li>➤ More guest lectures could have been arranged</li> <li>➤ Need more time for practicals</li> </ul>
<b>Refresher Courses / Summer Schools</b>	<ul style="list-style-type: none"> <li>➤ Acquisition of new knowledge and skills</li> <li>➤ Commitment and expertise of the faculty members</li> <li>➤ Relevant to the needs</li> <li>➤ Good exposure to different areas</li> <li>➤ Time allocation for various theme areas was good</li> </ul>	<ul style="list-style-type: none"> <li>➤ Resource material of guest speakers are not provided</li> <li>➤ Presentation of some topics needs improvement</li> <li>➤ More computer exposure required</li> </ul>
<b>Workshops / Conferences</b>	<ul style="list-style-type: none"> <li>➤ Relevant to the needs</li> <li>➤ Provided a forum for sharing information on topical issues</li> <li>➤ Timeliness and useful</li> </ul>	<ul style="list-style-type: none"> <li>➤ Structured presentation by participants as case studies need to be included</li> </ul>

## Workshops / Seminars / Conferences, etc.

The academy has been regularly organizing policy level workshops, seminars, conferences, etc. to provide a platform for deliberations and discussions on areas and issues of topical interest and also to provide policy support to NARS in general and ICAR in particular. In addition, some of the Academy's training programmes are also conducted in workshop mode. The output of these events is often used as training resource material. Details of workshops, seminars, conferences, etc. organized during the year are given in the table below:

Name of the programme	Duration	No. of participants	Coordinators
Training Programme-cum-Workshop on "Computer Aided Instructional Technology for the Faculty of SAU System"	May 24 to June 3, 2004	28	A Gopalam KM Reddy
Directors Workshop on "Management of Research Institutes" (with special reference to analyzing the utility of foreign training programmes) Local ICAR institutes Directors and Secretary, ICAR	July 28-29, 2004	11	MM Anwer RVS Rao
Training Workshop on "Developing Winning Research Proposals"	Aug. 17-21, 2004	18	D Rama Rao Jagannadham Challa
Workshop on "Meaningful Learning as a Communication Process"	Aug. 24-27, 2004	12	RK Samanta N Sandhya Shenoy BS Sontakki
National Seminar on "ICTs for Agriculture and Rural Development"	Sept. 9-10, 2004	33	D Rama Rao BS Sontakki
Training Programme-cum-Workshop on "Computer Aided Material Production for the Faculty of SAU System"	Oct. 25 to Nov. 4, 2004	17	A Gopalam
Training Workshop on "Developing Winning Research Proposals" (under NATP)	Oct. 26-30, 2004	30	D Rama Rao Jagannadham Challa
Directors' National Workshop on "Commercialization of Agricultural Technology"	Nov.30 to Dec.3, 2004	94	MM Anwer GRK Murthy
Indian Agriculture - in Post WTO Era	Dec. 21, 2004	46	R Kalpana Sastry
International Conference on "Agricultural Heritage of Asia"	Dec. 6-8, 2004	123	YL Nene (AAHF) P Manikandan R Kalpana Sastry KH Rao



### Computer Aided Instructional Technology

To sensitize agricultural professionals to the issues of Computer-Aided Instructional Technology (CAIT) in agricultural research and education and to expose the participants to the theory and practical exercises for production of computer-aided instructional materials, a training-cum-workshop on Computer Aided Materials Production was organized, under NATP. The course covered various aspects like Multimedia materials in class room, Multimedia concepts, Computer-aided instruction, Multimedia packages, etc. which provided adequate hands-on experience to the participants to develop skills in multimedia for their use in learning-teaching.

### Management of Research Institutes



A review of the capacity building and human resource planning is

underway in the Indian Council of Agricultural Research. Under the directions of the Director General, ICAR, and at the behest of the Secretary, ICAR, a workshop was planned to analyze the utility of foreign training programmes and other capacity building measures, in addition to developing human resource planning for the Council.

Recognizing the need to take a detailed technical input, it was decided to invite all the Directors of ICAR institutes located at Hyderabad to deliberate on these issues, and the Academy organized a Directors' workshop on Management of Research Institutes, with special reference to analyzing the utility of foreign training programmes. This workshop provided a platform for participating Directors to interact with one another and share their experience in arriving at a definite proposal for human resource planning, capacity building, and effective utilization of scientists trained abroad. As an output of the workshop, a training policy of ICAR is also proposed wherein the duration, nature, and frequency of training within the country and abroad is outlined for effective capacity building and for development of excellence to meet the emerging challenges of agriculture in the modern era.

### Developing Winning Research Proposals

Every scientist needs to know how to write convincing proposals. In times of increasing competition for scarce research resources, it is vital for the scientists of agricultural research organizations to design projects

that can attract external funding for specific research efforts. In an effort to build the necessary skills, training workshops on Developing Winning Research Proposals, sponsored by NATP, were organized. These workshops aimed at developing necessary skills among the participants for writing research proposals that can win funds from donors. Content encompassed broad areas such as how to write a concept note as a preamble to the research proposal, how to write research proposals to inform and to persuade the donors, how to sharpen writing skills indicating urgency and need, how to prepare the budget, and how to write group research proposals.

### Meaningful Learning as a Communication Process

Communication plays a very important role in promoting human development in the present day social change. Communication is an essential pre-requisite to achieve teaching or training excellence. In order to develop conceptual and practical understanding on the importance of communication in experiential learning and to bring about a desirable change in behaviour among the individuals working in teaching, research, and extension organizations for their personal and professional growth, a workshop on Meaningful Learning as a Communication Process was designed and organized at the Academy. The programme provided an excellent opportunity for the participants to develop the needed understanding and skills through experience sharing, exercises, simulation, and games.

### ICTs for Agriculture and Rural Development

A National Seminar on ICTs for Agriculture and Rural Development was organized to provide a national platform for documenting and deliberating on the Information and Communication Technology (ICT) initiatives for agriculture and rural development, and to develop a policy framework and road map for integration of ICT in technology development and transfer to empower farming and rural communities. The seminar facilitated discussions on the themes



such as ICT initiatives for agriculture and rural development, issues related to open access and information sharing, and e-commerce and e-governance. NAARM and NAARM Alumni Association jointly organized this seminar. The seminar produced useful outputs in the form of proceedings and policy framework.

### Computer Aided Material Production for the Faculty of SAU System

Multimedia development and adoption in learning teaching is one of the primary focus areas now adopted as the best instructional strategy by the faculty of State Agricultural Universities. Computer Aided Material Production (CAMP), in which methodology for the development of instructional materials with a sharp focus of strategy option for instruction and learning assessment of instructional packages is very much needed for the faculty members of SAUs. In order to develop competence among the participants for the production of computer aided instructional material, and also the aspects of computer aided materials and multimedia in learning teaching, the workshop was organized. The workshop covered the topics such as Computer Aided Instruction (CAI) in agriculture, Multimedia in agriculture, and video and audio coverage.

### Commercialization of Agricultural Technologies



Commercialization of technology is of paramount importance for sustained growth and to keep pace with global challenges. It is crucial to understand the dynamics of developing, protecting, transferring, and monitoring a commercializable technology, which may be a process or a product. In response to the decision taken in the ICAR Directors' Conference, the Academy organized a National Workshop on Commercialization of Agricultural

Technologies with an aim to sensitize the Directors of various ICAR Institutes on the procedures, problems, issues, and prospects pertaining to commercialization of agricultural technologies. Some of the issues deliberated in the workshop included target-oriented technology generation with end user participation; commercialization of farm machinery – issues and strategies; testing and evaluation of technology as a step towards commercialization; policy of commercialization in NARS; institutional strategy for technology protection in IPR era; patents law, etc. The workshop deliberations led to recommendations centered on charting a draft commercialization policy for ICAR.

### Indian Agriculture - in Post WTO Era

The Indian Science Congress Association (ISCA - Hyderabad Chapter) in collaboration with National Academy of Agricultural Research Management (NAARM), Acharya N.G. Ranga Agricultural University

(ANGRAU), and Farm and Rural Science Foundation (FRSF) organized a one-day workshop on “Indian Agriculture - in Post - WTO Era” at the Academy. This workshop focused on global perspective of IPR in agriculture and provided an insight into various aspects like PVP, Seed Act and Breeders Right, India’s policy regime in the emerging scenario, protection of Geographical Indications, traditional and indigenous knowledge, IPR as an effective tool in gene-based inventions, etc. Senior-level functionaries belonging to varied strata, including progressive farmers, policy makers, Vice-Chancellors of Agricultural Universities, and personnel from NGOs, leading research groups, and various other organizations participated in the workshop.

### **International Conference on Agricultural Heritage of Asia**

Asian Agri-History Foundation (AAHF), Secunderabad, and National Academy of Agricultural Research Management (NAARM), in collaboration with Acharya N.G. Ranga Agricultural University, Hyderabad, organized a three-day International Conference on Agricultural Heritage of Asia at NAARM. Dr Mangala Rai, Director General, Indian Council of Agricultural Research (ICAR), and Secretary, Department of Agricultural Research and Education (DARE), New Delhi, inaugurated the conference. The conference covered broad areas such as women and food security, animal management and fisheries, agro-forestry, management of soil, arbori-horticulture, plant biodiversity, rainfall prediction and water management, medicinal plants in agriculture, sustainable crop production and protection practices, and technology transfer across Asia. The conference also attracted delegates, including delegates from Australia, Israel, Japan, The Netherlands, Sri Lanka, and the USA.



# RESEARCH ACHIEVEMENTS





## Research Achievements

NAARM undertakes research studies on management problems faced by the agricultural research and educational institutions in the NARS. These studies generally are of short duration in nature. These are conducted with funding support from NAARM as well as external funding. Several prestigious educational and management institutions have recognized the Academy as a centre for undertaking project related academic research for their respective students under the guidance of NAARM faculty. The research output is used to provide policy support to the NARS in the specialized areas of agricultural research and education management and also to serve as technical backstopping for its different training programmes. Details of research projects for the year are as follows:

	Project Title	Sponsor	Investigators
1.	Performance Assessment and Accountability Enhancement of Indian NAROs	NATP	T Balaguru R Kalpana Sastry RVS Rao
2.	Micro-level Priority Setting – Prioritization of Fisheries Production Constraints	NATP	GP Reddy, BS Sontakki SK Soam, N Sandhya Shenoy, VKJ Rao
3.	Assessment of Strategic Research Extension Plan (SREP) Methodology for Upscaling and Institutionalization of Research-Extension-Farmer Linkages	NATP	GP Reddy, BS Sontakki, VKJ Rao, N Sandhya Shenoy (NAARM), GR Desai, MN Reddy (MANAGE)
4.	Capacity Building of NARS in Developing Decision Support System Using GIS	NATP	NH Rao, MN Reddy SK Soam, KH Rao
5.	Computer Aided Material Production	NATP	A Gopalam, KM Reddy
6.	Developing of Virtual Campus for Agricultural Research and Education Management	NATP	K Vidyasagar Rao NH Rao, MN Reddy KM Reddy
7.	Forecasting Trained Agricultural Manpower	NATP	D Rama Rao, C Sriram SK Nanda
8.	Training Needs of Technical Staff in ICAR	AP Cess	R Kalpana Sastry SK Soam D Rama Rao
9.	Development of Decision Support Tools for Agricultural Research Systems Transition towards Sustainability	AP Cess	NH Rao and MN Reddy

	Project Title	Sponsor	Investigators
10.	Identifying Strategic Issues and Prospective Approaches in Higher Agricultural Education System in India to Face Challenges of GATS	AP Cess	SK Soam R Kalpana Sastry
11.	Management of Agricultural Education and Policy Implications	AP Cess	A Gopalam SN Saha
12.	Developing Multimedia Protocols and Electronic Exchange of Information in SAU System	AP Cess	A Gopalam R Kalpana Sastry
13.	Strategies to Encourage Rural Female Students in the Agriculture Education	AP Cess	D Rama Rao N Sandhya Shenoy Sulaiman Rasheed (NCAP)
14.	Information and Communication Technologies for Sharing of Agriculture Information in Rural India	AP Cess	N Sandhya Shenoy D Rama Rao, N.H. Rao M N Reddy, BS Sontakki
15.	Capacity Building of NARS in Application of GRAM GIS in Micro-level Planning and Development for Sustainable Agriculture	DST	NH Rao, MN Reddy KH Rao, SK Soam GP Reddy
16.	Research Project Management in NARS	NAARM	P Manikandan T Balaguru, SN Saha
17.	Leadership Styles and Effectiveness in ICAR Institutes	NAARM	MM Anwer, P Manikandan RVS Rao, KH Rao
18.	Organizational Climate in ICAR	NAARM	MM Anwer, BS Sontakki C Sriram
19.	Transience in Organization	NAARM	MM Anwer, BS Sontakki RVS Rao
20.	Agricultural Gateway to India	NAARM	N Sandhya Shenoy
21.	Development of on-line Delphic Technological Forecasting Study	NAARM	GRK Murthy D Rama Rao
22.	Training Needs Assessment of NARS Scientists	NAARM	RK Samanta, N Sandhya Shenoy, BS Sontakki P Vijendar Reddy
23.	Impact of NAARM Training of ICAR Scientists and Assessment of their Training Needs	NAARM	RK Samanta, KVS Rao KV Kumar

Project-wise salient achievements of the year are detailed below:

### NATP Projects

#### 1. Performance Assessment and Accountability Enhancement of Indian NAROs

*Objective:*

- To develop a comprehensive performance assessment methodology and build the capacity of NARS scientists.

*Achievements:*

- Building on the premise that research organizations use certain resources (*inputs*) in specific operations (*processes*) to generate various types of *outputs* that are transformed into positive outcomes (*impact*) by the end users, a basic framework for the self-introspection of their performance was developed.
- The methodology mainly attempts to integrate research output (*productivity*) and outcome (*impact*) evaluation with the assessment of key *management processes* that affect the performance.
- The methodology encompasses the identification of various types indicators pertaining to research output (8 nos.), outcome (10 nos.), and key management process (11 nos.); their measurement in terms of *productivity ratio*, *performance ratio* and *constraint ratio*; and evolving strategies for improved performance by integrating the results into internal decision-making.
- As a part of the capacity building exercise, two management development programmes on the performance assessment methodology were organized and 38 scientists from ICAR Institutes and Agricultural Universities got benefited.
- Two ICAR Institutes (IIHR, Bangalore and DOR, Hyderabad) and two Agricultural Universities (AAU, Jorhat and KAU, Thrissur) used the developed methodology to assess their performance in quantitative terms for submission to expert bodies (like QRT) constituted for the purpose.

#### 2. Micro-level Priority Setting – Prioritization of Fisheries Production Constraints

*Objectives:*

- To identify fisheries production constraints in the coastal agro-ecosystem.
- To prioritize the identified fisheries production constraints.

*Achievements:*

- Based on analysis of primary data collected from 929 fishermen/fish farmers/fish traders and processors, the production constraints in marine fisheries and brackish water and freshwater aquaculture were identified and prioritized using constraint magnification approach. Rank based quotient (RBQ), probability of occurrence, economic loss and market price were used to compute monetary loss due to each constraints. Accordingly, the production constraints were prioritized state-wise.
- A workable methodology to identify and prioritize production level constraints in fisheries was developed.
- The identified and prioritized constraints in the three sectors, by and large, are in conformity to the proposed Fisheries Action Plan to achieve targeted fish production of 8 million tonnes by 2007.

### **3. Assessment of Strategic Research Extension Plan (SREP) Methodology for Upscaling and Institutionalization of Research-Extension-Farmer Linkages**

*Objectives:*

- To review the SREP methodology followed in the pilot districts with a focus on linkages and identification and prioritization of research, extension and development issues.
- To analyze the mechanism followed in each state for implementation of SREP outputs in operationalizing strategies evolved.
- To identify the gaps in SREP methodology and its implementation process and suggest appropriate measures to overcome the gaps.
- To evolve future directions for up-scaling and institutionalization of SREP approach.

*Achievements:*

- This project aimed at process assessment of SREP methodology to strengthen R-E-F linkages. Data was collected by personal interview method from a cross section of the stakeholders of ATMA using two instruments structured specifically for the purpose. Analysis of data collected from 13 ATMAs revealed that the process of SREP has been largely successful in identifying gaps in research, extension and development by a participatory process. However, prioritization of gaps and issues needs improvement. It was observed that a comprehensive package of exposure visits, training, demos and IT interface contributed to the success in operationalization and implementation of extension strategies and activities.

