



# International Conference on Innovative Approaches for Agricultural Knowledge Management: Global Extension Experiences

9-12 November 2011 | New Delhi, India



## PROCEEDINGS





International Conference on  
**Innovative Approaches for Agricultural Knowledge  
Management: Global Extension Experiences**

9–12 November, 2011  
New Delhi, India

**PROCEEDINGS**

*Jointly organized by*

International Society of Extension Education, Nagpur  
Indian Council of Agricultural Research, New Delhi

*In collaboration with*

Asia-Pacific Association of Agricultural Research Institutions (APAARI)  
Global Forum on Agricultural Research (GFAR)  
Food and Agriculture Organization (FAO) of the United Nations  
Alcorn State University  
Iowa State University  
Trust for Advancement of Agricultural Sciences (TAAS)  
Maharashtra Society of Extension Education (MSEE)  
National Academy of Agricultural Sciences (NAAS)

Printed : July 2013

**Proceedings of International Conference on Innovative Approaches for  
Agricultural Knowledge Management: Global Extension Experiences  
New Delhi, India**

*Compiled and Edited by*

**K.D. Kokate**

**K. Vijayaragavan**

**J.P. Sharma**

**P. Adhiguru**

**S.K. Dubey**

**N.V. Kumbhare**

**R.N. Padaria**

**R.R. Burman**

**V. Sangeetha**

*Published by*

Indian Council of Agricultural Research (ICAR), New Delhi, India

International Society of Extension Education (INSEE), Nagpur, India

*Design & Production*

**V.K. Bharti and Punit Bhasin**

© 2013, All rights reserved, International Society of Extension Education (INSEE),  
Nagpur, India & Indian Council of Agricultural Research, New Delhi, India

---

Lasertypeset by M/s Dot & Design, D-35, 1st Floor, Ranjeet Nagar Comm. Complex, New Delhi 110 008 and  
printed at M/s Royal Offset Printers, A-89/1, Naraina Industrial Area, Phase I, New Delhi 110 028

शरद पवार  
SHARAD PAWAR



कृषि एवं खाद्य प्रसंस्करण उद्योग मंत्री  
भारत सरकार  
MINISTER OF AGRICULTURE &  
FOOD PROCESSING INDUSTRIES  
GOVERNMENT OF INDIA

## MESSAGE

**T**HE economic security of the country is interlinked with agricultural development. Despite the adversities, the country has recorded impressive achievement in agriculture during last three decades since the onset of green revolution in late sixties.

At the current juncture, however Indian agriculture is facing multi-pronged challenges of climate change, declining per capita holding size, natural resources, etc. At the same time, many players and partners from private and voluntary sectors, agribusiness houses, etc. have come forward to work in partnership with Public sector to put their stake in agricultural development. Hence, managing the knowledge emanating from various sources, partners and institutions is probably one of the major interventions that is required for sustainable agricultural development in the current context.

It was timely that Indian Council of Agricultural Research and International Society of Extension Education, Nagpur had jointly organized International Conference on 'Innovative Approaches for Agricultural Knowledge Management: Global Extension Experiences' in collaboration with Maharashtra Society of Extension Education, Pune, Maharashtra; Trust for Advancement of Agricultural Sciences, New Delhi; Asia Pacific Association of Agricultural Research Institutions apart from other international organizations.

I am happy to know that the Conference had threadbare deliberations on the issues pertinent to knowledge management with respect to Indian agriculture, which shall have policy and developmental implications and the output of the Conference is being brought out as Proceedings of the Conference.

(Sharad Pawar)





डा. एस. अय्यप्पन

सचिव एवं महानिदेशक

**Dr. S. AYYAPPAN**

SECRETARY & DIRECTOR GENERAL



भारत सरकार  
कृषि अनुसंधान और शिक्षा विभाग एवं  
भारतीय कृषि अनुसंधान परिषद  
कृषि मंत्रालय, कृषि भवन, नई दिल्ली 110 001

GOVERNMENT OF INDIA  
DEPARTMENT OF AGRICULTURAL RESEARCH & EDUCATION  
AND

INDIAN COUNCIL OF AGRICULTURAL RESEARCH  
MINISTRY OF AGRICULTURE, KRISHI BHAVAN, NEW DELHI 110 001

Tel.: 23382629; 23386711 Fax: 91-11-23384773

E-mail: dg.icar@nic.in

## FOREWORD

**I**NDIAN Agriculture has been consistently witnessing many challenges leaving issues to be addressed by the research and extension managers of the country. As a response to these scenario, besides the firstline extension system, there is emergence of pluralism in the extension education and rural development related interventions. This has created a vast pool of knowledge and information, which are to be suitably processed, stored, retrieved as and when required and utilized by the concerned clientele. In view of this, the need for framing appropriate strategy for extension and agricultural knowledge management is becoming vital.

Against this backdrop, the International Conference on 'Innovative Approaches for Agricultural Knowledge Management: Global Extension Experiences' was organized during 9-12 November, 2011 at New Delhi, India by 'Indian Council of Agricultural Research', New Delhi and 'International Society of Extension Education', Nagpur, India in collaboration with other National and International organizations.

The deliberations of the Conference provided an opportunity for stakeholders to share the issues, experiences, innovations and success in agricultural knowledge management. The Conference has gained significance as it drew global attention to the issue of agricultural knowledge management and in turn demonstrated the commitment of global community to work together for achieving vibrant agricultural extension system.

The fruitful deliberations of the Conference have led to several recommendations. This document is a compilation of significant output in the form of deliberations and recommendations, which I am sure would provide a road map to the researchers, policy makers, extension personnel, institutions and students for ensuring effective agricultural knowledge management and extension for achieving Millennium Development Goals.

(S. Ayyappan)



## PREFACE

---



**G**LOBALIZATION of economy, changing structure of rural economy and emerging issues such as climate change have opened up new avenues and challenges in agriculture and enhanced the need for timely and accurate information as one of the drivers of agricultural growth. This situation, demands for a continuous search for new methods and approaches for generating, processing and sharing of agricultural knowledge communication by various stakeholders for augmenting agricultural production and productivity. Apart from innovativeness in methods, there is consistent efforts to bring in innovativeness in increased level of partnership between public and private sectors in agricultural technology generation and sharing so as to improve efficiency of agricultural knowledge system.

In this context, organization of ‘International Conference on Innovative Approaches for Agricultural Knowledge Management: Global Extension Experiences’ by International Society of Extension Education and Indian Council of Agricultural Research in partnership with national and international research and development organizations and professional societies was a timely initiative. This Conference had provided opportunity for sharing of ideas and experiences among several stakeholders at national and international level like scientists, extension and development professionals.

In the Conference there were 23 technical sessions and two special technical sessions. This publication contains deliberations and salient recommendations of the sessions of the conference.

We express our sincere gratitude to Smt. Pratibha Devisingh Patil, Her Excellency, then The President of India for transforming this conference into historical event by inaugurating the conference. We are grateful to Shri Sharad Pawar, Hon’ble Union Minister of Agriculture and Food Processing Industries for agreeing to Chair the Inaugural session and also providing continued support for successful organizing this conference. We express our gratitude to Shri Harish Rawat, Hon’ble then Union Minister of State for Agriculture and Food Processing Industries for kindly agreeing to Chair the Valedictory Function of the Conference and also providing guidance and support in organizing Conference.

We express gratitude to Dr S. Ayyappan, the Secretary, DARE and DG, ICAR for his valuable guidance in conceptualization, planning and organizing of this conference. We are also thankful to Dr H.S. Gupta, Director, Indian Agricultural Research Institute, for his wholehearted support in organizing the Conference.



We are grateful to Dr R.S. Paroda, Executive Secretary and Dr Attaluri Srinivasacharyulu, Coordinator, Asia Pacific Association of Agricultural Research Institutions (APAARI) for adding value to the conference with an exclusive session on “Openness in Agriculture Knowledge Information System”. We sincerely thank Dr Mark Holderness, Executive Secretary and Dr Ajit Maru, Agricultural Research Officer, GFAR Secretariat (FAO) for their help.

On behalf of INSEE and ICAR, we would like to place on record our gratitude to all the national and international partners for supporting the conference namely Maharashtra Society of Extension Education (MSEE) Pune, India; National Academy of Agricultural Sciences (NAAS), New Delhi; Trust for Advancement of Agricultural Sciences (TAAS), New Delhi; Alcorn State University, USA; APAARI; Food and Agricultural Organization (FAO); Global Forum on Agricultural Research (GFAR), and Iowa State University, USA for their partnership in organization of this conference. We are extremely obliged to all the invited speakers of the conference who have responded to our request.

We extend special thanks to Syndicate Bank, Syngenta Foundation–India, National Bank for Agriculture and Rural Development (NABARD) and other organizations for financial help in the form of sponsorship and advertisement. Special appreciation is extended to all the Chairpersons, Co-chairpersons, and members of Committees including Zonal Project Directorates of ICAR for their committed involvement in planning and organization of this conference.

We appreciate the students of Division of Agricultural Extension, IARI for their support in planning and organizing this Conference. We compliment the intellectual sharing of all the learned contributors and delegates from India as well as abroad.

The conference had generated effective deliverables on agricultural knowledge management based on the deliberations and recommendations of this conference. We are sure this document would benefit the planners as well as researchers, academicians and extension personnel in framing a roadmap for achieving Millennium Development Goals particularly food, nutrition and livelihood security globally.



(K.D. Kokate)  
Deputy Director General  
(Agricultural Extension)

# CONTENTS

---

<i>Message</i>	<i>iii</i>
<i>Foreword</i>	<i>v</i>
<i>Preface</i>	<i>vii</i>
<i>Acronyms and Abbreviations</i>	<i>xi</i>
Background	1
Inaugural Session	4
Technical Session	8
Theme I : Agricultural Knowledge Generation, Refinement and Dissemination	8
Theme II : Capacity Development for Agricultural Knowledge Management	17
Theme III : Use of ICT for Agricultural Knowledge Management	19
Theme IV : Networking for Agricultural Knowledge Management	26
Theme V : Current Agrarian Issues and Agricultural Knowledge Management	30
Valedictory Session	34
Recommendations of the International Conference	36
<i>Annexure I</i> : Advisory Council	41
<i>Annexure II</i> : Organizing Committee	44
<i>Annexure III</i> : National Organizing Committee	45
<i>Annexure IV</i> : Programme	49



---

## ACRONYMS AND ABBREVIATIONS

---

APAARI	ASIA PACIFIC ASSOCIATION OF AGRICULTURAL RESEARCH INSTITUTIONS
ASRB	AGRICULTURAL SCIENTIST RECRUITMENT BOARD
ATMA	AGRICULTURAL TECHNOLOGY MANAGEMENT AGENCY
CGIAR	CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH
CSC	COMMON SERVICE CENTRE
DARE	DEPARTMENT OF AGRICULTURAL RESEARCH AND EDUCATION (INDIA)
DU	DEEMED UNIVERSITY
FAO	FOOD AND AGRICULTURE ORGANIZATION
GFAR	GLOBAL FORUM ON AGRICULTURAL RESEARCH
GDP	GROSS DOMESTIC PRODUCT
HRD	HUMAN RESOURCE DEVELOPMENT
ICAR	INDIA COUNCIL OF AGRICULTURAL RESEARCH
ICT	INFORMATION COMMUNICATION TECHNOLOGY
INSEE	INTERNATIONAL SOCIETY OF EXTENSION EDUCATION
ITDS	INTEGRATED TECHNOLOGY DISSEMINATION SYSTEM
ISU	IOWA STATE UNIVERSITY
KVK	KRISHI VIGYAN KENDRA
KM	KNOWLEDGE MANAGEMENT
MSEE	MAHARASHTRA SOCIETY OF EXTENSION EDUCATION