- The SREP methodology also has potential to identify, prioritize and articulate micro-level research priorities. Perception analysis revealed that about 77% of the respondents have 'very good' overall perception about SREP, while about 80% perceived their role as important. Role clarity and role conflict aspects need improvement as nearly one-third of the respondents reported low role clarity and high role conflict. Based on findings it is suggested to revise the guidelines for SREP preparation, and linking SREP to KVKs.
- **Impact:** Project recommendations on revision of SREP Guidelines to comprehensively cover planning, operationalization, implementation, monitoring and evaluation, and improving the prioritization process are being considered in upscaling SREP methodology that is being initiated by the Department of Agriculture and Cooperation of the Ministry of Agriculture, Government of India under its X Plan Scheme on Support to State Programmes for Extension Reforms in 252 districts covering all the states of the country.

#### 4. Capacity Building of NARS in Developing Decision Support Systems (DSS) Using GIS

##### *Objectives:*

- To develop training facilities and methods for training in GIS based research.
- To develop agricultural resource and other databases and spatial information systems.
- To develop GIS based DSS for specific case studies at macro level and micro level.
- To use GIS based DSS as training tools.

##### *Achievements:*

- A state-of-art GIS Laboratory and training facilities have been established at NAARM. These facilities enable development of new GIS products including web-based products. They also enable training to cover a wide range of requirements – from limited GIS capability (involving working with pre-developed complete applications when users do not have access to basic GIS tools, or with predigitized maps when users have map viewing and analysis tools but not map creation tools) to full GIS capability involving creating maps and detailed geographic analysis.
- A unique framework for training in GIS applications in agriculture based on a project/case study based approach with each software has been developed. Six training manuals have been developed for the different GIS software to facilitate independent self-learning. All the training

manuals are available on the NAARM Virtual Learning Center (VLC) for web based interactive learning.

- *Spatial Information System for Agricultural production and resources in States (SISAg\_States)* has been developed and is being updated continually. **SISAg\_States** combines GIS maps with related data sets to map, update and analyze agricultural production, resources and infrastructure information for States of India. Such information is frequently sought in agricultural policy and development planning. *SISAg does not require users to have access to GIS software as it is developed in Visual Basic and MapObjects and can be used on any system operating on MS Windows.* An external MS Access database of agricultural production, resources and infrastructure data from 1970-2000 is integrated into the application. SISAg can be downloaded free from the NAARM web site.
- *Spatial information system of agricultural production and resources in districts (SISAg Districts)* has been developed and is being updated continually. The application is similar to *SISAg states*, the difference being that the attribute data is for districts.
- *Decision support system (DSS) for watershed management* is developed as a deployable application by integrating independent GIS layers of watershed features created in ArcGIS with MapObjects in VB, for a case study watershed – the KK3 watershed (about 430 sq km) in Mahbubnagar district of Andhra Pradesh, India. The GIS layers include, the watershed boundary, contours, streams, habitations, soils, land use, rain gauge station locations and Thiessen polygons, and a digital elevation model (DEM) of the area generated in ArcGIS using the contours and streams layers. Using the DEM and streams layers, the watershed was delineated into subwatersheds using AVSWAT. The subwatershed layer is then integrated into the GIS. Thiessen polygons, land use and soils layers were overlaid to obtain a layer of hydrologic response units (HRUs). Runoff from each HRU was calculated using the Curve Number method of USDA-SCS. Thematic maps of spatial variations in runoff on individual rainy days could be generated both for individual hydrologic simulation units and for the subwatersheds. The dynamic decision support framework was developed in VB by assembling all the GIS layers into a single application using MapObjects. Rainfall data of the 3 rain gauge stations covering the area was assembled in an external database developed in MS Access. Attribute data of individual features was added directly in the corresponding feature attribute table. The system also generates the thematic maps of the volume of runoff and average runoff depth for the subwatersheds for daily, monthly, seasonal and annual intervals. *The DSS is made available as a deployable application so that users can dynamically update the rainfall data, and assess the variations in runoff and its spatial distribution over the past or current seasons.*

- **Crop-livestock integration for micro-level planning for sustainable livestock management in dry-land areas:** A case study is being developed for sustainable management of livestock in dry-land areas; the major emphasis will be on crop-livestock integration for sustainable growth and utilization of locally available natural resources. The study is being carried out in District Mahabubnagar of AP. The survey for livestock data has been completed and PRA studies have been carried out in two villages.
- Six training programmes of 10-days duration on GIS Applications in Agricultural Research and one Summer School on GIS based decision support systems for sustainable agriculture were organized. In addition 3-day GIS training modules were offered in 9 Refresher courses offered at NAARM during 2000-04. A total of over 320 scientists and faculty of NARS obtained their training in GIS at NAARM after the initiation of the project. Further a short one-day module on GIS was also offered to 9 batches of FOCARS during this period.

#### 5. Computer Aided Instructional (CAI) Materials Production

##### *Objectives:*

- To select subject theme areas from standard text books and segment into instructional events and to develop storyboard preparation strategy and to select software suitable for lesson delivery with computers as instructional carrier
- To short list the evaluation methods for learning assessment and to integrate story board of lesson events to evaluation and to encapsulate lesson & evaluation into a learning packages
- To field test CAI lesson modules in select universities & estimate difficulty levels and to validate the lesson & evaluation to equal opportunity learner
- To conduct workshop on CAI

##### *Achievements:*

- Methodology and protocols were standardized to developed modules on educational technology, introduction to soil science, clean milk production, early childhood education and management of agricultural education.
- Two training programmes Computer Aided Material Production (CAMP) strategy for SAU faculty were conducted in a 11 day workshop. The participants were given adequate exposure on multimedia development aspects and on hands training to develop a story board and instructional resource module integrating picture, video, audio and other multimedia

features. The outcome of this workshop was significant and helped in preparing lesson modules on the following:

- Breeds & varieties of chicken
- Drip irrigation
- Urea treated paddy straw
- Zoonosis – A major public health problem
- Nature & process of communication
- An introduction to harvesting machines
- Agro-techniques in vanilla

## 6. Development of Virtual Campus for Agricultural Research and Education Management

### *Objectives:*

- To provide opportunities for scientists of NARS and other countries to learn and contribute to agriculture research management and education.
- To provide accessibility to the scientists to get management training at anytime and anywhere without disturbing their regular work schedule.
- To cover more number of scientists in the system with less cost.
- To make use of contemporary Information Technology tools for effective and interactive learning mode.

### *Achievements:*

- A pilot site of the Virtual Learning Centre (VLC) has been designed and made accessible in the public domain from the NAARM web site. Course modules on agricultural research management, information management and HRD on NAARM website (<http://icar.naarm.ernet.in>). For the convenience of the learners download and feedback features were incorporated at the end of the each topic. The following features were also incorporated for effective browsing and interaction of each topic. The website is also being used by the faculty in the class room lectures during the trainings on computer applications and web designing. It is freely available on NAARM website. Provided user friendly navigator facility with easy searching in the pages.
- At the end of the module an interactive mailing for self testing and downloading material for hard copy is provided.
- Following topics are available on NAARM website.
  - Agricultural research management
  - Information Management
  - Human Resource Management
  - Intellectual property rights

- **Outcome / Impact:** The virtual center has been used as a demo to the participants of the training programme related to distance education training and design and development of web sites. Based on the feedback received from the participants necessary modification has been done. This web site is also being used by the faculty in the classroom lectures whenever needed during the trainings on computer applications and web based designing. This website is being used by the trainees of FOCARS and other senior programs to supplement information on the topics related to ARM, HRM and ICM.

## 7. Forecasting Trained Agricultural Manpower

### *Objectives:*

- To review the estimate of the present stock and supply of agricultural graduates
- To assess manpower needs in agriculture
- To provide policy guide lines for planning agricultural education

### *Achievements:*

The study indicates that future jobs will be more in non-govt sector and most such organizations do not require the research-centered specialized skills now being imparted by agri-universities. There is need to introduce either new courses or reorient the existing courses as per the needs. At least 50 per cent of the graduates need new skills in the areas such as marketing, communication and information technology. Educational strategies to meet the future manpower requirement are given in terms of new curriculum, levels of education and private partnership and few important suggestions are:

- There is danger that agri-education would be usurped by private players in the new competitive era unless universities adopt a proactive approach.
- With exception to Ph.D. level, it is possible to provide agri-education at all other levels in select demand areas on commercial basis. Commercial aspect brings not only accountability but also tunes the education system to the market needs.
- Flexibility in choice of courses for students. Electives results in greater student's involvement in academic programs. There should be at least three elective courses.
- There is a need to establish linkages of educational institutes with user departments, where students need to work on projects as part of curriculum.
- To meet the future needs there is need to introduce courses like ecology, environmental impact, renewable and non-conventional energy, biotechnology, IT in agriculture, food processing and food technology, feed formulation, artificial insemination and animal products technology that have demand for qualified manpower.

- Vocational courses can be offered in the fields of aquaculture, tissue culture, fish processing, food production, farm automation, navigational engineering, fisheries business management and aquaculture engineering on commercial terms.
- The rising unemployment levels are likely to force the graduates to look for non-conventional occupations. Therefore, it is time for universities to make a beginning to guide the graduates on self-employment.
- **Impact:** The manpower forecasting study aimed to sensitize the education experts on the emerging challenges and their impact on manpower quality and quantity. Based on the demand and supply scenario of trained manpower in agriculture, the study has drawn the attention of education planners towards the urgent need for critical review of present courses in the context of employment opportunities. The demand analysis and the employers perceived expectations pointed to evolve a market driven education system. In all, the project output led to debate to re-look at the present system from market demand perspective. The project outcomes provide direction to agricultural education system to improve the employment opportunity through both qualitative and quantitative changes in the system.

#### AP Cess Projects

#### 8. Training Needs Assessment of Technical Staff in ICAR

##### *Objectives:*

- To identify training needs of technical personnel for creating an enabling environment of learning system to achieve organizational excellence.
- To evolve a base document for training policy of personnel identified above.

##### *Achievements:*

- Recognizing participation by the targets themselves would give the needed pointers for developing a tangible training plan, formal and informal means to collect information from individuals on the needs and gaps were used through survey, discussion and brainstorming sessions by focusing on the following themes:
  - Area of training
  - Criteria for training
  - Places of training
  - Issues in training

- The training needs of staff were synthesized based on the survey results, brainstorming, and discussions with senior officers and training record. Most issues related to subject matter logistic arrangements in training, location of training institution, difficulties and advantages in outstation training, funding norms for training and contents of training. The participants could identify areas of training, criteria for selection, logistic issue and place of training. In areas of training, participants prioritized training related to their area of work, followed by personality based programs and skill based courses like GIS and computers. Most participants in all venues outlined the need for mandatory foundation training at entry level and skill and need based training at regular periods later.
- A conceptual framework for training strategy was formulated as per vision and objectives of the organization.
- Issues of logistics, especially in terms of advances for travel, proper lodging, transport, gender specific issues were voiced as concerns. In criteria for selection, seniority, the need and usefulness, and basic educational qualifications were rated high.
- The participants pointed out the places of training at global and national levels. In the ICAR system, participants preferred training at NAARM followed by IASRI, NDRI, IIHR, CIFA. Outside ICAR Institutes, IIMs were on priority followed by NIRD, MANAGE, NIIT, CMC etc. ICRISAT and IRRI were given top priority in international institutes. Some of the issues highlighted were need for mandatory foundation as well as refresher courses including orientation training. Special training programs for women technicians, proper transport, boarding and lodging facilities, advanced intimation about training programs and administrative problems were highlighted. Travel concerns, proper intimation for personnel located in institutes in Northeast region were specially focused.

#### **9. Development of Decision Support Tools for Agricultural Research Systems Transition towards Sustainability**

##### *Objectives:*

- To develop an analytical framework to structure issues relating to agricultural research management with a sustainability perspective.
- To develop decision support systems to plan, prioritize, and evaluate agricultural research programmes with a sustainability perspective.
- To ensure wide access of the stakeholders to the philosophy, concepts, data bases, knowledge bases, technologies and methods relevant to research, development, policy and practice of sustainable agriculture by their dissemination through the Internet and other media.

*Achievements:*

- *Framework for assessing agricultural sustainability:* A framework based on DPSIR (Driving forces-pressures-State-Impacts-Responses) framework used in environmental sustainability assessments has been developed to identify the sustainability indicators for agricultural production systems.
- *Spatial databases:* Spatial databases of soils, agro-ecozones, agricultural production and resources, land use, and socioeconomic data for the 4 States identified under the project of Andhra Pradesh, Orissa, and Bihar have been designed.

### **10. Identifying Strategic Issues and Prospective Approaches in Higher Agricultural Education System in India to Face Challenges of GATS**

*Objectives:*

- To analyze GATS obligation and mechanisms with respect to higher agricultural education system, and develop recommendation domain.
- To find out potential risks and opportunities in trade in educational services with respect to- preparedness, commitments in service delivery and receiving service (*modus operandi* and country of interest) and capacity building in agricultural education system.
- To identify the competitive advantages of Indian higher agricultural education system to take maximum advantage.

*Achievements:*

- Completed document survey and concept mapping to prepare a document on general understanding of GATS vis a vis higher agricultural education.
- Conducted interviews of five experts, two at ICAR i.e. DDG (Edn) and ADG (HRD II) and three at National Institute of Education Planning and Administration (NIEPA), New Delhi.
- Nodal Officers from 31 SAUs, 2 Central Universities and two ICAR Deemed Universities have been identified.
- Four kinds of questionnaires have been developed for data collection, as under:
  - Heads of the Colleges in SAUs/CAU/Agric. Faculties in CU and Heads of Divisions in ICAR Deemed Universities.
  - Heads of the Departments in SAUs/ CU/ CAU
  - Faculty of various cadres
  - Nodal Officers

## 11. Management of Agricultural Education and Policy Implications

### *Objectives:*

- To study the ICAR model act and its implications in various agricultural universities.
- To probe into the acts and statutes and functioning of management bodies of SAU's.
- To ascertain the organization structure of universities and their physical development.
- To investigate the integrated function of teaching, research and extension with in the universities and allied institutions with in the state and the state departments of agriculture.
- To outline the course credit and internal assessment systems in various agricultural universities.
- To review investment pattern in SAU's and the outcomes.
- To scrutinize the recruitment and staffing pattern vis-a-vis the load of work and the outcome.
- To understand the planning, monitoring and evaluation mechanisms in the SAU's.
- To specify recommendations as a result of the above 8 objectives and enlist the policy resulting out of this study.

### *Achievements:*

- An interview schedule was also developed and the research teams visited some universities for getting the information, insights and material pertaining to the Universities for the following Academic and management problems. Academic problems include Curriculum up gradation Introduction of new courses Diversification of existing courses, New concepts that should be appended Introduction learners to new educational concepts Standardization of teaching methodology, Working for the globalization of the Agricultural Education Reactions to development Institutional management Assessment and Evaluation systems and the Management problems included Inbreeding Rotation of Deans/ Directors/ Heads of the Department.
- The study investigated under this CESS fund Project indicated that the ICAR Model Act and its implementation at various state agricultural universities is at variance depending on the location specific requirements. The functional responsibility of VC, financial controller, Comptroller of examinations, and deans and directors of various research & academic departments are fine-tuned to the functional requirements of the University studied.

- The organizational structure of various universities is studied and it is found that there is not significant variation within the universities. SAU being established under land-grant pattern, the tri functional responsibility for teaching research and extension is considered as important but it was found that some faculty members perform exclusive function of teaching, research or extension.
- A CD on Management of agricultural education was developed.
- A workshop on Management of Agricultural Education was organized for the Deans of State agricultural Universities in which the presentations were sought on Management complexity of Agricultural education and the problems resulting. This workshop was attended by the 16 Deans.

## **12. Developing Multimedia Protocols and Electronic Exchange of Information in SAU System**

### *Objectives:*

- To organize research on needs by assessment methodology for complimentary and supplementary roles of multimedia packages in Learning Teaching in SAU System.
- To develop appropriate methodology and protocols for the development of multimedia packages and electronic exchange of information in selected curriculum of agricultural science subjects
- To estimate the efficacy of multimedia & electronically exchanged information for possible integration in class room and distance education
- To propagate the developed materials by institutional training and train selected SAU faculty for development in their respective field of specialization for capacity building
- To estimate the post introduction and post training consequences by supplementing and complimenting class room instructions by the introduction of multimedia & electronic exchange of information

### *Achievements:*

- Multimedia protocols for instructional lesson modules were developed using the video, audio, photographs, pictures and other visual sources. The scripting protocols were developed in order to capsule these lessons for electronic exchange of information.
- Different presentation platforms were test tried and most viable presentation techniques were short-listed.
- A step-by-step procedure is now being worked out for the development of multimedia lesson modules and a guide manual for the university teachers is being prepared.