MANAGE	NATIONAL INSTITUTE OF AGRICULTURAL EXTENSION MANAGEMENT (INDIA)
MDGS	MILLENNIUM DEVELOPMENT GOALS
MNREGA	MAHATMA GANDHI NATIONAL RURAL EMPLOYMENT GUARANTEE ACT
NABARD	NATIONAL BANK FOR AGRICULTURE AND RURAL DEVELOPMENT
NARS	NATIONAL AGRICULTURAL RESEARCH SYSTEM
NASC	NATIONAL AGRICULTURAL SCIENCE CENTRE
NICRA	NATIONAL INITIATIVE ON CLIMATE RESILIENT AGRICULTURE
NGOS	NON-GOVERNMENT ORGANIZATIONS
NRM	NATIONAL RESOURCE MANAGEMENT
OPAPA	OPEN ACADEMY FOR PHILIPPINES AGRICULTURE
PPV&FRA	PROTECTION OF PLANT VARIETIES AND FARMERS RIGHTS AUTHORITY (PPV & FRA)
SAU	STATE AGRICULTURAL UNIVERSITY
SHGS	SELF-HELP GROUPS
SSI	SUSTAINABLE SUGARCANE INITIATIVE
TAAS	TRUST FOR ADVANCEMENT OF AGRICULTURAL SCIENCES
ZPD	ZONAL PROJECT DIRECTORATE

## BACKGROUND

**K**NOWLEDGE management in agriculture is crucial factor concerned with ways of exchanging knowledge among those who can develop it and those who can use it. Knowledge management programmes, based on this approach, attempt to manage the process of information exchange between groups of specialists, companies, and research and development (R&D) organizations. Different empirical studies have shown that knowledge, in fact, cannot be easily generated in research organizations, and passed down to the extension services and development projects, which diffuse it among farmers. Consequently, recommendations focus on organizational practices such as information technology, communities of practice, expert systems, intranets and other networking tools and communication technologies as well as investment in R&D and the building of partnerships between research institutes and companies.

Similarly, information technology (IT) has become the buzzword in India these days. It is making tremendous impact on the rural economy due to its wide application and appeal. The National agricultural research and extension systems of India have developed content in English, Hindi and regional languages in support of extension and education over the time. The content in effect envisages most of the dimensions of practical agriculture in various regions of India. However, at present the availability of this information in the digital format or media is scarcely available. Thus, the need for content digitization and creation of new content in the digital mode has become indispensable. The vast quantum of knowledge is being shared in interactions among experts and with farmers. However, this rich information is most of the time not capitalized for synthesis, analysis and codification for re-use. The extension system requires timely, adequate and quality update and accurate content for providing the effective information delivery to the farmers. Many ICT-for-development (ICT4D) partners need such a support as well. Contemporary knowledge management approaches when ingrained with advanced content organization and delivery and exchange methods based on ICT, can help stakeholders overcome this challenge. The prospective of ICT lies in bringing about an overall qualitative development in life by providing timely and quality information inputs for decision making.

The international conference on *Innovative Approaches for Agricultural Knowledge Management: Global Extension Experiences* was organized by the International Society of Extension Education, Nagpur, Maharashtra, India in collaboration with Indian Council of Agricultural Research (ICAR) and with the partnership of Asia-Pacific Association of Agricultural Research Institutions (APAARI), Global Forum on Agricultural Research (GFAR), Food and Agriculture Organization (FAO) of the United Nations, Trust for Advancement of Agricultural Sciences (TAAS), Maharashtra Society of Extension Education

(MSEE), National Academy of Agricultural Sciences (NAAS), Alcorn State University and Iowa State University.

More than 400 participants from the fields of agricultural research, extension, and information and communication technologies participated in the conference during 9-12 November, 2011. The main aim of the conference was to address the issues and knowledge gap for the benefits of different stakeholders operating under various agricultural innovation systems by facilitating the deliberation and confluence of ideology and experiences in order to understand, develop and share innovative knowledge management strategies for agricultural development.

The major themes and sub-themes of the conference were:

### **i. Agricultural knowledge generation, refinement and dissemination**

- a. Critical analysis and appraisal of recent innovations and reforms in extension for knowledge sharing and dissemination
- b. Experiences in knowledge generation and dissemination: agricultural extension models and approaches across various situations indifferent countries
- c. Innovative agri-business approaches and farm entrepreneur development
- d. Analysis of indigenous knowledge system and mechanism for upscaling
- e. Gender mainstreaming in agricultural knowledge generation and dissemination

### **ii. Capacity development for agricultural knowledge management**

- a. Policy framework, support systems and updating course curriculum for professional excellence in extension discipline and extension system
- b. New approaches and tools for effective training for extension professional as well as other stakeholders.
- c. Methods and training modules for enhancing management skills among extension professionals

### **iii. Use of ICT for agricultural knowledge management**

- a. Experiences including innovative models and strategies in using ICT for effective agricultural knowledge management
- b. Development and application of knowledge management aids like portal, decision support system, expert system, weather and market information advisory services.
- c. Use of webinars and webcasting for knowledge sharing and capacity strengthening

### **iv. Networking for agricultural knowledge management**

- a. Experiences, concerning issues and strategies related to convergence of pluralistic extension agencies and strengthening linkages and coordination.

- b. Public-private partnership in technology generation and dissemination
- c. Field experiences in collective action, development of social capital, formation of collectives (SHGs, FIGs, CIGs, farmers' organizations/Associations, etc.)

**v. Current agrarian issues and agricultural knowledge management**

- a. Role of extension in conservation agriculture and climate change related adaptation and mitigation strategies
- b. Role of extension in generation and dissemination of genetically modified (GM) crops and other innovations in biotechnology

This document presents the major outcome and recommendations emanated from the deliberations held in various technical sessions under different themes.





## INAUGURAL SESSION

HER Excellency Smt. Pratibha Devisingh Patil, President of India inaugurated the International Conference on Innovative Approaches for Agricultural Knowledge Management–Global Extension Experiences on November 9, 2011 at Vigyan Bhawan, New Delhi. Hon’ble Union Minister of Agriculture, Government of India, Shri Sharad Pawar Ji was the Chairperson in Inaugural session.

On this occasion, Her Excellency Smt. Pratibha Devisingh Patil, President of India said that knowledge and knowledge management must be leveraged for the benefit of the farming community.



While emphasizing the need for sharing of knowledge to farmers in an understandable and doable form, Her Excellency has suggested three basic considerations for knowledge management strategies. Firstly, share experiences gained in a project or extension practice to avoid duplication and reduce the repetitive cost of research or practice. Secondly, help farmers interact with scientists and agricultural experts, and explain their practical difficulties at the ground level, to enrich their knowledge base. Thirdly, ensure availability

of location specific agricultural knowledge for application at the right time. Agricultural knowledge sharing from lab to the farmer has to be smooth flowing and timely to enhance its usefulness.

The President of India also highlighted the importance of grassroots innovations in her Inaugural Address. *Over the past a few years, I have seen many grassroots innovations. It is important that these innovations can be refined and made marketable, by developing knowledge partnerships.* Traditional knowledge in farming is often good enough to address several location specific problems of agricultural practices. The issues related to blending of traditional wisdom with modern scientific knowledge is also to be examined. Her Excellency – The President also complimented the Indian Council of Agricultural Research and the National Agricultural Research System for their catalytic role in supporting the improvements in agriculture.

The President conferred upon Life-Time Achievement Awards to Drs C. Prasad, S.N. Singh, R.P. Singh, G. Trivedi and K. Narayana Gowda for their outstanding contribution in agricultural extension. Shri B.V. Ramesh Kumar, a progressive farmer was honoured with the Prof. R. Dwarakinath Young Innovator Award.

Shri Sharad Pawar, Hon'ble Union Minister of Agriculture and Food Processing Industries, emphasized the knowledge and innovations as a major input for agriculture and suggested



that efforts for knowledge sharing has to be intensified to face the global challenges in agriculture. ICT-based interventions are the need of hour as they provide last-mile connectivity for knowledge sharing to end-users. Speaking as Chairperson of the Inaugural Session, he called upon corporate sector to implement and support the knowledge sharing initiatives as corporate social responsibility. It will trigger higher productivity and higher income to farmers promoting the overall growth in agriculture. Public-private partnerships can make knowledge delivery system more effective for various stakeholders in agriculture. Shri Pawar released two publications viz., *Future Agricultural Extension* and *Abstracts of the International Conference* and presented first copies to Her Excellency – The President of India.

Dr A.G. Sawant, President of the International Society of Extension Education welcomed dignitaries, guests and participants.

Dr S. Ayyappan, Secretary, DARE and Director General, ICAR and Chief Patron of the Conference elaborated the various knowledge management and knowledge sharing initiatives of the ICAR, which included ICT-tools, extension mechanisms and multi-institutional strategies. In an era of science based and knowledge driven agriculture, efforts are on in different forms with farmer's first approach and quality enhancement in knowledge products, he added. Sharing of knowledge management experiences on multi-institutional platforms is important in the wake of emerging challenges, which require innovative transfer of knowledge.



Dr K.D. Kokate, Deputy Director General (Agricultural Extension), ICAR and Chairman, Organizing Committee briefed the objectives and themes of the Conference. Agricultural extension has to be more vibrant in view of challenges as agricultural knowledge has become a key driver for agricultural growth and development, he said.

The four-day International conference was being jointly organized by the International Society of Extension Education and the ICAR with the primary objective to facilitate sharing and developing innovative knowledge management sharing for agricultural development. National and International Organizations working in the area supported the event. Agricultural communication and extension experts of the National and International Forums discussed challenges and emerging issues with stakeholders during technical sessions of the Conference.

The Inaugural session ended with vote of thanks proposed by Dr R.R. Sinha, Vice President, International Society of Extension Education (INSEE).



## TECHNICAL SESSION

### Concurrent Technical Session – 1

#### Theme I : Agricultural Knowledge Generation, Refinement and Dissemination

Chairperson : Prof. R.B. Singh  
Co-Chairperson : Dr P. Das  
Conveners : Dr R. Parshad and Dr V.P. Chahal

Technology assessment, refinement and dissemination are important for agricultural transformation. The foremost requirement for developing appropriate technologies for its acceptance by the farmers may be increased involvement of farmers in the process of technology generation, refinement and dissemination. Farmer participatory research (FPR) encourages farmers to engage in experiments in their own fields so that they can learn, adopt new technologies share with other farmers. New information, technologies and concepts get communicated to farmers through the FPR approach. The rise of FPR was a deliberate effort among agricultural professionals to combine farmers' Indigenous Traditional Knowledge (ITK) with the more widely recognized expertise of the agricultural research community. The technology innovation process includes research followed by technology development, testing and adaptation, technology diffusion. The Technology Integration refers to the process or a set of activities that must happen if new information can be put to use in the farm production system.



It is to be reemphasized that technology and research information has been used as synonym without considering their basic structural differences. A more holistic approach through the process of technology integration can provide a base for reconciling the need for higher productivity with productive employment and income generation without displacing labour. While the need for a technological base for extension might seem a truism, it is frequently poorly handled in the design and operation of extension systems.



The current emphasis on transfer of technology is on high potential areas with the main issue on adaptation of available technology. The real challenge is on transfer of technology in the marginal areas to small-scale production systems. In resource-poor areas, it is required to optimize returns from the minimum use of external inputs and to quantify the level of inputs required to ensure that the system is truly sustainable. The strategy followed in designing and implementing transfer of technology projects has been based more on the supply of technological information than on the prior consideration of limitations at the farm level. The usual approach has been that any technology which produces the best results at the experimental level is superior, and that is what should be offered to the farmers. What is needed is a technology generation and transfer mechanism and a methodology that will make it possible to recognize and classify the different types of small farmers. Then and only then, the organizational design can generate and make available to farmers an appropriate technology which they will be able to adapt.



This technical session was organized in seven parallel sessions, details of which are mentioned in Annexure IV.