- This questionnaire was administered after a brief presentation on multimedia efficacy, methodology protocols and development strategy in order to conceptualize the teacher perception and reach on to the arising issue of MM lesson plans and integrating capability for class room instruction. The results of such study helped the investigators for assessing the teacher accepting such developmental issues in classroom instruction and also emphasizing factors to adopt such changes. Following are the results, which are of practical significance.
- A resource book entitled Multimedia in Agriculture was published.

### **13. Strategies to Encourage Rural Female Students in the Agriculture Education**

#### *Objectives:*

- To assessment of growth of female students in agriculture education,
- To develop strategies to enhance participation of female students from rural areas.

#### *Achievements:*

- The project was started in the month of October 2004. The proportion of girl students in the various SAUs varied from 2 to 50 per cent. SAUs having girl students upto 20% were selected for detailed study. Questionnaires were developed to seek issues on girl students from the universities, students, parents and senior officers working in Agri-Organizations.
- A survey was carried out covering MPUAT, Udaipur; AAU, Anand; ANGRAU, Hyderabad; HAU, Hisar and OUAT, Bhubaneswar. Brainstorming sessions were organized to solicit opinions from officials and students covering colleges and stations of the selected SAUs. Perceptions of select senior officials and farmers were obtained through personal discussions.
- The preliminary information reveals that most students and farmers are not aware of agricultural education and there is no organized way to reach them at present.

### **14. Information and Communication Technologies for Sharing of Agriculture Information in Rural India**

#### *Objectives:*

This project is being implemented in Gujja village, Nalgonda District of Andhra Pradesh, to promote use of information and communication technologies (ICTs) for empowering farmers and transfer of agri-technology information, with the following objectives:

- To assess the farmers information needs relevant to internet and build a system using ICT in agriculture technology dissemination for problem solving
- To empower farmers and farm women in the use of ICT
- To develop policy strategy for scaling up the use of ICT for improvement in the quality of life in rural areas across the country

*Achievements:*

- project is implemented in association with an NGO 'Centre for Sustainable Agriculture (CSA)' and local NGO 'Society for Women Education and Environment Training (SWEET)' so as to take care of total needs of farmers in the village. The needs assessment was carried out for determining the content to be covered and the preferences for content presentation for the farmer respondents.
- It was found that farming was the primary occupation followed by dairy. Therefore the content has to be primarily oriented towards crop management aspects followed by dairy. Most of the farmers expressed the need for information on pest management and drought tolerant varieties. Regarding the Dairy sector, the farmers needed information on technologies for increasing milk yield, fat content in the milk, and artificial insemination. Farmers faced scarcity of fodder supply and inadequate availability throughout year thereby required information on the fodder crops cultivation, storage and management. The other basic information need of the village was the information on economically viable and less complex fluoride treatment at household level to solve the problem of high fluoride content in drinking water. Alternative livelihood opportunities for women are the other prominent information needs.
- An Agricultural Information Centre equipped with a variety of conventional and IT based ICTs has been set up in the village with a resident project staff (SRF) to serve as interface. The information needs of the farmers were identified and the project is implemented in association with an NGO 'Centre for Sustainable Agriculture (CSA)' and local NGO 'Society for Women Education and Environment Training (SWEET)' so as to take care of total needs of farmers in the village. The needs assessment was carried out for determining the content to be covered and the preferences for content presentation for the farmer respondents.
- Farmers have shown their interest in learning about how to get the Information on various aspects of agriculture and rural issues. After setting up of the project, most of the farmers are regularly visiting the center and making queries through telephone to the ATICs (of GOVT of AP) and Rythu mitra (of Teja TV) and Annadata (of Eenadu) and solving their

doubts regarding the farming, pests and diseases and also about the suitable varieties. About 10- 15 children and rural youth are coming to the center regularly and learning the computer basics and are now in a position to develop their own powerpoint presentations and even attempting some animations. Farmers are regularly visiting the center and enquiring about the market prices through internet, cultivating safflower (new practice) and suitable seed availability.

### DST Project

#### 15. Capacity Building of NARS in Application of GRAM GIS in Micro-level Planning and Development for Sustainable Agriculture

##### *Objectives:*

- To develop a GRAM GIS based framework for assessing agricultural production systems at various levels for sustainability, and
- To organize and conduct training programmes on application of GRAM GIS in planning and management for sustainable agriculture

##### *Achievements:*

- The project has been initiated in 2005. Equipment has been procured. Necessary arrangements are being made with IIT, Bombay, and DST, New Delhi, for procuring the software and training in its use to the staff of the project.

### NAARM Projects

#### 16. Research Project Management in NARS

##### *Objectives:*

- To study the existing system of research project management and to propose a comprehensive system for effective research project management.

##### *Achievements:*

Critical analysis of the information collected through a questionnaire survey from the scientists, HODs, and In-charge, Technical Cell revealed the following:

- A decent proportion of scientists seem to be involved in a large number of projects. There is a need to rationalize the number of projects to be handled by a scientist.

- Technical competence and urgency of the problem are the major factors for project approval
- In the research project cycle, project proposal writing, project monitoring, and evaluation are given relatively less importance.
- Though scientists are involved in interdisciplinary projects they have expressed constraints in teamwork, as accountability for each worker is not clearly defined. There is a felt-need for training in teamwork.
- Simplified RPF, with distinct monitoring indicators is needed to make it more useful.
- Apart from effecting mid-term corrections, monitoring had also resulted in termination of a few projects.
- Final report availability, achievement of objectives, technologies generated, and publications made are considered as major criteria of evaluation.
- Training in project-related areas, project management, and human resource management are considered essential by the scientists to improve their efficiency and effectiveness in managing their projects well.
- Involvement of scientists in non-research activities is pointed out as a constraint for the scientists to pay adequate attention to research.
- Adoption of project based budgeting, decentralized decision-making at PI level, timely release of funds, responsive administration, identification of need-based and farmer-participatory research projects, and promoting teamwork culture are suggested for improving research project management in the NARS.

### 17. Leadership Styles and Effectiveness in ICAR Institutes

#### *Objectives:*

- To identify leadership styles of research leaders of ICAR
- To measure the leadership effectiveness of these leaders
- To collect information through self-assessment on basic leadership qualities of research leaders

#### *Achievements:*

- The data collecting instrument has been finalized. A pilot study was conducted and the data was analysed to determine the suitability of statistical analysis procedures and testing of the instruments. Data has been collected from about 30 respondents. The instrument for data collection has been mailed to all the research leaders of the council such as DG, DDGs, ADGs, Directors of institutes, JDs, HODs, PCs etc. Filled in questionnaires that have been returned are being coded for analysis.

## 18. Organizational Climate in ICAR Institutes

### *Objectives:*

- To study the organizational climate of ICAR institutes as perceived by scientists, technical and administrative staff
- To generate baseline data on organizational climate in ICAR institutes
- To analyze prevailing and desired organizational climate at the institute and ICAR levels
- To suggest a strategic model to create, nurture and sustain a congenial organizational climate in ICAR institutes

### *Achievements:*

- After thorough literature review, an instrument for data collection consisting four parts on personal information, organizational climate perception, job and organization related information and suggestions was designed. A pilot study was conducted in the local ICAR institutes viz. DRR, DOR, NRCS, and PDP to pre-test the instrument. Based on the results of pretest the instrument was revised and finalized in the form of a questionnaire to collect data from scientists and technical officers (T5 and above) of all the ICAR institutes. This questionnaire was mailed to the respondents. The incoming responses are being coded for further analysis.

## 19. Transience in Organization

### *Objectives*

- To investigate the readiness of the Scientists of NARS in transience management
- To monitor the implementation of the Agenda for change in 19 ICAR Institutes through frequency

### *Achievements:*

- A Director's Workshop on Transience Management was conducted from Oct 27 – 30, 2003. Nineteen Directors attended this workshop. The workshop report was prepared and mailed to DDG (Edn), Secretary ICAR, DG and all the participants of the Workshop. The report contains the outcome of the 5-syndicate groups that have worked on various topics in the workshop. A road map for change management in ICAR as well as change in the 19 Institutes was prepared and included in the report.

- Feedback from all the 19 Directors of the participating Institutes has been sought on three different occasions. Five Directors have submitted partial feedback and one Director has submitted complete feedback. Efforts are on to receive the feedback to analyze the information for writing a monitoring report.

## 20. Agricultural Gateway to India

### *Objective:*

- To develop web based information on agriculture in India in particular and general agriculture relevant research, education and extension.

### *Achievements:*

- Agricultural Gateway to India is developed as a window on NAARM web site providing information on Indian agriculture. Information for different categories pages were linked in the AGI pages like Regional Agriculture Research Stations, Institutes, Agricultural Technology Information Centres, and such that would be useful for the extension functionaries, farmers and others. Information of Women Agriculture Professionals in India was collected and compiled as a directory and hosted in the AGI site, which would be helpful for networking of the women professionals and organizations involved in agriculture research, education and transfer of technology.

## 21. Development of on-line Delphic Technological Forecasting Study

### *Objectives:*

- To develop online Delphi technique with a provision to Maintain anonymity, Provide controlled feedback and make it an iterative process.
- To develop methodology to generate road maps/policy decisions using online Delphi method.

### *Achievements:*

- Developed algorithm for conducting different rounds of Delphi on LAN. Software developed using visual basic and access database. The package was tested in two different training batches. The software was modified based on feedback from the users. Software provides simple graphical and tabular data of responses at end of different rounds. The participants can view the analysis and give their responses for the next round. Software provides the controller to withdraw a question when satisfactory confirmation by majority of respondents (generally above 80 per cent).

## 22. Training Needs Assessment of NARS Scientists

### *Objectives:*

- To study the profile and training needs of the agricultural scientists in NARS with reference to their human resource development / research management.
- To undertake job analyses of junior, middle and senior level agricultural scientists to determine their needs in research management and personal growth.
- To study the perceptions and attitudes of the agricultural scientists in different levels regarding the training in research management and human resource development and
- To plan training strategies for agricultural scientists in NARS for their agricultural research management, in personal development by NAARM.

### *Achievements:*

- Profile analysis, job analysis and training need analysis of the data collected from 1380 scientists of NARS (728 from ICAR and 652 from SAUs) revealed that majority are in the age group of 35-50 years, have PhD and are male. About 45 per cent are devoting less than 50 per cent of their job time to research. ICAR scientists spend more time on research than their SAU counterparts. About 40 per cent of the surveyed scientists did not have a single research project at the time of investigation. Prominent training needs pertained to IT and Computer applications, research project management, human resource management. ICAR and SAU scientists showed differential preference in training needs in almost all the areas. Most of the training needs identified through this survey conform to the priority areas identified by NAARM for focusing its training efforts.

## 23. Impact of NAARM Training of ICAR Scientists and Assessment of their Training Needs

### *Objectives:*

- To evaluate the impact of NAARM training on ICAR scientists at their work place
- To find out the benefit derived from the trained scientists at the institute
- To evaluate the training needs of the scientists

- To document the strengths and weaknesses of the present training programmes

*Achievements:*

- The study revealed that there was an appreciable impact on the performance of scientists due to new knowledge gained and the skills acquired by them following training. As far as senior programmes are concerned, the informal feedback received, from those trained as well as from the senior managers in their work places, indicated a positive impact of the training received at NAARM particularly on application of project management techniques, interpersonal relationships, teamwork, and information management.
- With respect to the overall perception of training programmes offered by the Academy, it was felt that their objectives are clearly defined. However, there is lack of insufficient correspondence between the course content and the job duties. A more systematic study on the impact of training on the productivity of scientists as well as the research institutes is on the anvil. There was unanimity in that the training programmes at NAARM are unique and are not repetitive in terms of content and coverage.



## Academic Research

**Name of the students :** V.Pushpalatha and V.Santhi Sree

**Name of the Guide :** M.N. Reddy

**Discipline and University :** M.Tech in Geo informatics from environmental sciences, JNTU, Hyderabad

**Duration:** One year (February, 2004 to January, 2005)

**Objective:** The broad objective of this project is to develop a GIS based case study on the spatial and temporal trends in crop diversity index as an indicator of sustainable agriculture.

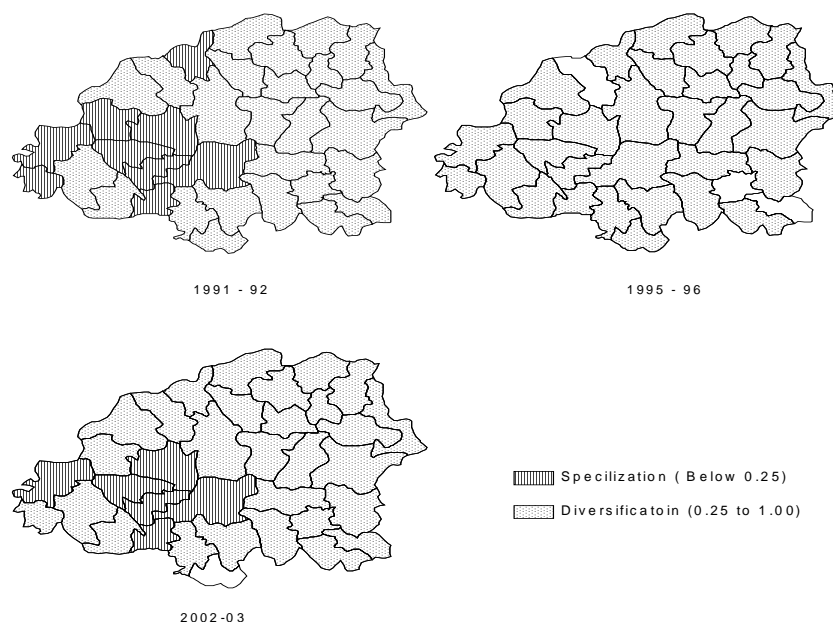
**Database:** The district Nizamabad in Andhra Pradesh is selected as the study area because of its heterogeneous conditions with respect to natural resources and socio-economic variables. The Database consists:

- **Spatial data:** Digitized mandal map of Nizamabad district and remote sensing data on land use and land cover for Nizamabad district
- **Attribute data:** mandal is the minimum spatial unit considered in this case study. Data of 36 Mandal on crop production, rainfall, land-use and socio-economic attributes such as literacy and population density etc., for three periods 1991-92, 1996-97 and 2002-03 and aggregate data on the above attributes for India and Andhra Pradesh for the latest three decades.

Crop diversity is a sub-set of agricultural biodiversity, which is a vital sub-set of biodiversity. Crop biodiversity has economic importance in production systems as it minimizes risk of total failure of crop production, confers potential resistance to droughts, decreases the vulnerability of the crops to biotic and biotic stresses. The following Gribbs-Martin Index of Diversification is adapted for measuring the extent of crop diversification.

$$\text{Index of Diversification} = 1 - (\sum X^2) / (\sum X)^2$$

Where X is the percent of total cropped area occupied by each crop, or hectareage under an individual crop. The value of this index varies from zero to unity. Higher the index more diversification and lower the index more specialization towards a single crop. The results for three time periods for Nizamabad district are shown in the following figure.



**Figure: Spatial and temporal trends of crop diversity index in Nizamabad district**

Note : Blank spaces indicate non availability of data.

The average index of crop diversity decreased from 64 per cent in 1995-96 to 41 per cent during 2002-03. The value of the index during 1995-96 is greater than 50 per cent in all the mandals, whereas it reduced to below 50 per cent in 20 mandals out of 36 mandals, indicating decreasing trend in crop diversification particularly during latest period. In-fact six mandals the value of the index is less than 25 per cent during 2002-03, showing the trend in growing single crop.

The exercise is carried for the aggregate data at the country and state level last three decades. The values of the index are stable and above 75 per cent indicating significant diversification, whereas at district level the fluctuations in the values of the index are more and the average value is about 50 per cent. At mandal level the variations are very high spatially / as well as temporally. This study shows strategic planning for crop diversification at village and mandal level is crucial to achieve sustainable agriculture. Identification of spatial units to prioritize research on crop diversity is essential for achieving sustainable agriculture.