### Recommendations

1. More participatory and demand driven research is the need of the hour. The social scientists have to be involved as member of the Inter-disciplinary team at the time of formulation of projects and its implementation.
2. Research in extension education has to be based on appropriate sampling, quasi experimental designs and statistical tools. The extension research findings have to be utilized for agricultural research and development.
3. A comprehensive study need be taken up to find out the extent to which ATMA model is successful and what kind of organizational, structural and financial flow is needed to transform and make ATMA responding more to needs of farmers.

4. In order to have appropriate convergence and integration of research, education and extension, the ICAR may specifically play more role to Agricultural universities and Deemed universities.
5. There is need to tap the large reservoir of farmers' tacit knowledge to consider their perspective and for blending with the scientific findings to develop applicable knowledge and appropriate technologies.
6. The impact assessment of the technological interventions need to be researched with appropriate use of new tools focusing on profitability and livelihood security indicators rather than collecting data only on yield.
7. There should be institutional arrangements with adequate funding support for validation and effective application of the innovations developed by farmer-innovators.
8. The good extension models and best practices evolved and developed by various institutes and agricultural universities, which are found relevant in particular situations, may be up-scaled by the main extension system responsible for large scale extension.
9. Enabling policies are required for effective application of emerging technologies having good production potential like *Bt* Brinjal and other technologies developed in India.
10. The long term vocational training programmes conducted by KVKs for rural youth should be linked with agro-industries and corporate for the benefit of trainees and industries as well.
11. It is essential to find out the relevance, effectiveness, profitability, adaptability, sustainability, repeatability and equity of all the technologies before making final recommendation for its adoption by farmers.
12. It is essential to do process documentation of various multi extension multi extension models prevailing across India so as to encourage greater adoption of technologies to suit regional agro-climate and location specific needs.
13. The KVK- a unique intermediary institution created as part of NARS in India to assess, refine, demonstrate, transfer and to function as knowledge and resource centre of agricultural technologies has emerged as very successful model. Therefore, this model may also be tried and tested in other developing countries as part of their NARS.

## Concurrent Technical Session – 2

### Sub-Theme: Recent Innovations and Reforms in Extension

- Chairperson : Dr V.V. Sadamate  
Co-Chairperson : Dr B.S. Hansra  
Conveners : Dr M.J. Chandregowda and Dr Bharat Sonta

The papers presented in this session have been presented in Annexure IV.

## Recommendations

1. ATMA as a reform measure needs to be projected as an innovative institutional arrangement at district level and not as a scheme or project. Hence, regular interfaces with frontline systems are necessary to dispel any misconceptions about ATMA and its importance as mainstream extension interface at cutting edge level.
2. There is a need to promote innovative models of agricultural extension with focus on their replicability, scalability and sustenance. This can be done through analysis of micro-innovative models to identify the critical success factors to generate a set of 'good extension practices'.
3. Human and behavioral dimensions play decisive role in promoting reforms and innovations in extension. Hence, due attention needs to be paid in terms of policy, intent and action for increasing and intensifying HRD and capacity building efforts by increased financial allocations.
4. Human resource development is critical for strengthening agricultural extension system for effective Agricultural Knowledge Management. Hence, there has to be a re-look at the policy of regular recruitments. This issue is of high priority in allied sectors like animal husbandry, fisheries, horticulture, sericulture, etc. which have significant contribution to agricultural GDP. It is, therefore, strongly recommended for rigorous HRD, Training and Capacity Building of all stakeholders.





5. Client-led, participatory and bottom up knowledge generation, refinement and dissemination need to be promoted for effective knowledge management in agriculture.
6. There is a need for rigorous research back up to evaluate, validate and up-scale innovations in extension.
7. There is a need to promote exchange of extension science knowledge among countries. When it comes to translating this important knowledge into action, due care has to be exercised to test it for relevance, feasibility and profitability in terms of local conditions, and then adapt/adopt it. The implication is that one universal model fits to all is not valid and the ‘best fit model’ is to be explored in terms of the local adaptability.

### Concurrent Technical Session – 3

#### Sub-Theme: Knowledge Generation and Dissemination

Chairperson : Dr A.G. Sawant

Co-Chairperson : Dr B.P. Sinha

Conveners : Dr Jancy Gupta and Dr R.R. Burman

The papers presented in this session have been presented in Annexure IV.

### Recommendations

1. Being the district level organization for extension, KVKs are supposed to play the role of knowledge and resource centre for better knowledge management, but expectations from KVKs for non-mandated activities should not be unreasonably high which is likely to be counterproductive.
2. Small and marginal farmers need to be mobilized for diversified agriculture to meet the increasing demand for horticultural products.
3. Institutionalization of linkage among farmers, researchers, extension workers and other stakeholders need to be made to promote mutual trust.
4. Generation and dissemination of market oriented information is very essential for making agriculture profitable and sustainable.



5. Extension scientist should take care while making meaning of the results of adoption research so that misleading communication and dissemination could be avoided.
6. Institution based training has its own importance. Apart from this, community based training programmes in villages also require to be promoted to make communication and dissemination of agricultural technologies more effective.
7. Integrated technology dissemination system (ITDS) combining all the available technologies from research institutes, extension organizations, input dealers, corporate R&D companies and marketing agencies need to be promoted for effective adoption of agriculture technologies and development of agri-business models.

There are large number of indigenous technologies innovated by the farmers most appropriate to their agro-climatic situations. Such technologies should be meticulously identified, validated on scientific principles and shared among farmers.

#### Concurrent Technical Session – 4

##### Sub-Theme: Knowledge Generation and Dissemination

- Chairperson : Dr P.N. Jha  
Co-Chairperson : Dr Baldeo Singh  
Conveners : Dr U.S. Gautam and Dr V.B. Dixit

The papers presented in this session have been presented in Annexure IV.

#### Recommendations

1. Frontline demonstrations conducted by KVKs in India have been found to be proven and effective mechanism to demonstrate the production potential of technologies to farmers and extension personnel.



- Hence, intermediary agencies should identify knowledge and adoption gaps and address these gaps through transformational technologies related to major production systems in their areas of operation. Such demonstrations should focus on experiential learning approach. There is also a need to create awareness on such technologies for large scale adoption by farmers.

## Concurrent Technical Session – 5

### Sub-Theme: Indigenous Knowledge Systems

Chairperson : Dr P.L. Gautam  
Co-Chairperson : Dr P.N. Mathur  
Conveners : Dr C.L. Acharya and Dr Lakhan Singh

The papers presented in this session are mentioned in Annexure IV.

### Recommendations

- Sustainable Sugarcane Initiative (SSI) is based on technology innovation of farmers. The innovations are tested in the farmers' fields and have potential for saving seed cost, increase in yield, saving of water use, reduced labour cost in transportation.
- Innovation in the form of technologies/practices and methodologies developed by innovative farmers like Sustainable Sugarcane Initiative (SSI) are benefiting widely and have potential for acceptance across the system. Scientific talents behind such grassroot level innovations need to be encouraged, recognized, documented and integrated with modern science.
- Traditional knowledge is attracting global interest. Protection of Plant Varieties and Farmers Rights Authority (PPV &FRA) is protecting the intellectual property of farmers. Separate Act is needed to protect the traditional knowledge as well.



## Concurrent Technical Session – 6

### Sub-Theme: Agri-business Approaches and Entrepreneurial Development

Chairperson : Dr S.A. Patil

Co-Chairperson : Dr A.P. Srivastava

Conveners : Dr J.P. Sharma and Dr Rashmi Singh

The papers presented in this session are presented in Annexure IV.

### Recommendations

1. Entrepreneurial success depends on personal factors and external support systems. Hence, there is need to strengthen the entrepreneurial attributes of farmers by capacity building and providing facilitative measures like credit, technical back up, policy support and sustained hand holding till they independently manage their enterprises.
2. Emerging technologies like agricultural biotechnology, tissue culture, protected cultivation, post-harvest food processing and value addition hold promise as agri based enterprises. These can be exploited for commercial entrepreneurial ventures which will result not only in economic returns but also help in preservation of perishable commodities. Steps are needed to promote entrepreneurship in value chains of livestock, fisheries, horticulture, apiculture, sericulture, etc.
3. Micro credit and micro finance availability in rural areas must transform into micro enterprises establishment. Agriculture is a contributor of raw material to most of the industrial ventures but gains are mostly garnered by others and farmers remain bereft of the benefits. Group entrepreneurial promotion at farmers' level may be taken up to increase farmers' share in the final price paid by consumers for a commodity.
4. Documenting and sharing best practices of rural entrepreneurship is necessary. Success stories in Asia and Pacific of agriculture based enterprises will prove inspirational to other farmers.



5. Women entrepreneurship on the lines of other countries like Singapore and Indonesia need to be encouraged in India as well. Their needs of market information and skill upgradation must be addressed by appropriate training interventions and mentoring. Nascent agri-businesses must be incubated till they are firmly in place by undertaking hand holding measures.



### Concurrent Technical Session - 7

#### Sub-Theme: Gender Mainstreaming

- Chairperson : Dr C. Prasad  
Co-Chairperson : Dr Krishna Srinath  
Conveners : Dr Premlata Singh and Dr K. Ponnuswamy

The papers presented in the session are given in Annexure IV.

### Recommendations

1. Training programmes for rural women need to be organised based on felt needs identified through specific studies.
2. Sericulture and Apiculture have been found to be highly enterprising areas for women. KVKs can facilitate these enterprises with the support of Central Silk Board and National Bee Board.
3. In order to implement policies and programme on women through extension system, adequate number of women extension staff need to be employed at all the levels on the pattern of Tamil Nadu.



## Theme II: Capacity Development for Agricultural Knowledge Management

It is imperative to empower the farmers through capacity building by enriching their knowledge and other support services. Human resource development is important for knowledge empowerment of farmers in agricultural and allied sectors.

As knowledge plays a central role in capacity building, it is found useful to take advantage of the theory and practices of knowledge management. Knowledge can be defined as “justified true belief that increases an entity’s capacity for effective action” following a concept introduced by Plato. He distinguishes between “explicit” knowledge and “tacit” knowledge. The first form of knowledge “can be expressed in facts and numbers and can be easily communicated and shared in the form of



hard data, scientific formulae, codified procedures, or universal principles.” The second form, however, “is highly personal and hard to formalize. Subjective insights, intuitions and hunches fall into this category of knowledge.” There are two dimensions of tacit knowledge: a technical dimension, consisting of skills and know-how, and a cognitive dimension, consisting of mental models, beliefs, values and perceptions. Weggeman regarded knowledge as an artificial production factor (commodity) on the same level as natural resources, labour and capital. Knowledge is considered as a property of individuals and defined as “a (personal) capability that is the product of information, experience, skills and attitudes a person possesses at a given moment.

Knowledge is intimately linked to all three levels of capacity previously discussed, and its knowledge base relates to the acquisition, archiving and analysis of the already huge and still growing amount of data and information. These data are encapsulated explicitly in every human artifact: databases, documents, models, procedures, tools and its knowledge base also includes implicit or tacit knowledge inherent in people, namely their skills, experience and natural talents to understand, create and apply knowledge. In this way implicit knowledge becomes a synonym for capacity-to-act or a competence to solve problems. This emphasizes that implicit knowledge is contextual, and it underlines the importance of local, traditional or indigenous knowledge. Content availability and its intelligent organization continue to be serious challenges in Indian agriculture. This prevents offer of meaningful and efficient advisory and allied services to farmers and other stakeholders.

Human resource development is essential for enriching knowledge and empowering farmers in agricultural and allied sectors. Knowledge management is crucial for meeting the technology information need of the farmers. It is also imperative to empower the farmers through capacity building through enriching their knowledge and other support services. There is a need to further strengthen the efforts for availability of quality inputs, developing linkages with public, private partners/institutions, application of ICT in agricultural communication.