## Collaboration, Consultancy and Policy Support

### 1. Collaborations

NAARM has fruitful collaborative arrangements with NARS institutions in addressing crucial issues emerging in the fast changing global agricultural scenario. Collaborative working got a fillip during the year, as several fruitful collaborative programmes were organized. Faculty of the Academy exhibited exemplary skills in facilitating the collaborating institutions to successfully organize training, workshop, and conference on topics of immense significance beside counseling on patent application, the details of which are as follows

- **IPR in Plant Genetic Resources Management:** A training workshop on IPR in Plant Genetic Resources Management which was collaboratively organized by National Bureau of Plant Genetic Resource (NBPGR) Regional Centre, Hyderabad and NAARM at the Academy from August 30 to September 02, 2004. The programme was attended by 33 participants and was coordinated by Dr. K. S. Varaprasad and Dr. S. K. Pareek (NBPGR) and Dr. R. Kalpana Sastry (NAARM).
- **Workshop cum Training on Biodiversity and Intellectual Property Rights in relation to Agrarian and Seed Sector Reforms in India:** The faculty of the Academy facilitated and supported this programme conducted by National Research Centre on Sorghum (NRCS), Hyderabad. This programme was conducted at NRCS, Hyderabad from November 17 to 20 and was attended by 35 participants. Drs. Vilas M. Tonapi and M. Elangovan (NRCS) and R. Kalpana Sastry (NAARM) were the coordinators.
- **Assessment Study of SREP Methodology:** At the behest of Priority Setting, Monitoring and Evaluation (PME) Task Force, NAARM undertook a study on assessment of SREP methodology for upscaling and institutionalization in collaboration with National Institute of Agricultural Extension Management, Rajendranagar. This collaborative study made recommendations on required methodological, structural, functional and logistic changes in SREP methodology for its successful upscaling.
- **Agricultural Heritage of Asia:** The Academy in collaboration with Asian Agri-History Foundation, and Acharya N.G. Ranga Agricultural University brought together on one platform, scientists, scholars, and others interested in Asian agricultural heritage to exchange views to stimulate scientific research based on traditional technologies; and discuss ways and means to influence future agriculture of Asian countries.

- **WTO Impact on Indian Agriculture:** Keeping in view the importance of IPR a workshop was organized to disseminate and introspect on the tangible benefit of IPR's in the post WTO era in collaboration with the Indian Science Congress Association (Hyderabad Chapter), Acharya N.G. Ranga Agricultural University (ANGRAU), and Farm and Rural Science Foundation (FRSF). A policy document was developed about the role of IPR in agriculture in post WTO era, which is the need of the hour.
- **Export Potential of Livestock Products:** A policy paper on 'Export Potential of Livestock Products' was developed, based on the deliberations in the Brainstorming Session conducted at the Academy under the aegis of National Academy of Agricultural Sciences (NAAS).
- **Facilitation in Patent Application:** NAARM, in partnership with Andhra Pradesh Technology Development Centre (APTDC), Acharya N.G. Ranga Agricultural University (ANGRAU), and Central Research Institute for Dryland Agriculture (CRIDA) facilitated Mr C. Venkat Reddy, a progressive farmer from Hyderabad, to file a process patent under Patent Co-operation Treaty (PCT) with WIPO, Geneva, on "A Method to Improve the Soil Fertility". Keeping with the commitment in building new partnership with other institutions, a Memorandum of Understanding has been signed between NAARM and Andhra Pradesh Technology Development and Promotion Centre (APTDC) in initiating a project-mode approach for "Building IP portfolio for traditional knowledge holders of Kalamkari art".
- **Support to IAUA:** Planning commission asked IAUA to develop proposal for higher allocation to agricultural universities in order to effectively translate rural developmental activities. A strategic proposal was developed for IAUA to upsurge agricultural sector for accelerating growth for rural employment generation and boosting farm income and in the process leapfrog agricultural universities through a mix of technical and management initiatives.

## 2. Consultancy

Attaining financial sustainability through revenue generation is the order of the day even for the public funded agricultural research organizations. ICAR also has been placing high importance on this. As move in this direction, the Academy regularly undertakes consultancy projects with the twin objectives of extending its expertise and infrastructure to cater to the specific requirement of its clients as well as to generate revenue towards attaining financial sustainability.

Consultancy on Video Production was offered to the following ICAR institutes

- Dubbing of video film 'Hybrid Rice' of Directorate of Rice Research, Hyderabad into five languages namely Kannada, Oriya, Bengali, Tamil and Marathi.
- Video Programme Production for Vivekanada Parvatiya Krishi Anudandhan Santhan, Almora.
- Successfully completed the Video Programme Production for Project Direcotrate on Biological Control, Bangalore.

### 3. Policy Support

Ever since its establishment, NAARM has been supporting ICAR by regularly providing policy support in the areas of agricultural research and education management. By virtue of its strategic position in the ICAR as well as its central location, the Academy presents a readymade platform for policy level deliberations and consultations. It also regularly organizes seminars, workshops, brainstorming sessions, etc. on topics of strategic importance. The outputs of such efforts are synthesized to develop policy leads and recommendations in improving the efficiency and effectiveness of Indian NARS in general and ICAR in particular. This endeavour was actively pursued during the year to evolve policy support on several significant issues both proactively and reactively. Following are the important endeavours done in this regard:

#### Strategies to Use ICTs for Agriculture and Rural Development

The Academy initiated a national dialogue on use of ICTs for agriculture and rural development in the form of a national seminar. This seminar aimed at developing a policy framework and roadmap for integration of ICTs in technology development and transfer to empower the farming and rural communities. The following strategic recommendations are suggested based on the deliberations of the seminar:

- NARS should have a say in the Telecom policy so as to provide special emphasis on rural telecom issues. As agriculture is the mainstay of Indian rural economy, large-scale use of ICTs needs pro-active telecom policy.
- Several efforts being made are not successful due to wrong assumptions and also due to copying of solutions from developed countries without taking into account the local situations.
- We have to exploit the spill over effect phenomena. Instead of making efforts to solve multiple problems, we have to pick up one core problem and solve it. The spill over effect may automatically solve several other problems.

- India needs scalable solutions. Also we have no time as vision target is set to have ICTs in all villages by 2008. Any solution we propose should have a potential to cover all India populations by personalized delivery services within 5 years.
- Majority of Indian population is literate and have small land holdings. We should not expect them to pull the information. We need systems that push personalized information in their local language. Also they should be cost effective.
- The existing information on agricultural technologies suitable for small and marginal farmers needs to be drastically modified and treated to make it amenable for dissemination through new ICTs.
- IT researchers need to design and develop information dissemination systems that provide cost effective and personalized information to improve the productivity of people.
- Various NARS institutions have a repository of scientific and technological information on agriculture. Efforts should be made to evolve a proper documentation mechanism so that the wealth of information may be properly archived and made available to users.
- The existing information on agricultural technologies suitable for small and marginal farmers needs to be arranged as Agriculture Knowledge Information System (AKIS). This AKIS may also document the Indigenous Technical Know-how (ITK) and Native Wisdom of Farmers and Rural Folk.
- There is a need to promote large scale use of ICTs in NARS institutions. However, the use of ICTs needs to be closely monitored to ensure synergy in information dissemination efforts.
- ICT initiatives in rural areas should be shouldered by public, private and non-governmental agencies.
- Efforts should be made to integrate the ICT use with the conventional information dissemination and delivery mechanisms.
- New ICTs provide yet one more opportunity for ICAR and SAUs to work together in the rural areas. The present opportunities available like NIC project extending ICT in select 28 blocks in the country can be explored.
- Information needs of villagers in the backdrop of new ICTs need to be done across the country. As good number of SAUs are having RAWE program for UG students, it can be made part of RAWE. Or alternately, it can be sought through ZARS/RARS/Colleges spread across the country.

### **Management of Research Institutes**

The recommendations emerged out of the interaction of Directors of ICAR research institutes were formed as policy support of ICAR. In the Directors' Workshop on management of research organizations the issues

discussed were: low strength of desirable age group, discipline-wise composition, improper staffing ratio, and duration of training programmes. Some of the recommendations that emerged are as under:

- Cadre strength of institutes is to be revised to reflect the arising priorities and keeping in mind the discipline-wise composition.
- Vacant positions of scientists may be filled up in six months' time in order that full complement of cadre strength is available and desired number can be spared for training/foreign training.
- Duration of foreign training for scientists up to the age 40 years may be of minimum six months.
- Duration of foreign training for scientists between 40 and 50 years may be of minimum six weeks.
- Duration of foreign training for scientists between 50 and 60 years may be of minimum three weeks.
- Each institute might identify two or three priority areas from among the areas of commodity improvement, commodity production, commodity protection, social sciences, and basic sciences.
- Training opportunities may be available for technical and administrative staff as well.
- In-country training policy should emphasize entry level training for scientists may be of one year duration, 21 days training every other year up to the age of 40, 7-10 days training every other year up to the age of 50, and 3-5 days training every other year up to the age of 60.
- Training should be linked with annual assessment and career advancement.
- ICAR is to obtain full autonomy for deputing scientists to foreign training without reference in each case to the Ministry of External Affairs.
- ICAR may delegate the power of deputing scientists for foreign training to the Directors of ICAR institutes and the powers of deputing Directors for foreign training may be delegated to the DG as is done in CSIR.

### Commercialization of Agricultural Technologies

The research institutes to reorient their research agenda to suit the market demands in order to make the agriculture economically attractive for the farmer. For achieving so, there is a need for a change in the mindset of personnel working in the research organizations. In this context, on behalf of ICAR, Academy organized a Directors' national workshop on commercialization of agricultural technologies. The recommendations of the workshop addressed 5 issues on legal and administrative dimensions 8 issues on policy matters 2 points on research management, 4 issues on marketing initiatives for technology commercialization and made one recommendation of human resource development in the NARS. The programme had 52 resource persons and 94 participants. Some of the recommendations that emerged at the end of the workshop are as under:

### Legal and Administrative Issues

- Decentralization of patenting and commercialization at Institute level through creation of Technology Promotion Cell with powers for outsourcing and hiring.
- Panel of legal experts and patent attorneys could be prepared by the institutes and approved by the Council.
- Guidelines may be developed by ICAR for handling the legal complications arising out of commercialization of technology and IPR.
- Modalities to be evolved for safe guarding through branding etc. of improved live materials such as fish/aquaculture, plant materials, products etc. developed by the institutes.
- Package of practices of the technology with the complete labeling should accompany the technologies being commercialized.

### Policy matters

- Guidelines have to be formulated and documented for IPR and commercialization of technologies on the lines of Johl's Committee recommendations on contract research etc.
- Incentive and reward policy for the inventors (Inventor : 50 :: 50 : Institution) may be made.
- Creation of venture capital fund at institute and Council levels.
- Encourage certification-by-certification agencies like Central Farm Machinery Training and Testing Institute (CFMTTI) for licensing and certification of farm machinery.
- Tie-ups with external agencies like National Research Development Corporation (NRDC) (already existing), Technology Development Board, Technology Information Forecasting and Assessment Council (TIFAC), Agri-business Incubator, Agri Science Park at ICRISAT etc. for outsourcing from patenting to industrial tie-up for commercialization.
- Institute – Industry partnerships need to be encouraged for commercialization.
- Policy guidelines for field testing of products and technologies developed by the institutes with regard to giving free inputs to farmers for field testing trials are essential for validation of products and technologies need to be developed.
- Guidelines need to be developed for scaling up of technologies developed by ICAR institutes in collaboration with private sector / industry relevant to the field whenever and wherever necessary.

### Research Management

- Research projects of the institute formulated with an aim of commercialization / patenting may be encouraged. While emphasizing Commercialization we should ensure that the main focus on the R&D agenda of the ICAR institutes is not diluted.

- Maintaining the experimental records (log book, lab diary etc.) needs to be re-emphasized to ensure hassle free legal processing and protection.

### Marketing Initiatives for Technology Commercialization

- Aggressive publicity campaign for commercializable technologies through different means and media needs immediate attention.
- Extensively using Information and Communication Technologies for technology transfer and commercialization..
- Technology Transfer Workshops and Demonstrations need to be regularly conducted by the institutes for commercializable technologies.
- Sister ICAR Institutions and others could act as a demonstration window for popularization of commercializable technologies, wherever feasible.

### Human Resource Development

- Sensitization, Awareness and detailed Training Programmes on IPR issues and commercialization aspects in Agricultural Technologies to be conducted at NAARM for different levels of scientists.

### Indian Agriculture - in Post WTO Era



A policy document about the role of IPR in agriculture in post WTO era was prepared based on the recommendations that emerged at the end of the workshop on “Indian agriculture in Post WTO era”. Some of the salient features of the document are:

- **IPRs and Outlook for Scientific Research in Agriculture:** The two IPRs of the TRIPS Agreement namely, patent and geographical indications, patents are likely to bring in marked changes in the outlook for scientific research in agriculture. With the legal system in place for the protection of plant varieties and other innovations, scientists need to come up with discoveries and inventions of commercial value. Research, especially in agriculture cannot be carried out just for the sake of research alone. Agricultural scientists need to endeavor increasingly to come up with inventions, and discoveries of commercial utility.
- **IPRs and Inventive Capability of the National Agricultural Research System:** Achieving self-sufficiency in food has been the cherished policy objective of our planners. Reasonable research infrastructure to achieve the goal through development progressively improved varieties is now in

place. It is however important to ascertain how effective and vibrant the national agricultural research systems (NARS) are to cope with the fast changing global economy / market. With legal systems of protection of inventions in place, the entire NARS *needs to be induced to identify and prioritize researchable issues to remain competitive globally and cater the country with technologies appropriate to achieve its cherished goal of higher production of food and nutrition security.* Concurrently, the NARS also needs to be charged with the cataloguing of indigenous germplasm and developing inventories of the plant and animal genetic resources, developing strong G.I. protocols for native crops/varieties having high value in trading sector and agri-based products and processes. The inventories will enhance the bargaining power of our country.

- **Investments in Agriculture:** With increased inventive capability of NARS and assured protection of new varieties and agricultural inventions, the level of investment in agriculture may increase. Assured protection of IPRs may induce the private sector to take up the protected varieties for commercial production and marketing. However, prospects of enhanced investment in the agricultural sector in view of IPR safeguards will depend upon the configuration of the private sector, the level of investment of the public sector and the size of the market for the new products. If the private sector of the agricultural segment is totally indigenous, the provisions of the IPRs will produce salutary effects. If, however, the private sector of an agricultural segment comprises foreign-based companies, the likely benefits from IPRs may not be as much. The foreign-based companies may demand protection of their patented products. They may not allow the domestic companies to grow. Large companies invariably would operate with a strategy to capture a large market share. Developing countries can take advantage of the provisions of the IPRs if they promote their indigenous capital markets, corporate sector and financial infrastructure.
- **IPRs and Trade Associations:** The TRIPS Agreement envisages protection of geographical indications. Therefore, brand names of geographical indications can be used only by the producers and associations of the given geographical areas to which the geographical indications belong. In practice, it is the concerned trade association, which has the major responsibility of protecting the geographical indications. IPRs, therefore, will strengthen the hands of the trade associations dealing in the products consisting of geographical indications. Scientists may have to work out the potential areas of building GIs.
- **Growth of Indigenous Industries:** One of the major attributes of patents is that the rights of the patentees are territorial. This attribute is of great economic significance. This implies that the patentees would set up

manufacturing units in respect of the patented items in the countries issuing patents. In other words, the country issuing patents would stand to gain from the investment in this manner by the licensees of the patents. The country granting patents has the right to ensure the working of the patents granted by its patent office. The patent granting country has also the right known as compulsory licensing enables it to authorize an agency to undertake commercial production of the item in question in case the patent holder of the item fails to undertake manufacturing and marketing within the stipulated period.

- **Watch Ongoing Negotiations at WTO Ministerial Meetings:** The ongoing negotiations at the WTO necessitate a close monitoring of agricultural prices (export & import), input utilization and the amount of subsidies given for various agricultural commodities. Agricultural scientists need to watch the global developments and develop strategies to offset the concerns and problems of the stakeholders in terms of pricing regime at the national and global levels. The policy makers for negotiations at the WTO table often need data from such studies.
- **Focus on Agri Exports and their Value Addition:** The need to make Indian agri exports more competitive at the global level is perhaps one of the major implications of the WTO. In order to withstand the competition at the international level studies on development of various standards as per the HACCP, CODEX is necessary for the export industry. These would also form the basis for the various disputes to be heard at the Dispute Settlement Panel of the WTO.

### Agricultural Heritage of Asia



The deliberations and discussions of International Conference on Agricultural Heritage of Asia jointly organized by Asian Agri-History Foundation (AAHF), NAARM, and Acharya N.G. Ranga Agricultural University, Hyderabad, led to the following recommendations towards conserving and meaningfully harnessing the agricultural heritage for sustainable agricultural development in Asia:

- Agri-archaeology should be intensified in collaboration with general archaeological research.
- It has been noted that, in recent years, there is a renewed interest in the subject of climatic variability, rainfall prediction, matching of length of growing season with the crop duration to sustain agriculture. It is proposed

to establish a Working Group on Agrometeorology. The AAHF may initiate necessary action.