### Concurrent Technical Session – 8

Chairperson : Dr Mangala Rai

Co-Chairperson : Dr M.L Madan

Conveners : Dr V. Venkatasubramanian and Dr T.P. Trivedi

The papers presented this session are mentioned in Annexure IV.

### Recommendations

1. Amongst various options of capacity building, awareness generation, frontline demonstrations, vocational education and training programmes and training/retraining of extension functionaries are advocated.
2. Frontline demonstrations fulfilling the truth of learning by doing and seeing is believing should be promoted more as a mean of technology transfer, however, focus should also be made in print and electronic media.
3. The learning system needs to be adapted according to the situation.
4. Need based pre-service and in-service training programmes, keeping in view of their educational level may be incorporated as essential component of human resource development.
5. Open and distance learning is considered as the most viable means for broadening education access, while improving the quality



of education, advocating peer-to-peer collaboration and giving the learners, a greater sense of autonomy and responsibility for learning.

6. Training needs to be promoted for increased knowledge of rural women to change their attitude to a significant level regarding value added products.

### Theme III: Use of ICT for Agricultural Knowledge Management

Knowledge and information have become the major drivers of social and economic transformation in the world. They are of even higher significance in agriculture, which sustains the food and livelihood security as well as economic growth. Presently, the agriculture across the globe is facing challenges in the wake of increasing climatic variability, biotic stresses, and competitive global market; declining base of production resources; growing essentiality of application of hi-tech and precision farming for adaptation and increasing need for matching the pace of technological advancements and knowledge explosion. Therefore, access to real time information and validated as well as processed technological knowledge have to be ensured to the farming community and other related stakeholders for informed, quality and prompt decisions. The concern is how to strengthen the collation, integration and customization of knowledge and information as well as their speedy flow and utilization among the community at large. Information and Communications Technologies (ICT), such as the World Wide Web, e-mail, telephones, fibre optics and satellites have revolutionized the way not only of interaction and networking pattern in the societies but also the very design and functioning of knowledge management models and information sharing mechanisms. ICT can enable individuals, communities and institutions to generate, access, share, adapt and apply larger volume of information at an enhanced rate and at reduced costs. They are also the potential means for community empowerment as well as solutions to the dwindling strength of extension functionaries.

ICT can facilitate larger awareness and extent of people's participation in development processes. The existing gaps between the haves and have-nots with respect to knowledge and information could be bridged effectively across societies, cultures,





communities and gender. Realizing their immense potential as engine of growth and development, several countries made initiatives of ICT application in agricultural knowledge and information management. The use of ICT to improve information flow and to connect people within the rural areas has proved that illiteracy of farming communities may no longer be an excuse to be denied of some form of extension system. Mobile telephony, innovative community radio and television programs, mobile phones in combination with radio, video shows, information kiosks, web portals, rural tele-centers, farmer call centers, video-conference, offline multimedia CDs, open distance learning, etc are the major forms of ICTs applied in various countries.



In the area of ICT usage in agriculture, 138 papers were received from various countries. Therefore, to facilitate greater extent of participation and in-depth deliberation, the two kinds of presentations viz., oral and poster were arranged. Four concurrent sessions were held for oral presentations. Firstly, there were 2 panelists' presentation followed by presentation of 5 lead papers and 27 contributory papers. Following two concurrent sessions were held. The Technical Sessions 9, 10, 11, 16 and 17 were held under this theme. The details of papers presented under these technical sessions have been given in Annexure IV. Poster session was held separately.



## The issues covered under deliberations

The issues covered in presentations included opportunities and challenges of using ICT as well as various forms and cases of ICT applications. The other important policy issues highlighted in the deliberations include location specific and vernacular based content development, user friendliness, cost-effectiveness, capacity building, development and deployment of usable ICT products, enhanced investments in ICT application and impact assessment, etc.

The delegates shared various ICT-based innovative experiences like applications in financial transactions during procurement of inputs and extension services; utilization of best agriculture practices; advisory alert with respect to weather, climate, and supply chain management; delivery of information and services; scientific animations based information system. Some international experiences like Kenya's KenCall Farmers Helpline (Kenya), which provides agricultural information, advice and support to smallholder farmers over the phone using voice and voice call-back to farmers; *Kilimo Salama* (Kenya), which makes provision of agricultural insurance products to farmers through mobile phones; and M-PESA, which facilitates mobile banking (subscribers send and receive money using their mobile phones) provided an insight of ICT application in day-to-day agricultural management.

Similarly other notable presentation in the conference include MAKWACHA in Malawi, which is a smart-card-based system to receive payments and purchase of farm inputs electronically; combination of mobile with community radio stations used for advisory services in Tanzania; Cocolink, which provides farmers with useful information about improving farming practices through voice and SMS messages, farm safety, crop disease prevention, post-harvest production, and crop marketing in Ghana; providing information via internet for Waterhole monitoring for livestock early warning in northeastern Kenya and southwestern Ethiopia; Open Academy for Philippines Agriculture (OPAPA); e-chaupal in India were the notable and successful cases of ICT usage in agriculture presented in the conference.

A range of challenges which ICT-based initiative experience include technological dependence; lack of accessible telecommunication and internet infrastructure in rural and remote areas; capital cost of ICTs, high cost of on-going access and support; inherent need for capacity building; difficulty in integrating with existing media, local communication methods and traditions; and, lack of involvement of all stakeholders, especially women and youth.