- In the past, water tanks and reservoirs have played important role in water harvesting and irrigation in rural areas. However, these tanks and reservoirs have been ignored in India in the recent past. It is recommended that attention is paid to re-establish these tanks and reservoirs in rural areas so that they could again serve the useful purpose as they did in the past. It is further recommended that traditional knowledge, including water-harvesting techniques, should be utilized at village/community level.
- Soil health management should be given high importance in all future research projects related to Soil Science. All ancient practices should not be considered outdated but the relevant ones be utilized with currently followed practices.
- Encouragement should be given to innovative uses of biodiversity, based on ancient and medieval knowledge base.
- Farmers' knowledge of agro-forestry is important and should be used for developing new systems on the basis of known principles. Tree improvement programmes such as germplasm collection and breeding should be undertaken.
- Traditional knowledge from the past should be validated by experimentation. ICAR/CSIR/ICMR may provide the needed encouragement and support for such validation research.
- Information on available traditional knowledge of gardens in ancient times is scanty. There is a need to intensify efforts to discover such information and undertake restoration of old gardens.
- Information available on traditional knowledge on fishery is scarce. Fishery experts need to make efforts to collect information for future research.
- Even though the medicinal properties of a large number of plants are fairly well documented, there is a need to intensify research in collaboration with "Pharma industry". Crop scientists need to identify varieties of medicinal plants with high content of active ingredients and work out appropriate cultivation practices.
- For diversification of food base, knowledge of plant species used during famines should be utilized. National Agricultural Research Councils in different countries should encourage publications on such plants, especially from the viewpoint of detailing cooking recipes.

- SRI, the “System of Rice Intensification”, should be evaluated widely throughout the rice growing regions of Asia. This system includes practices followed during ancient times.
- It is gratifying to note that a basic course on agricultural heritage of India has now been included in the curriculum of agricultural universities in India. It is recommended that this course should also include information on ancient and medieval knowledge of domesticated animals. The AAHF would be willing to provide assistance in ensuring uniformity in the contents of this course.
- The Asian Agri-History Foundation may prepare a high quality university course module on CD to facilitate the integration of agri-history into University courses related to agriculture, potentially for use in all countries.
- The Asian Agri-History Journal and books be published on the AAHF website. If this would conflict with the sale of the printed edition, a suitable time lag, before the web publication, may be considered.
- The Asian Agri-History Foundation would foster the establishment of AAHF interest groups in other Asian countries (through existing contacts and organizations).



## Other Events

### National Technology Day Celebrations



The National Technology Day was celebrated at the Academy on May 11, 2004, by holding a panel discussion on “Technology Development and Commercialization – Problems and Prospects”. The programme was jointly organized by the Directorate of Rice Research (DRR), National Research Centre for Sorghum (NRCS), Directorate of Oilseeds Research (DOR), Project Directorate on Poultry (PDP), Regional Station of the National Bureau of Plant Genetics Resources (NBPGR), and the Academy (NAARM). The Directors of all these institutes made presentations and facilitated the open forum discussion.

Dr R.K. Samanta, the Acting Director of the Academy, welcomed the gathering and Dr M.M. Anwer, Principal Scientist and the moderator of the programme, initiated the panel discussion. Dr N. Seetharama, Director, NRCS, enunciated the need for a change in mind-set with regard to the commercialization of the latest technology. Dr D.M. Hegde, Director, DOR, touched upon the requirements to streamline the procedures of patenting and commercialization of technologies developed in agricultural research institutions. Dr R.P. Sharma, Director, PDP, elaborated that, in the earlier times, the emphasis was on technology development alone without an eye on its commercialization; however, in the recent past, emphasis is being given on the development of appropriate and relevant technologies which can be readily commercialized. Dr K.S. Varaprasad, Head of Regional Station, NBPGR, pointed out that the responsibilities of agricultural scientists include the conversion of science to technology and then on to its commercial applications. He stressed the need for a judicious mix of basic research, applied research, adaptive research, and operations research.

The host Director, Dr R.K. Samanta, spoke of the technological divide in the commercialization of the technology. He emphasized the need for delivering the commercialized technology to the poorest of the poor to reduce the gap between the rich and the poor. After the presentations by the panelists, the issue was opened up for discussion to the audience. A lively interaction came up from the audience with questions and comments. Dr M.M. Anwer, Principal Scientist, and Dr R. Kalpana Sastry, Senior Scientist facilitated the programme organization.

### Management Committee Meeting

The 38<sup>th</sup> Management Committee meeting of NAARM was held on June 17, 2004. The meeting was held under the chairmanship of Dr R. K. Samanta, Acting Director, NAARM, and with the following members: Dr J.C. Katyal, Deputy Director General (Edn.), ICAR, New Delhi; Shri C. Uma Maheswara Rao, Commissioner, APARD, Hyderabad; Dr T. Balaguru, Head, ARSMP Division, NAARM; Dr P. Manikandan, Head, HRD Division, NAARM; Dr D. Rama Rao, Head, ICM Division, NAARM; Shri M. Suresh Kumar, Chief Administrative Officer, NAARM. The committee deliberated on various issues, which included manpower position at the Academy, management development programmes for the agricultural sector, and establishment of a professional society of management at NAARM.

### NAARM Foundation Day Celebrations



Marking the 28 years of its service to the National Agricultural Research System, the Academy organized a Foundation day lecture on September 1, 2004, by Dr Jayaprakash Narayan, National Campaign Coordinator, Lok Satta, Hyderabad. Speaking on the occasion, Dr Jayaprakash Narayan said that professional skills are to be acquired to excel in global perspective and for introducing professional management for modernizing Indian agriculture. He pointed out that the values and ethics are more or less similar across the world. He highlighted that corruption has come down significantly in various fields of life in governance of India. However, he did mention that, in certain areas, the corruption has increased significantly. He emphasized the role of the citizens in building up a nation and exhorted the audience to rise above their self-interest and work for the prosperity of the nation.

Delivering the presidential address, Dr R.K. Samanta, Acting Director, NAARM, gave an account of the progress of the Academy since its inception. He emphasized the need for agricultural scientists to commit themselves for restoring human dignity. He pointed out the responsibility of agricultural scientists in ensuring food and nutritional security. Dr Jayaprakash Narayan released the “NAARM News”, brought out by the Academy, on this occasion.

### Hindi Fortnight Celebrations

The Academy organized Hindi Fortnight Celebrations from September 1 to 14, 2004. During this period, various competitions in Hindi, viz. noting and drafting, essay writing, elocution, dictation, etc. were held, in which

officers and staff of the academy participated in large number. On September 14, 2004, at the conclusion of the Hindi Fortnight Celebrations, prizes were awarded to the winners. Dr R.P. Sharma, Project Director, Project Directorate on Poultry, Hyderabad, was the Chief Guest in the concluding-day function. Dr R.K. Samanta, Acting Director, NAARM, chaired the function. Dr A. Gopalam, Officer-in-Charge (Hindi), presented a report on the achievements of the Hindi Section during the year 2004. Speaking on the occasion, Dr Sharma stated that it was a pleasant surprise for him that Hindi was given so much honour and place of pride by the Academy. He congratulated all the officers and staff who participated in the competitions.

### **Dr Mangala Rai, DG, ICAR, Visits NAARM**

It must be realized that domestic reforms are the pre-requisite for India to consolidate the gains from the WTO framework regarding agriculture, said Dr Mangala Rai, Director General, ICAR, and Secretary, DARE, Govt. of India, while addressing the faculty members and trainees at the Academy, on October 5, 2004. He said that India has amended all the relevant legislations for the various forms of intellectual property, as per the mandatory requirements of GATT, by January 2000. It is now in the process of implementing the act, which needs to be completed by 2005. The mode of



sustaining intellectual property as such by the public and private sector organizations and policy-level initiatives on building economical IP portfolios are some of the gray areas that need to be reflected on, he said. He expressed the hope that the Vision document will provide a road map for steering the research and educational programmes to ensure a better world for all of us.

Reorientation of research programmes and capacity building are essential to get better results, he added. He emphasized the vital role of agricultural education in increasing the overall food production and making it sustainable for evergreen revolution. In view of changing national and international agricultural scenario, we have to make suitable alteration in our agricultural education system so that our students and younger generation will be able to face the new challenges of the present millennium confidently and reap the benefits of new technologies, he said.

Dr R.K. Samanta, Acting Director, NAARM, welcomed Dr Mangal Rai and expressed gratitude for his valuable advice, from time to time, in shaping the programmes of the Academy.

### Research Advisory Committee Meeting

The fifth meeting of the Research Advisory Committee (RAC) was held on December 27 and 28, 2004. The meeting was chaired by Dr Y.L. Nene, Former Deputy Director General (ICRISAT), Hyderabad. The following members attended the meeting: Dr A.M. Krishnappa, Former Vice Chancellor, University of Agricultural Sciences, Bangalore; Shri Madhukarrao Mulay, Chairman, Green Gold Seeds Ltd., Aurangabad; Dr J.C. Katyal, Deputy Director General (Education), ICAR, New Delhi; Dr I.V. Subba Rao, Former Vice Chancellor (ANGRAU), Hyderabad; Dr Pakki Reddy, Co-ordinator, Biotechnology Unit, Institute of Public Enterprises, Hyderabad; Dr S.M. Virmani, Former Agro-climatologist, ICRISAT, Hyderabad; Dr R.K. Samanta, Acting



Director, NAARM, and Dr D. Rama Rao, Head, ICM Division, NAARM, the Member secretary of the Committee. Dr T. Balaguru, Head, ARSMP Division, and Dr P. Manikandan, Head, HRD Division, were also present in the meeting.

In his opening remarks, Dr Y.L. Nene, Chairman, RAC, emphasized that the Academy should be unique. He urged that this Academy should be a guide for other ICAR institutes and should take the best from the international organizations. The RAC took stock of the progress made by the Academy in research and training activities during the last one year and suggested various measures for its improvement in the coming year.

### International Guest House Inaugurated

A newly-built International Guest House was inaugurated by Dr Mangala Rai, Secretary, DARE, and Director General, ICAR, on December 6, 2004, in a function presided over by Dr J.C. Katyal, Deputy Director General (Edn), ICAR. The International Guest House having ten suites, with well-furnished ultramodern facilities, provides excellent support for organizing various international training programmes at the Academy.



### ICAR Task Force Meeting



Planning Commission, Govt. of India, Agriculture Division, formed a Task Force for reorganizing the agricultural research in the country under the Chairmanship of Prof. M.S. Swaminathan. The Chairman, Task Force, formed a sub-committee under the Chairmanship

of Dr V. Prakash, Director, Central Food Technological Research Institute, Mysore, to discuss with the scientists the kind of assessment and promotion policies that may be required to attract and retain brilliant scientists in NARS and also to encourage the Indian scientists, working abroad, to return to India and work with NARS. The policies so evolved may be recommended to make the system result-oriented, with high professional output. In that connection, a meeting was organized at NAARM on January 13, 2005. The Chairman and members of the sub-committee, viz. Dr V. Prakash, Director, CFTRI, Mysore; Dr S.K. Raina, Nath Seeds, Aurangabad; and Dr (Mrs) Mehtab S. Bamji, Emeritus Scientist, Dangoria Charitable Trust, interacted with the Directors and other senior members of the local ICAR institutes. The meeting was attended by Dr R.K. Samanta, Acting Director, NAARM; Dr B. Mishra, Project Director, Directorate of Rice Research; Dr D.M. Hegde, Project Director, Directorate of Oilseeds Research; Dr R.P. Sharma, Project Director, Project Directorate on Poultry; Dr T.R.K. Murthy, Officer-on-Special Duty, National Research Centre on Meat; Dr S. Indira, Principal Scientist, National Research Centre for Sorghum; Dr K.P.R. Vittal, Project Co-ordinator, Central Research Institute for Dryland Agriculture; Dr P. Manikandan, Head, HRD Division, NAARM; Dr D. Rama Rao, Head, ICM Division, NAARM; Mr M. Suresh Kumar, Chief Administrative Officer, NAARM; and Mr S.K. Pathak, Finance and Accounts Officer, NAARM. The meeting facilitated discussion on many relevant and pressing issues that need a relook. The outcome of the deliberations would provide useful input to the final report.

### ICT Centre at Gujja Village Inaugurated

The Academy is currently implementing an Information and Communication Technology (ICT) project, under AP Cess fund, in Gujja village (Samsthan Narayanapur Mandal), Nalgonda District of Andhra Pradesh, on use of information technologies for empowering farmers and for transfer of agri-technology information. The project is executed by the team comprising Dr N.Sandhya Shenoy, Dr D. Rama Rao, Dr N.H. Rao, Dr M.N. Reddy, and Dr B.S. Sontakki.



The Agricultural Information Center at Gujja was inaugurated on February 10, 2005. While inaugurating the centre, Dr Harikrishna, Project Director, District Water Management Centre, said that the information centre would help improve the quality of life and instill a sense of self-confidence among the users who could diagnose problems and address their own situation.

Delivering the presidential address, Dr R.K. Samanta, Acting Director, NAARM, mentioned that the centre intends to enable information sharing related to agriculture within and between rural communities and also would enable connecting them to relevant institutions that would facilitate acquiring the needed information.

Dr N. Sandhya Shenoy, Principal Scientist and Project Leader, said that the centre would help to make a preliminary assessment of the information needs of the farmers in a typical dry land area and assist them, through capacity building, in using ICT for sustainable and timely dissemination of agricultural knowledge, practices, and services. It would also enable sharing local knowledge and skills in adopting agricultural technologies and farming systems. Further, this experience will be used to develop internet-based information services across the country, she added.

The programme received a wide participation, which included officials from Departments of Agriculture and Animal Husbandry, Village Sarpanch, Veterinary doctor, and other members of the village community, in addition to scientists from local ICAR institutes.

The centre established at Gujja village with people participation, through non-government agencies, would offer the following services:

- Information on various aspects of agriculture and rural development
- Information on services provided by various institutions relating to farming
- Information on resources relevant to farmers
- Information regarding crop management practices relevant to the village
- E-mail services for interaction with relevant information sources
- Opportunities for diversification.

As a follow-up of this activity, a training programme on Information and Communication Technologies for Sharing Agricultural Information was held at NAARM from March 22 to 24, 2005. The programme was mainly aimed at helping the farmers and farmwomen of Gujja village to efficiently use the information and communication technologies for meeting their agricultural needs. The programme covered basics of computers and computer use, Internet browsing, e-mail, and basics of video, besides visits to some of the local ICAR institutes. The programme, coordinated by Dr N. Sandhya Shenoy, Principal Scientist, benefited 32 farmers of Gujja village who developed a favourable attitude towards ICTs and gained confidence in using various tools of ICT.

### Women's Day Celebrations



The Women Cell of the Academy organized special events to celebrate the International Women's Day. On this occasion, Dr R.K. Samanta, Acting Director, NAARM, addressed the women employees regarding the multiple roles that they perform by quoting the "Teen Kanyaen" of Rabindranath Tagore and by giving illustrations of successful women

in various fields of work. He advised the women employees to emulate those successful people and get motivated to perform effectively in the roles they play. The women employees utilized this special occasion to extend alms to the poor people by visiting the orphanage centre and old age home at Aramghar in Shivarampalli and distributed various utility items and provided lunch and fruits to the inmates of the centre. They later visited Sri Ramananda Tirtha Rural Institute at Pochampally, where they visited the workshops and lab, and also interacted with the faculty members to understand the activities of the institute. Women employees of all cadres, numbering 35, actively participated in the programmes of the day, which also included women participation from National Research Centre for Sorghum.

A close-up photograph of a flowering plant with large, vibrant pink flowers and lush green leaves. The flowers have a white center and a yellowish base. The background is a plain, light-colored wall. The word "PUBLICATIONS" is overlaid in white, bold, sans-serif capital letters in the center of the image.

PUBLICATIONS



## Publications

### Books

**Samanta, R.K.** (2005). Empowering Rural Women – Issues, Opportunities and Approaches (Ed.) New Delhi, The Women Press – B.R. Publishing Corporation.

**Gopalam, A.** (2004). Science of Effective Teaching for Enhancing Teaching Learning in SAU System. NAARM, Hyderabad.

### Book Chapters

**Gopalam, A.** (2004). Computer Assisted Management System for Nutritional Quality Measurement and Assurance of Processed Indian Food Preparations in “Bioprocess and Food Engineering”, Annamaya publications.

**Kalpana Sastry, R.** and Chattopadhyay C. (2005). Diseases of Safflower. In: Diseases of Oilseed Crops. (Ed.G.S.Saharan, Naresh Mehta and M.S.Sangwan, Indus Publishing Co., New Delhi. pp. 236-268.

**Samanta, R.K.** (2005). Rural Development Through Women Empowerment in Empowering Rural Women – Issues, Opportunities and Approaches (Ed. Samanta, R.K.), New Delhi, The Women Press – B.R. Publishing Corporation.

**Samanta, R.K. and Aneja, G.** (2005). Empowering Rural Women Through Entrepreneurship Development – Learning from Experiences in Empowering Rural Women – Issues, Opportunities and Approaches (Ed. Samanta, R.K.), The Women Press – B.R. Publishing Corporation, New Delhi.

### Research Papers

**Ahire, L.M. and Sandhya Shenoy, N.** (2004). Training needs assessment of young scientists in Agricultural Research System. **The Journal of Research**, Vol. 32, No. 4.

**Aneja, G. and Sandhya Shenoy, N.** (2004). Information and Communication Technologies (ICTs) for Agriculture. **Journal of Communication Studies**, Vol.22, No. 2.



Chowdary, V.M., **Rao, N.H.** and Sarma, P.B.S. (2004). A Coupled Soil Water and Nitrogen Balance Model for Flooded Rice Fields. **Agriculture, Ecosystems and Environment**, 103, pp. 425-441.

**Jagannadham Challa.** (2004). Scientist-Administration-Finance Interface in Agricultural Research – A Survey of NARS. Occasional Paper No.15. NAARM Publication.

Meti, S. K. and **Bharat S. Sontakki.** (2004). Integration of Information Technologies with Extension Methods for Transfer of Technologies for Small and Marginal Farmers for Sustainable Agricultural Development. In: Rama Rao, D. and Bharat S. Sontakki (Eds.) Information and Communication Technologies for Agriculture and Rural Development. Proceedings of National Seminar. NAARM, Hyderabad. pp. 187-192.

Mruthyunjaya, **Bharat S. Sontakki, and Reddy, G.P.** (2004). A Framework for Setting Priorities for Fisheries Research. In: Reddy, G. P., Sontakki, B. S., Sandhya Shenoy, N., and Rao, V. K. J. (Eds.). Methodologies for Prioritization of Fisheries Research in India. Proceedings of National Workshop. NAARM, Hyderabad. pp. 1-9.

**Narayana Reddy, M.** (2004). GIS and Spatial Statistics - Potential tool for Developing Spatial Decision Support Systems in Agricultural Research Management. **GIS India**, June 2004 Vol.13 No.6. pp 6-7.

Naveena, B.M. and **Rao, K.H.** (2004). Microbial Decontamination of Meat and Meat Products, **Processed Food Industry**, 7 (12): pp. 28-31.

**Rama Rao, D. and Bharat S. Sontakki.** (2004). Review of Experiences of ICTs for Development. In: Rama Rao, D., and Bharat S. Sontakki (Eds.) Information and Communication Technologies for Agriculture and Rural Development. Proceedings of National Seminar. NAARM, Hyderabad. pp. 94-109.

**Rao, K.H.** (2005). Quality Management in Production of Milk and Milk Products for Global Market, Compendium of national symposium on "Emerging Trends in Dairy Processing Systems and its Impact on Quality Attainment" held on March 16<sup>th</sup> and 17<sup>th</sup>, 2005 at College of Dairy Science and Technology, Kerala Agricultural University, Thrissur, Kerala. pp. 33-34.

**Rao, N.H.** and Rogers, P. (2004). A Framework for Assessment of Agricultural Sustainability, **Working Paper**, December, 20 2004, Harvard University, Environmental Systems Programme, Division of



Engineering and Applied Sciences, Harvard University, Cambridge, Massachusetts, USA. pp. 31.

**Rao, N.H.**, Brownee, S.M. and Sarma, P.B.S. (2004). GIS based decision support system for estimation of water demand in large canal irrigation projects, **Current Science**, 87(5), pp. 628-36.

**Rao, N.H.**, Katyal, J.C. and **Reddy, M.N.** (2004). Embedding the sustainability perspective in agricultural research: Implications for agricultural research management in India, **Outlook on Agriculture**, 33 (3), pp. 167-176.

**Reddy, G.P. and Bharat S. Sontakki.** (2004). Prioritization of Production Constraints in Fisheries. In: Reddy, G. P., Bharat S. Sontakki, Sandhya Shenoy, N., and Rao, V. K. J. (Eds.). Methodologies for Prioritization of Fisheries Research in India. Proceedings of National Workshop. NAARM, Hyderabad. pp. 36-43.

**Reddy, G.P.**, and Anand, P.S.B. (2004). Economic Efficiency and Resource use Efficiency of Water Chest Nut Production in Waterlogged Areas of Eastern India, **International Journal of Tropical Agriculture**, Vol.22, No.1- 4: pp. 35-41.

**Samanta, R.K.** (2004). Communication for Capacity Building and Change in Individuals and Organizations. Occasional Paper No.14. NAARM Publication.

**Sandhya Shenoy, N.** (2004). ICTs for women in agriculture and rural development. Proc. National Seminar on "ICTs for Agriculture and Rural Development" organized by NAARM and NAARM Alumni Association on September 9<sup>th</sup> and 10<sup>th</sup>, 2004, Hyderabad. pp. 123-128.

**Sandhya Shenoy, N.** and Paramita Banerjee. (2004). Knowledge networking in Information and Communication Technologies (ICTs) for women in agriculture and rural development. **MANAGE Extension Research Review**, Vol. 5, No. 1.

**Sandhya Shenoy, N. and Rama Rao, D.** (2004). Women professionals in agriculture – Some employment issues. **Economic and Political Weekly**, Vol. 39, No. 17.

Sasidhar, P. V. K., Shruti Sethi, and **Bharat S. Sontakki.** (2004). Adoption of ICTs for Agricultural Educational Technology: Issues. In: Rama Rao, D. and Bharat S. Sontakki (Eds.) Information and



Communication Technologies for Agriculture and Rural Development. Proceedings of National Seminar. NAARM, Hyderabad. pp. 157-161.

Senthil Vinayagam, S. and **Samanta, R.K.** (2004). Assessment of Work Environment among Trainers in KVKs, **Asian Journal of Extension Education**, Volume 23, No. 1, pp. 129 -134.

**Soam, S.K.** (2004). Research Project Prioritization Through Training in Analytic Hierarchy Process: case study of a village in Semi-Arid region of Central India. **Uganda Journal of Agricultural Sciences**, September 2004, 9 (3) 157-162. ISSN 1026-0919.

**Soam, S.K.**, Norma Gomez, J., Kombiok, S., Williams, M., Yahya and Ranjitha, P. (2003). Agroecological zonation of Bundelkhand: Opportunities of Agroforestry Interventions to Enhance Fodder Resources. Proc. of National symposium on agroforestry and sustainable production, November 7 to 9, 2003 organized by Indian Society of Agroforestry at IGFARI, Jhansi, India, pp. 204-206.

Vivek H. Nirmale, **Bharat S. Sontakki**, and Biradar, R.S. (2004). Indigenous Knowledge of Coastal Fisherfolk of Mumbai district in Maharashtra. **Karnataka Journal of Agricultural Sciences**. 17(1). pp. 115-118.

### Technical Bulletins / Project Reports / Working papers

**Balaguru, T., Kalpana Sastry, R. and Rao, R.V.S.** (2004). Performance Assessment of Agricultural Research Organizations. Resource material for MDP on Performance Assessment of Agricultural Research Organizations. NATP Project Report, NAARM, Hyderabad. 82 pages.

**Balaguru, T., Kalpana Sastry, R. and Rao, R.V.S.** (2004). Performance Assessment of Agricultural Research Organizations, NATP Project Report, NAARM, Hyderabad. 188 pages.

**Balaguru, T., Kalpana Sastry, R. and Rao, R.V.S.** (2004). Working Manual on Performance Assessment of Agricultural Research Organizations. NAARM, Hyderabad. 82 pages.

**Gopalam, A.** (2004). Science of Teaching Effectiveness. (2004). NAARM, Hyderabad. 98 pages.

**Gopalam, A. and Reddy, K.M.** (2005). Human Resources Development for Agricultural Research and Education Management, component :



Computer Mediated Courseware Development. NATP Project Report, NAARM, Hyderabad.

**Rama Rao, D. and Bharat S. Sontakki.** (2004). Issues on Integration of ICTs in NARS Agenda. In: Rama Rao, D. and Bharat S. Sontakki. (Eds.) Information and Communication Technologies for Agriculture and Rural Development. Proceedings of National Seminar. NAARM, Hyderabad. p. 245.

**Rama Rao, D., Nanda, S.K., and Sriram, C.** (2004). Forecasting Trained Agricultural Manpower. NATP Project Report, NAARM, Hyderabad. P.129.

**Rao, N.H., Reddy, M.N., Rao, K.K., and Reddy G.P.** (2004). Capacity Building of NARS in Developing Agricultural Market Decision Support Systems Using GIS. NATP Project Report, NAARM, Hyderabad.

**Reddy, G.P., Bharat S. Sontakki, Rao, V.K.J., Sandhya Shenoy, N., Desai, G. R., and Reddy, M. N.** (2004). Assessment of Strategic Research Extension Plan (SREP) Methodology for Up-scaling and Institutionalization to Strengthen R-E-F Linkages. Research Project Report, NAARM, Hyderabad.

**Reddy, G.P., Bharat S. Sontakki, Sandhya Shenoy, N., and Rao, V.K.J.** (Eds.). Methodologies for Prioritization of Fisheries Research in India. Proceedings of National Workshop held on November 10<sup>th</sup> and 11<sup>th</sup>, 2003. NAARM, Hyderabad.

**Reddy, G.P., Bharat S. Sontakki, Sandhya Shenoy, N., Rao, V. K. J., and Soam, S. K.** (2004). Project Report of Prioritization of Fisheries Research in India. NAARM, Hyderabad. 318p.

**Samanta, R.K. and Murthy, G.R.K.** (2004). **NAARM Training Fact File and Beyond**, Technical Bulletin, NAARM, Hyderabad.

**Samanta, R.K., Sandhya Shenoy, N., Bharat S. Sontakki, and Vijender Reddy, P.** (2004). National Agricultural Research System Scientists and Their Management Training Needs. Project Report, NAARM, Hyderabad.

**Sandhya Shenoy, N., Rao, V.K.J., Soam, S.K., and Bharat S. Sontakki.** (2004). Guidelines for Field Experience Training (Revised). NAARM, Hyderabad.



Tonapi, V.A., Elangovan, M., Varanavasiappan, S. **Kalpana Sastry, R.** Visarda, K.B.R.S., and Seetharama, N. (2004). Legislative Mechanisms for Conserving Biodiversity and Protection of IPR in India. National Research Centre for Sorghum. Rajendranagar. Hyderabad, AP. pp.649.

**Vidyasagar Rao, K., Rao, N.H., Reddy, K.M. and Reddy, M.N.** (2005). Human Resources Development for Agricultural Research and Education Management, component : Development of Virtual Learning Campus for Agricultural Research and Education. NATP Project Report, NAARM, Hyderabad.

### Training Manuals

- Developing Winning Research Proposals (D. Rama Rao & Jagannadham Challa)
- Microsoft Access 2000 (N.H. Rao)
- ArcView 3.1 (N.H.Rao)
- Geomedia Professional 4.0 (N.H. Rao)
- ArcGIS 8.3 (N.H. Rao)
- ERDAS Imagine 8.0 (N.H. Rao)
- Watershed Characterization and Runoff Assessment (N.H. Rao)
- STELLA for Dynamic Modeling and Simulation (S.K. Nanda)
- Agricultural Research Prioritization (G.P.Reddy & S.K. Soam)
- Fisheries Research Prioritization (G.P. Reddy & B.S. Sontakki)

### Reviews

**Manikandan, P.** reviewed three papers in the area of Human Resource Management, which were submitted for the Conference of 8<sup>th</sup> South Asian Management Forum (SAMF), held in Lahore from Nov. 28 to Dec 1, 2004.

**Murthy, G.R.K.** reviewed the scientific paper on “Development of Chlorophyll Contents Grouping of Rice for Variable Rate Application” for publication in Transactions of American Society of Agril. Engineers, USA.

**Rao, N. H.** (i) referee for scientific paper submitted to Current Science (India), Soil, Water and Air Pollution (Netherlands) (ii) Reviewed projects submitted to APCESS and DST. (iii) Member Project Review Team: Technology Development Board, Ministry of Science and Technology, G.O.I.

**Vidyasagar Rao, K.** reviewed the research papers “Software for Screening and Selection of Varieties in Coordinated Trials” of Directorate of Rice



Research, Rajendranagar. “Scientific Manpower Resources of ICARA Attributes and Allocations” and “Overview of Financial Resources of ICAR” of National Professor Unit, NCAP, New Delhi.

### Electronic Publications

#### Agricultural Research Project Management

Research Priority Setting  
 Research Programme Planning  
 Project Management Tools  
 Project Monitoring and Evaluation  
 Writing Research Proposals  
 Intellectual Property Rights

#### Information Management

Word Processing  
 Presentation Graphics  
 Data Analysis Using MS EXCEL  
 Database Management with MS Access  
 Graphic Information Systems  
     GIS Tutorial in Geomedia (V 4.0)  
     GIS Tutorial in ARCGIS (V 8.3)  
     GIS Tutorial in ARCVIEW (V 3.1)  
 Web Design Concepts  
 Internet based Information Systems

#### Human Resources Management

Motivation and Behaviour  
 Motivation in Work Environment  
 Personality Development  
 Conflict Management  
 Management of Change

### Resource Material Developed

- NARS in India: History, Vision, Mandate, Organization and Functions (T. Balaguru)
- Research Project Management (T. Balaguru)
- Sustainable Agricultural Development (T. Balaguru)
- Performance-Oriented Evaluated System: A Tool for Good Governance (T. Balaguru)
- Performance Appraisal (P. Manikandan)



- Team Building (P. Manikandan)
- Interpersonal Relationships (P. Manikandan)
- IPR and Ethics (P. Manikandan)
- Research Project Management – Conceptual Framework (P. Manikandan)
- IT for Good Governance (D. Rama Rao)
- Designing Multimedia Presentations (D. Rama Rao)
- Presentation Techniques for Effective Classroom Communication (Bharat S. Sontakki)
- Instructional Evaluation (Bharat S. Sontakki)
- Introduction to Adobe Photoshop (V.K.J. Rao and K.M. Reddy)
- Multimedia Presentations Issues, Tools and the Future (V.K.J. Rao and K.M. Reddy)
- Training Manual on STELLA for Dynamic Modeling and Simulation (S.K. Nanda)



## Faculty News

### Papers presented at workshops / conferences / seminars / symposia

Aruna, P., Nagaraju, A., **Kumar, K.V., Reddy, M.N., and Rao, N.H.** SISAg - Spatial Information System for Agricultural Production and Resources, Proc. ESRI User Conference, New Delhi, during December 2004.

**Balaguru, T., Kalpana Sastry, R. and Rao, R.V.S.** Performance Assessment of Agricultural Research Organizations. National Conference on "Scientific Awareness", organized by the Ministry of Science and Technology, Government of India, held on December 27 and 28, 2004 at New Delhi.

**Gopalam, A.** Study on Behavioral Dimensions of Teachers in Teaching through Multimedia in Classroom Instruction, and Developing Multimedia Package in Distance Instructional Setting for Gender in Agriculture. "92<sup>nd</sup> Indian Science Congress", during January 3 to 7, 2005, at Nirma University, Ahmadabad.

**Gopalam, A.** Computer Assisted Management System for Nutritional Quality Measurement and Assurance of Processed Indian Food Preparations. International Conference on "Emerging Technologies in Agriculture and Food Engineering", at Indian Institute of Technology, Kharagpur during December 14 to 17, 2004.

**Jagannadham Challa.** Winning Research Proposal on Distance Training in Agricultural Research Management. National Workshop on "Research Methodology in Distance Education", held at Dr B.R. Ambedkar Open University, Hyderabad in collaboration with COL, Canada, during December 6 to 10, 2004.

**Jagannadham Challa.** Success Story on Availing the Commonwealth Scholarship during 1983-86 for Ph.D. at University Reading, UK. "Commonwealth Scholars of South Indian Conference", at Mangalore, organized by the British Council, on March 18<sup>th</sup> and 19<sup>th</sup>, 2005.

**Kalpana Sastry, R.** Moving towards a Cross-over Regime between Conservation of Traditional Knowledge and Intellectual Property? Workshop on "IPRs in Agriculture - Protecting the Seeds of



Innovation”, organized by CII-TIFAC-Govt. of AP, on December 13 and 14, 2004.

**Kalpana Sastry, R.** Creating Portfolios of Geographical Indications as IP assets. National Workshop on “IPR and Agriculture”, at University of Agricultural Sciences, Dharwad, on March 9 and 10, 2005.

**Kalpana Sastry, R.** Creating Portfolios of Geographical Indications. “Mango Growers-Scientist Interaction Meeting” (ANGRAU-FSRF), on March 15, 2005.

**Murthy, G.R.K., Rama Rao, D., and Sandhya Shenoy, N.** Assessment of Agricultural Information Portals in India. National Seminar on “ICTs for Agriculture and Rural Development”, held at NAARM during September 9 and 10, 2004.

**Murthy, G.R.K., Rama Rao, D., Sandhya Shenoy, N., and Nanda, S.K.** Assessment of Agricultural Information Portals in India. Second National Workshop on “ICT in Agriculture and Rural Development”, organized by IAITA and DA-IICT on December 16 and 17, 2004 at Gandhinagar, Gujarat, India.

Nagaraju, K., Aruna, P., **Kumar, K.V.**, Nagaraju, A., **Reddy, M.N.**, and **Rao, N.H.** GIS Based Decision Support System for Watershed Runoff Assessment, Proc. ESRI User Conference, New Delhi, during December 2004.

Naik, R., **Murthy, G.R.K.**, Sarma, I.S.R.P., and Math, B.C.V. Optimum Steaming Time for Value Addition of Paddy Hybrids Through Parboiling - Economic Cost Return Model. “37<sup>th</sup> Annual convention of Indian Society of Agricultural Engineers”, organized from March 9 to 11, 2005 at ANGRAU, Hyderabad.

Patel, T., Pandey, K.P., and **Murthy, G.R.K.** Design and Development of a Precision Fertilizer Applicator for Wetland Rice. International Conference on “Emerging Technologies in Agricultural and Food Engineering”, held at IIT, Kharagpur from December 14 to 17, 2004.

**Rama Rao, D., Bharat S. Sontakki, and Murthy, G.R.K.** Role of Agriculture Research and Education Institutions for Development of ICTs. National Workshop on “ICTs for Agriculture and Rural Development”, held at Dhirubhai Ambani Institute of Information and Communication Technology (DA-IICT), Gandhinagar, on November 16 and 17, 2004.



**Rao, K.H.** WTO and IPR Implications on Bio-diversity of Indian Livestock and Global Marketing of Indian Livestock Products. National Workshop on “Intellectual Property Rights and WTO”, at Marathwada Agricultural University, Parbhani, sponsored by Ministry of Human Resources, Government of India.

**Rao, N.H.** Strategic Environmental Assessment as a Tool for Sustainable Agricultural Development. National Workshop on “Institutionalizing Strategic Environmental Assessment (SEA) in India”, organized by the Administrative Staff College of India, Hyderabad, Delegation of European Commission to India, Nepal, Bhutan, Maldives and Sri Lanka and the Ministry of Environment, GOI, New Delhi, held on February 16, 2005, (invited paper).

**Rao, N.H. and Samanta, R.K.** Governance of Agricultural Research: A Framework for Improving Performance, Accountability and Work Culture in NARS (Base paper). EDP on Good Governance in NARS, during March, 2005 at NAARM, Hyderabad.

**Reddy, G.P., Bharat S. Sontakki, Sandhya Shenoy, N., Rao, V.K.J., and Samanta, R.K.** Strategic Research Extension Plan (SREP) for Strengthening Research-Extension-Farmer Linkages. National Seminar on “Extension Pluralism for Rural Development”, held at TNAU, Coimbatore, on February 25 and 26, 2005.

**Reddy, G.P.** Globalization and Economic Development. IPR Workshop at Marathwada State Agricultural University, Parbhani during July 2004.

**Reddy, M.N. and Shukla, G.K.** Applications of Spatial Statistical Models in Agricultural Research and Management. International Conference on “Recent Advances in Statistics”, at Indian Institute of Technology, Kanpur, held on January 4 to 6, 2005.

**Samanta, R.K., Anwer, M.M. and Murthy, G.R.K.** Commercialization of Agricultural Technologies. (Theme paper). Directors’ National Workshop on “Commercialization of Agricultural Technologies”, held at NAARM during November 30 to December 3, 2004.

**Samanta, R.K. and Bharat S. Sontakki.** Extension Pluralism for Rural Development: Diversity, Performance and Prospects (Lead paper). National Seminar on “Extension Pluralism for Rural Development”, held at TNAU, Coimbatore, on February 25 and 26, 2005.



**Samanta, R.K. and Bharat S. Sontakki.** Future Strategies of Impact Studies in Agricultural Extension (Lead paper). National Seminar on “Extension Methodological Issues in Impact Assessment of Agricultural and Rural Development Programmes”, held at UAS, Bangalore, from January 21 to 23, 2005.

Sarma, I.S.R.P., Naik, R., **Murthy, G.R.K.** Role of Mechanical Transplanter in Cost Reduction of Hybrid Cultivation. “37<sup>th</sup> Annual convention of Indian Society of Agricultural Engineers”, organized from March 9 to 11, 2005 at ANGRAU, Hyderabad.

**Soam, S.K.** Research Project Prioritization Through Training in Analytic Hierarchy Process: Case study of a village in Semi-Arid region of Central India. Conference on “Integrated Agricultural Research for Development Achievements, Lessons Learnt and Best Practices”, organized by Uganda’s National Agricultural Research Organization at Entebbe, Uganda held on September 1 to 4, 2004.

### Participation in Seminar / Workshop / Conferences / Training Programmes etc.

#### Anwer, M.M.

- 31<sup>st</sup> National Management Convention organized by All India Management Association in Mumbai, from September 30 to October 1, 2004.
- Workshop on “Brainstorming for Finalizing the Training Programme”, for middle level scientists/technologists on October 30 and 31, 2004 at the Bellavista Campus of Administrative Staff College of India (ASCI), Hyderabad, sponsored by the Department of Science & Technology, GOI.
- Executive Development Programme on “Interpersonal Effectiveness and Teambuilding” at the Indian Institute of Management, Ahmedabad, from January 5 to 8, 2005.
- “Ruvvish – Course on Universal Ethical Values” organized by Secretary, ICAR from February 15 to 17, 2005 at the National Agricultural Science Complex, New Delhi.

#### Balaguru, T.

- Management Development Programme on “Effective Corporate Management”, organized by Bodhananda Research Foundation for Management and Leadership Studies & Indian Institute of Management at Kozhicode, from February 10 to 12, 2005.



**Manikandan, P.**

- Discussion Meeting on “Performance Assessment of Agricultural Research Organizations”, at NAARM, Rajendranagar on March 20, 2004.
- Management Development Programme on “Interpersonal Effectiveness and Team Building”, at Indian Institute of Management, Ahmedabad, from January 5 to 8, 2005.

**Murthy, G.R.K.**

- Networking in Windows at Centre for Electronics Test Engineering, Hyderabad, from May 4 to 13, 2004.
- 39<sup>th</sup> Convention of Indian Society of Agricultural Engineers organized from March 9 to 11, 2005 at ANGRAU, Hyderabad.
- International Conference on Emerging Technologies in Agriculture and Food Engineering, at IIT, Kharagpur, from December 14 to 17, 2004.

**Nanda, S.K.**

- 39<sup>th</sup> Convention of Indian Society of Agricultural Engineers organized from March 9 to 11, 2005 at ANGRAU, Hyderabad.

**Rao, K.H.**

- Workshop on “Intellectual Property Rights and WTO”, held during July 30 and 31, 2004 at Marathwada Agricultural University, Parbhani (Sponsored by Ministry of Human Resources, Government of India).
- Technical Session on “Soya – Nutritional Benefits in Modern Age and Its Applications in Indian Food Industry”, conducted by Association of Food Scientists and Technologists (India) at Bangalore, on August 19, 2004.
- Short Course on “Globalization of Dairy Industry in India – Application of Forecasting Techniques”, held from August 18 to 27, 2004 at Dairy Science College, University of Agricultural Sciences, Bangalore.
- National Seminar on “Information and Communication Technologies for Agriculture and Rural Development”, held on September 9 and 10, 2004 at National Academy of Agricultural Research Management, Hyderabad.
- National Symposium on “Emerging Trends in Dairy Processing Systems and its Impact on Quality Attainment”, held on March 16 and 17, 2005 at Kerala Agricultural University, Thrissur.
- Invited to act as co-chairman for the technical session on “Innovations in Processing and Product Development”, at National Symposium



held at Kerala Agricultural University, Thrissur, during March 16 to 17, 2005. Acted as a member for drafting final proceedings and recommendations of the symposium.

#### **Reddy, G.P.**

- International Workshop on “Research need Assessment and Prioritization of Agricultural Research for development in South Asia and West Asia”, on October 7 and 8, 2004 at ICRISAT, Hyderabad.
- International Symposium on “Rice: From Green revolution to Gene Revolution”, held at Directorate of Rice Research, Hyderabad, from October 4 to 6, 2004.
- National Workshop on “WTO and Agriculture”, held at NAARM, Hyderabad, sponsored by Indian Science congress AP Chapter, during January, 2005.
- National Workshop on “Drought Proofing of Rained Agro Ecosystem”, held at Dr Marri Channa Reddy Institute of Development, Hyderabad, conducted by MSS Foundation, Madras, during October 2004.

#### **Reddy, K.M.**

- Training on “Multimedia” at ARENA Multimedia, Masab Tank, Hyderabad from December 28, 2004 to January 1, 2005 and from January 27 to 31, 2005.

#### **Samanta, R.K.**

- National Dialogue–cum–Retreat on Building a Golden India Through Scientific Awareness and Self Empowerment from May 20 to 24, 2004 at B.K. Ishwariya Vishwa Vidyalaya, Mount Abu, Rajasthan, and delivered valedictory address in its special session on May 22, 2005.
- National Workshop on “Planning and Management of Agricultural Extension Training”, at NASC, IARI Campus, New Delhi, on May 29 and 30, 2004, and Chaired a Session in Capacity Building in Agricultural Extension Systems and Finalization of Thrust Areas for Training Identification of Slots and Training Institutes.
- Brainstorming Session on “Mainstreaming on Extension Reforms”, under NATP Phase II at New Delhi, organized by Department of Agriculture Cooperation, Ministry of Agriculture, Government of India on July 18, 2004.
- Session on “Patents” for programme on “Awareness of IP” at Matrix Labs, Hyderabad on August 5, 2004.
- National Workshop on Commercialization of Agricultural Technologies held at NAARM, Hyderabad, from November 30 to December 3,



2004. Chaired one session on Marketing and Advertising Strategies for Technology Promotion in Directors'.

- Workshop on Indian Agriculture in Post WTO Era organized by ISCA, Hyderabad, on December 21, 2004.
- Workshop for Directors & Deans on Leadership, Institution Building and Quality Assurance in South Asian Business Schools held at Centre for Orgn. Development, Hyderabad, organized by AMDISA & ICFAI, Business School, Hyderabad, on January 28 and 29, 2005.
- Workshop on Institutionalization of PME in NARS : Strategies for NATP Phase II at NCAP, New Delhi, on March 15, 2005.
- Sensitization-cum-Training Workshop for the PME Cells in the ICAR Institutes held at NCAP, New Delhi, on March 17 and 18, 2005.
- Roundtable Meeting of Agriculture Ministers and Key Policymakers on Prospects for South Asia Free Trade and Cooperation in Agriculture at Hyderabad, organized by CESS, Hyderabad, on March 25, 2005.

#### **Soam, S.K.**

- Workshop on IPR of Education, Research and Outreach at Marathwada Agricultural University, Parbhani, Maharashtra held on July 30 and 31, 2004.
- Directors' National Workshop on Commercialization of Agricultural Technologies organized by NAARM, Hyderabad held on November 30 to December 3, 2004.
- Workshop on Indian Agriculture-Implications of TRIPS and Allied Agreements, organized by the Indian Science Congress Association-Hyderabad Chapter, ANGRAU, FRSF and NAARM on December 21, 2004.
- Workshop on Protection of Geographical Indications organized by Andhra Pradesh Technology Development Corporation on December 18, 2004 at Hyderabad.
- Interactive session on Amendments to the Patent Act at Hotel Taj Residency on February 9, 2005, organized by Federation of Indian Chambers of Commerce and Industry (FICCI) Andhra Pradesh State Council, Hyderabad.

#### **Sontakki, B.S.**

- XVII Meeting of the PME Task Force held at NCAP, New Delhi on May 31, 2004 and presented the Action Taken Report of the Academy on the recommendations of XVI Meeting.
- Meeting of the Network of Social Scientists in Fisheries at Division of Fisheries, ICAR, KAB-II, New Delhi on May 6 and 7, 2004 and



presented a research project proposal on Impact Assessment of Fisheries Research in India.

- Peer Review Workshop on “SREP Assessment Study”, at NCAP, New Delhi, on November 8 and 9, 2004 and presented the salient findings and recommendations of the study.
- Directors’ National Workshop on “Commercialization of Agricultural Technologies”, at NAARM, Hyderabad, from November 30 to December 3, 2004.
- International Conference on “Agricultural Heritage of Asia”, at ANGRAU, Hyderabad, from December 6 to 9, 2004.
- National Seminar of the Indian Society of Extension Education on “Extension Methodological Issues in Impact Assessment of Agricultural and Rural Development”, Programmes at UAS, Bangalore, from January 22 to 25, 2005.
- Sensitization Training Programme for PME Cells in ICAR Institutes at NCAP, New Delhi from March 17 to 18, 2005 and delivered a lecture on SREP for Micro-level Priority Setting.

#### **Vidyasagar Rao, K.**

- XIV Conference of Agricultural Research Statisticians held at Department of Mathematics and Statistics, JNKVV, Jabalpur, from November 17 to 19, 2004.

#### **Lectures delivered**

##### **Anwer, M.M.**

- ‘Oral Communication – Briefing Exercise and Feedback’ on April 15 and 16, 2004 in the BHEL R&D Corporate Headquarters, Balanagar, Hyderabad, in the Programme on Scientific Communication, organized from April 15 to 17, 2004.
- ‘Working Effectively in Teams’ on July 26, 2004 in a Workshop on Extension Management Skills, organized from July 21 to 28, 2004 at EEI, Rajendranagar.
- ‘Enhancing Leadership’ on July 27, 2004 at National Academy of Customs Excise and Narcotics, Hyderabad, in their ‘3-Day Workshop on Behavioural Skills for Organisational Management, organized from July 26 to 28, 2004.
- ‘Leadership Skills for HRD’ on August 25, 2004 in ‘Workshop on HRD’ of EEI, Rajendranagar, organized from August 23 to 30, 2004.
- ‘Self Motivation and Motivating People’ on August 26, 2004 in the WALAMTARI Induction Training to New AEE’s on August 26 and 27, 2004.



- 'Leadership and Effectiveness' at BHEL, Corporate R&D at Balanagar on November 3, 2004 in a programme for the development of non-supervisory staff organized from November 1 to 3, 2004.
- 'Enhancing Leadership' on November 24, 2004 at National Academy of Customs Excise and Narcotics, Hyderabad, in the Workshop on Behavioural Skills for Organisational Management, organized from November 23 to 25, 2004.
- 'Teambuilding Skills' on December 20, 2004 in the Workshop on Behavioural Skills – Personality Development from December 14 to 21, 2004, conducted by the EEI, Rajendranagar, Hyderabad.
- 'Beautification of Campus' on February 3, 2005 in the 33<sup>th</sup> Training of Trainers course held at SVP National Policy Academy, Hyderabad, from January 3 to February 4, 2005.

#### **Balaguru, T.**

- 'Farming Systems Approach' for the participants of the workshop on 'Strategic Research and Extension Plan' at Extension Education Institute, Rajendranagar. Hyderabad, on December 3, 2004.
- 'Patent Cooperation Treaty' for the participants of the programme on 'Biodiversity and IPR in Relation to Agrarian and Seed Sector Reforms' at National Research Centre on Sorghum, Rajendranagar on November 18, 2004.

#### **Gopalam, A.**

- 'Behavioral modifications and organization culture' to the participants of National Institute of Rural Development, Rajendranagar, on October 18, 2004.

#### **Kalpana Sastry, R.**

- 'Geographical Indications' and Case Analysis of Amazon Rain Forest case in the Training on IPR in Plant Genetic Resources Management on September 2, 2004.
- 'Implications of TRIPS to Indian Agricultural Research with reference to rapeseed- mustard' on January 2, 2005. at NRC, Rapeseed-Mustard, Bharathpur.
- 'Implications of TRIPS to Indian Agricultural Research' at Directorate of Oilseeds Research, Rajendranagar, Hyderabad, on February 16, 2005.
- 'Contract Labour' for final year MBA students at University of Hyderabad, on February 24, 2005.
- 'Creating Portfolios of Geographical Indications as IP Assets' in IPR Workshop at University of Agricultural Sciences, Bangalore, on March 9 and 10, 2005.



- 'Geographical Indications' for Mango Growers – Scientist Interaction Meeting on March 15, 2005 at Extension Education Institute, Rajendranagar.
- 'Protection of Undisclosed Information' for the participants of the programme on Biodiversity and IPR in Relation to Agrarian and Seed Sector Reforms at National Research Centre on Sorghum, Rajendranagar, on November 18, 2004.

**Manikandan, P.**

- 'Motivation for Organizational Development' on November 5, 2004, and 'Interpersonal Relationships' on July 20, August 11, and October 6, 2004, at Andhra Pradesh Cooperative Bank, Hyderabad.
- 'Poster Presentation' on April 16, 2004, 'Technical Report Writing' on April 17, 2004, 'Research Paper Writing' on April 17, 2004, 'Aspects of Scientific English' on April 17, 2004, at BHEL R&D, Hyderabad.
- 'Leadership Skills' on May 18, 2004, at Mari Chenna Reddy Human Resource Development Institute, Hyderabad.
- 'Leadership and Team Building' on August 25, 2004, at Water and Land Management Training and Research Institute, Rajendranagar, Hyderabad.
- 'Performance Appraisal' on August 26, 2004, 'Conflicts and Negotiation' on December 16, 2004, at Extension Education Institute, Rajendranagar, Hyderabad.
- 'Team Building for Organizational Effectiveness' on February 25, 2005, at National Institute of Rural Development, Rajendranagar, Hyderabad.

**Murthy, G.R.K.**

- 'Emerging Trends of IT in Dryland Mechanization and Precision Agriculture' at CRIDA, Hyderabad, on September 4, 2004 as a part of Summer Workshop on Mechanization in Dryland Agriculture.
- 'Emerging Trends of IT in Agriculture' at Directorate of Rice Research, Hyderabad during October 2004 as a part of their training programme on Selective Mechanization in Rice Cultivation.

**Rao, V.K.J.**

- 'Seasonality and Ranking Techniques' at Extension Education Institute, Rajendranagar, for senior and middle level developmental officers, on December 7, 2004.



**Reddy, G.P.**

- 'Economics of Rice Production in Training programme on Rice based Cropping Systems' at Directorate of Rice Research, Hyderabad, on September 24, 2004.
- 'Prioritization Techniques in Research and Extension' on June 25, 2004 in Workshop on SREP Preparation of new facilitators and faculty members of SAMETI's and EEI's at MANAGE, Hyderabad.
- 'Prioritization Techniques in Research Programmes; and Impact Assessment of R & D' in Training and Financial Management conducted by ANGRAU, Hyderabad, on October 11, 2004.
- 'Current Status of AOA and its Impact on Agriculture' in Training on Intellectual Property Rights in Relation to Agrarian Seed Sector Reforms in India conducted by NRCS, Hyderabad, on November 21, 2004.

**Sontakki, B.S.**

- 'SREP for Micro-level Priority Setting in Agriculture to the Sensitization Training Programme for PME Cells in ICAR Institutes' at NCAAP, New Delhi, on March 18, 2005.

**Vidyasagar Rao, K.**

- 'Basics of Statistics and Quantitative Methods in Management' (5 days) to the students of PG diploma in Agri-business at MANAGE, Rajendranagar, Hyderabad, from October 4 to 8, 2004.
- 'Design of Experiments and Sample Survey Techniques' to the participants of PG Diploma in Crop Protection at NPPTI, Rajendranagar, Hyderabad, on July 14, 2004.

**Foreign Visits**

- **Dr N.H.Rao**, Principal Scientist, was deputed as Visting Scholar, to Environmental Systems Programme, Harvard University, USA, to work on GIS applications in addressing sustainability concerns in agricultural research, development, and policy, for a period of six weeks, during November 14 to December 25, 2004. His programme at Harvard included research, coursework, interactions with faculty and students, and learning from Harvard Business School case studies relevant to agricultural research and agribusiness. His research covered: development of a working paper on framework for assessment of agricultural sustainability, preparing a concept note on spatial analysis for sustainable agricultural development and



poverty alleviation, understanding the implications of agricultural trade and virtual water flows for food security and water policies for sustainable development, application of GRASS GIS (public domain GIS software), and strategy for web-based geospatial services. He attended courses on sustainable development and the research seminar on science, technology, and innovation for sustainable prosperity. He also lectured to the graduate students at Harvard on GIS applications and interacted with faculty and students in the Environmental Systems Programme and in the Kennedy School of Government's Environmental Policy and Sustainable Development programme.

- **Dr R.V.S. Rao**, Senior Scientist, attended three months advanced training in human resource management with special emphasis on human resource strategy, at Fisher College of Business, Ohio State University, Columbus, USA, under NATP, from September 27 to December 25, 2004. He worked with Dr H.R. Unnava, W. Arthur Cullman Professor of Marketing, in the area of human resource strategy. During his study visit, Dr Rao audited advanced courses on human resource training and development, Staffing the organization, and Re-engineering the corporation. He also attended executive education programme at Fisher College of Business. Apart from these, Dr Rao attended a number of seminars at Ohio State University. Dr Rao also interacted with the faculty and students of the Divisions of Management and Human Resource, and Marketing and Logistics in the Fisher College of Business.
- **Mr M. Suresh Kumar**, Chief Administrative Officer, underwent training on "Advanced Management Programme on Sustaining Corporate Leadership" at Administrative Staff College of India, Hyderabad, from August 30 to September 17, 2004, followed by a study tour to The Netherlands, Italy, and Switzerland from September 26 to October 10, 2004. The main objective of the programme was to develop an appreciation of the new domestic and global environmental challenges; to identify opportunities with competitive advantage; and to develop strategic skills necessary to sustain corporate leadership. During the programme at Administrative Staff College, Mr Suresh Kumar was exposed to global business forces, new competitive advantages for Indian corporates, challenges of change, innovation and globalization, and challenges for sustaining corporate leadership. During his study tour, Mr Suresh Kumar visited high performing organizations in oil, power, and service sectors in The Netherlands, Italy, and Switzerland, apart from visiting leading Schools of Management. During these visits, Mr Suresh Kumar had interaction with senior management personnel and learned new ideas, initiatives, and processes relevant to Indian organizations.



## Awards, Honours and Recognitions

- The Academy won the Rajbhasha Puraskar Shield (Third place), for the year 2003-2004, for the best work done in the implementation of official language, in the category of central government organizations in southern region. On behalf of the Regional Implementation Office, Department of Official Language, Ministry of Home Affairs, Govt. of India, His Excellency Hon'ble Governor of Karnataka, Shri Trilokinath Chaturvedi, presented the award on February 16, 2005, at HAL Convention Centre, Bangalore.
- Dr R. Kalpana Sastry, Principal Scientist, was awarded Postgraduate Diploma in Patent Law along with certificate of merit for securing 3<sup>rd</sup> position in the PG Diploma examinations 2004, conducted by National Academy of Legal Studies and Research University of Law, Hyderabad.
- Dr R. Kalpana Sastry, Principal Scientist, was awarded the second best paper award by Indian Dairy Association, New Delhi, for the paper "Implications of WTO Agreements on Indian Dairy Industry", authored by R. Kalpana Sastry and B.N. Mathur, and published in Indian Dairyman (Sept. 2003, Vol. 55, No 9:61-72).
- Dr G.R.K. Murthy, Senior Scientist, NAARM, received the Hari Om Ashram Prerit Research Award on Renewable Energy for Young Scientist (for the period 2000-02) on January 21, 2005, at Sardar Patel Renewable Energy Research Institute (SPRERI). Ms Amrita Patel, Chairperson, SPRERI, awarded the prize. The award was given in recognition of his contribution to the field of renewable energy, for his work on solar ponds.

### Rose Show Awards

The Academy bagged the Best Institution Rose Garden Rolling Shield in the XIX Rose Show conducted by Horticulture Society and Cantonment Board, Secunderabad, on December 18 and 19, 2004. The Academy bagged Rolling Trophies for Best Red Rose, Best Roses Displayed by Institution, and for second highest aggregate points, apart from winning six first prizes and seven second prizes under different sections of flower display. The Academy also bagged three first prizes, ten second prizes, and four third prizes in the XXIX Rose show conducted by Hyderabad Rose Society on December 11 and 12, 2004.



### Team championship in ICAR Sports

The Academy won the team championship with a tally of 57 points in the ICAR inter-zonal sports meet held at National Research Centre for Grapes, Pune, from May 24 to 28, 2004. The following personnel have brought laurels to the Academy by winning various events. First prizes: Ms K.K. Rukmini Ammal and G. Aneeraja (Shuttle badminton - women doubles); Mr M.K. Samson (Discus throw - men); Ms K.K. Rukmini Ammal (Discuss throw - women, Javelin throw - women). Second Prizes: Ms K.K. Rukmini Ammal (Shuttle badminton - women singles, shotput - women); Mr M.K. Samson (Javelin throw - men, shotput - men, Carrom - men); Ms G. Aneeraja (Long jump - women). NAARM had also secured the second place in volleyball team event.



The NAARM sports contingent, led by Dr Debnath, participated in the ICAR (Zone-III) inter-institutional tournaments, held at Railway Recreation Club grounds, Secunderabad, from January 3 to 7, 2005. Ms Rukmini Ammal brought laurels to the Academy by winning five prizes. She

bagged first prize each in shotput, discus, shuttle (singles), and carroms, and third prize in javelin throw. Ms N. Vijayalakshmi bagged first prize in chess. In the men's events, Mr M.K. Samson bagged first prize each in shotput and discus, and second prize in javelin. Mr Sham Bahadur won first prize in carroms, Dr D. Debnath won third prize in javelin throw, and Mr Bagaiah won third prize in chess. Congratulations to the winners and also to the NAARM sports contingent.

Ms Rukmini Ammal participated in Andhra Pradesh State Senior (Men & Women) Badminton Championship 2004-05, conducted by Hyderabad District Badminton Association and A.P. State Badminton Association, held at Hyderabad, from January 19 to 22, 2005, and won the Badminton (women) singles title.

## Visitors

- ❑ Professor S. Bisaliah, Former Vice Chancellor, University of Agricultural Sciences, Bangalore visited the Academy on May 18, 2004.
- ❑ Professor S. Kanyan, Fomer Vice Chancellor, Tamil Nadu Agricultural University, Coimbatore visited the Academy on May 25, 2004.
- ❑ Two scientific delegates from Syria Mr Firas Haydar and Mr Yasser Al-isa visited the Academy on September 30, 2004.
- ❑ A three member high-level delegation from Islamic Republic of Iran visited the Academy on November 26, 2004.
- ❑ Fourteen participants from 13 developing countries, who were taking part in International Programme on “Strategies of Sustainable Agriculture and Rural Development” at National Institute of Rural Development, Rajendranagar, visited the Academy on January 20, 2005.



Two teams comprising of six-members and five-members from the Ministry of Agriculture under the World Bank funded Project in Farm Privatization Support Programme in the Republic of Tajikistan, on a study tour, visited the Academy on February 1 and 22, 2005 respectively.

- ❑ Mr A.K. Agarwal, Joint Secretary, Department of Agriculture and Cooperation, Ministry of Agriculture. Govt. of India, New Delhi, visited the Academy on March 29, 2005.

## Personnel

### Director's Office

R.K. Samanta, Acting Director

### Joint Director's Office

R.K. Samanta, Joint Director (Training)

Sarada Samanta, Private Secretary

### Agricultural Research Systems Management and Policies Division

T. Balaguru, HOD, ARSMP

S.N. Saha, Principal Scientist

N. Hanumantha Rao, Principal Scientist

R. Kalpana Sastry, Principal Scientist (from 29-6-2004)

S. K. Nanda, Senior Scientist

G.P. Reddy, Senior Scientist

S.K. Soam, Senior Scientist

### Human Resource Development Division

P. Manikandan, HOD, HRD

A. Gopalam, Principal Scientist

Jagannadham Challa, Principal Scientist

M.M. Anwer, Principal Scientist

K. Hanumantha Rao, Senior Scientist

R.V.S. Rao, Senior Scientist

### Information and Communication Management Division

D. Rama Rao, HOD, ICM

C. Sriram, Principal Scientist

K. Vidyasagar Rao, Principal Scientist

K.M. Reddy, Principal Scientist

M. Narayana Reddy, Principal Scientist

N. Sandhya Shenoy, Principal Scientist (from 29-6-2004)

B. S. Sontakki, Senior Scientist

V. K.J.R. Rao, Senior Scientist

G.R.K. Murthy, Senior Scientist

### Training Cell

R.K. Samanta, Joint Director (Training)

P. Vijender Reddy, Technical Officer

N.R. Nageswara Rao, Technical Officer

### Administration & Finance

M. Suresh Kumar, CAO

S. K. Pathak, F&AO

Y. Sankara Rao, AAO

P. P. Brahmaji, AAO

C. Bagaiah, JAO

L. Jhansi Lakshmi, Private Secretary

N. Raghunath, Private Secretary



## Service Units

### Computer Cell

M. N. Reddy, In-Charge (ARIS lab)  
N. H. Rao, In-Charge (GIS lab)  
K. V. Kumar, Technical Officer  
P. Mohan Singh, Technical Officer

### Farm Section

V. Murali, In-Charge (on study leave)  
M. A. Basith, Technical Officer

### Health Centre

A. Debnath, Medical Officer

### Hostel

D. Rama Rao, In-Charge  
Zameer Ahmed, Manager (Hostel Services)

### Library

P. Manikandan, In-Charge  
P. V. Nirmala, Technical Officer

### Maintenance Section

V. Murali, In-Charge (on study leave)  
Sohail Ahmed Khan, Technical Officer

### Photography & A.V. Services

K. Vidyasagar Rao, In-charge  
L. Venkateswarlu, Technical Officer  
Bansidhar Nayak, Technical Officer

### Press and Publications Section

R.K. Samanta, In-Charge  
R.V.V.S. Prakasa Rao, Editor  
P. Namdev, Technical Officer  
G. Aneeja, Technical Officer

### Security

B.Ch. Satyanarayana, Estate-cum-Security Officer

### Video Instruction and Production

P. Manikandan, In-Charge  
K. R. Prabhakar, Programme Officer (CCTV)  
Ch. Janardhan Rao, Technical Officer (on study leave)

### Official Language Cell

A. Gopalam, In-Charge  
D. Venkateswarlu, Technical Officer (on study leave)  
J. Renuka, Asst. Director (OL)  
S. Pradeep Singh, Asst. Director (OL)





**Grade IV**

G. Mani Bai

**Grade III**

M. Ashok

P. Balraj

C. Bickshapathi

G. V. Bikshapathi

Phool Kumar

B. Santhamma

P. Swamy

M. Yadaiah

Khalid

S. Shakuntala

**Grade II**

B. Bharathamma

S. Jangaiah

K. Kalavathi

K. Satyanarayana

K. Pentaiah

T. Jangamma

P. Yadaiah

M. Narsing Rao

G. Pentaiah

M. Shyam Rao

J. Chandraiah

M. Krishnaiah

**Grade I**

G. Anasuya

I. Bharathamma

C. Chandramouli

G. Dasaratha

M. Eswaramma

K. Hemlal

R. Sattiah

Nazia Parveen

L. Satyanarayana

N. Sukunamma

A. Yadaiah

M. Yadamma

C. Narsubai

C. Kausalya

D. Vittal

**Promotions**

Name	From	to	w.e.f.
R. Kalpana Sastry	Senior Scientist	Principal Scientist	29-06-2004
N. Sandhya Shenoy	Senior Scientist	Principal Scientist	29-06-2004
P.V. Nirmala	Technical Officer (T 5)	Technical Officer (T 6)	01-01-2004
K.V. Kumar	Technical Officer (T 5)	Technical Officer (T 6)	01-07-2004
G. Aneeja	Assistant Editor	Technical Officer (T 5)	10-12-2003
P. Mohan Singh	Computer Assistant (T4)	Technical Officer (T 5)	23-02-2003
D. Dhanalakshmi	Library Assistant (T-3)	Library Assistant (T-4)	21-09-2004
K. Obulapathi	Tech. (Electrical) (T 3)	Tech. (Electrical) (T 4)	01-01-2004
B.S.N. Murthy	Tech. (Electrical) (T 3)	Tech. (Electrical) (T 4)	01-01-2004
M.K. Shamshuddin	Tech. (Electrical) (T 3)	Tech. (Electrical) (T 4)	01-01-2004
C. Phani Raj	U.D.C.	Assistant	22-11-2004
K. Suryanarayana	L.D.C.	U.D.C.	07-07-2004

**Retirement**

Mr K.R. Prabhakar, Programme Officer (T 9) was retired on superannuation on March 31, 2005. NAARM family wished a happy, peaceful retired life during the facilitation organized on the occasion.

Mr K. Prabhudas, Assistant and Ms K. Swarajya Lakshmi, Junior Library Assistant (T 2) have taken voluntary retirement on 10-10-2004.