## Recommendations

The salient recommendations for policy as well as research initiatives for enhanced and effective application of ICTs for agricultural knowledge management are enumerated as below:

1. In the context of climate change and other pressing agrarian challenges, ICT mediated Knowledge Management Strategies have to focus on improving the access to risk management knowledge products and services through mobile telephones.
2. It is recommended that extension systems have to lay emphasis on capacity building of farmers and extension workers in optimum use of mobile networks.
3. Promotion of mobile networks along with community radios may enhance the knowledge management at grassroots level.
4. Most of the advisories being issued through mobile facility are text based which can be accessed by literate farmers. Therefore, voice-based mobile advisory in local language is to be emphasized.
5. All the extension and KVK staff should be provided with mobile phones and there should be provision for funds for operational expenses. SMS services should be provided by district based institution (eg. KVK/ATMA/BTT/CSC etc.).
6. There is a need for National Agricultural Research System (NARS) to focus on application of sensor based networks for precision farming as
7. Low cost teleconferencing may be encouraged to enhance the knowledge sharing and problem solving capabilities of extension personnel.
8. Commodity based Knowledge Portals may be developed with vernacular language content using combination of knowledge management tools and based on local needs.
9. Future extension course curriculum should focus on comprehensive ‘know how’ and ‘do how’ of ICTs mediated agricultural extension.
10. For all Knowledge Management initiatives, methodology for benchmark surveys and impact assessment should be developed and standardized.
11. To enhance the uses of ICT in agriculture, there is a need for capacity building and training of users, KVK staff and farmers for the strength of ICT for extension purposes.
12. Feasibility studies may be conducted by KVK system for starting mobile phone services for farmers and for finalizing the most preferred information through mobile phones.
13. There is a need to work on strategies for technologically empowering input dealers (in line with MANAGE’s initiative for agri-business).
14. More focus is to be given to farmers’ success stories through print media and ICT tools.
15. Quality content creation at national level with active participation of concerned crop research directorates and experts (In-service and retired) need to be encouraged.

## APAARI Session: Openness in Agricultural Information and Knowledge Sharing

The complex challenge of ushering agricultural innovation can be considered at a very basic level as the need to improve information content of market supply chains. Improving efficiency in the exchange of information along with the commodity and money not only improve the market chain but can also bring innovation to products and activities along market chains.

The challenge of improving efficiency in information exchange in market supply chains requires a fundamental recognition by all agricultural development stakeholders that: 1) the increasingly market oriented agriculture also makes this agriculture increasingly information and knowledge intensive, 2) it is the capability to intensify information and knowledge use that defines the ability of agricultural communities to respond through innovation and participate more effectively in markets.



The first reason for “openness” in agricultural information is the need to create more efficiency in market chains, calls for creation of complex information chains and the second reason, the need to tackle emerging challenges to agriculture, calls for enhanced information sharing so that it enables easier discovery and effective use of available information.

“Openness” of agricultural information and knowledge, therefore, in the context of the emerging paradigm of agricultural innovation should mean that a large part of relevant and useful information generated through public sector investments, should be available and also accessible as a public good with equity to all its users. However, in spite of agricultural information being largely a public good, it is “excluded” for many across the world and has become a “club”



good. This exclusion or conversion of a theoretically “public” good to a “club” good is largely through technological, institutional and community related barriers to information access and availability as also in making its effective use.

The technological barriers to availability, access and effective use of agricultural information are related to availability of hardware such as computers and mobile phones, software especially tools and applications, content, connectivity and capacity of agricultural organizations and communities. The Institutional barriers include the lack of appropriate investment, policies, rules, regulation, standards, structures especially reward and accountability and organizational work processes that embed openness in data and information sharing. The most common barriers to communities for sharing, exchanging and effectively using agricultural related information are related to political, social, economic and technological empowerment. As is common globally, rural and agricultural communities are the least empowered in most societies and countries. Besides these, there are issues related to awareness, language and skills

### Concurrent Technical Session – 12 (Inaugural Session)

Chairperson : Dr Raj Paroda, Executive Secretary, APAARI

Co-Chairperson : Dr K.D. Kokate, DDG (Agril. Extension), ICAR

### Following points were made

APAARI was identified as the vibrant regional association, in strengthening agricultural information systems in the Asia-Pacific region through its important program Asia-Pacific Agricultural Research Information System (APARIS), which is mandated to improve agricultural information flows at national, regional and global levels through value added services, capacity building and advocacy programs and success stories for greater adoption of agricultural innovations.



It was emphasized that complex information chains for market linked agriculture cannot operate effectively and in a sustainable manner if they are “closed” and limited in some way to other intermediary actors. The outputs of public funded research, especially data and information should be “public goods” in the sense that they should not be excluded from the public which has funded the research.

The role of APAARI was highlighted in improving openness in agricultural information and knowledge sharing through awareness, advocacy, capacity building programs and dissemination of success stories on agricultural innovations besides facilitating the Coherence in Information for Agricultural Research for Development (CIARD) initiative in the region.

Subsequently three Concurrent Technical Sessions 13,14,15 were held.

### Concurrent Technical Session - 13

#### Technological Issues to Usher Openness

Convener : Dr Paolo Ficarelli, ILRI

In this session, five papers were presented, which include Cases on Technological Issues on Mobile Devices by Dr Paolo Ficarelli, Technological Issues to Usher Openness by Dr V.K. Bhatia, Using ICT for Knowledge Generation and Refinement by Dr Bangali Baboo, e-Agriculture Initiatives in Tamil Nadu Agricultural University for Accelerating Agricultural Profession and Improving Livelihood Status of Farming Community by Dr P. Murugesha Boopathi and Agricultural Research for Development (AR4D) through Information and Communication Technologies by Dr H. Chandrasekharan.

### Concurrent Technical Session - 14

Convener : Dr Ajit Maru

#### Institutional Issues to Usher Openness

In the concurrent session on Institutional Issues to Usher Openness, five papers were presented. These include Cases on Institutional Issues presented by Dr Ajit Maru and Dr S. Mauria, ICTs for Agricultural Extension in India: Innovations, Lessons and Way Forward by Dr R. Saravanan, Web based Information Dissemination System for Agricultural Development in Jharkhand by Dr B.K. Jha and Envisioning e-Extension and Agricultural Knowledge Management by Dr P. Adhiguru.

### Concurrent Technical Session - 15

#### Community Issues to Usher Openness

Convener : Dr Rikin Gandhi

In this session, following five papers were presented which include presentations on Cases on Community Issues: Experience of Digital Green by Mr. Rikin Gandhi, Cases on Community Issues by Dr K.D. Kokate, ICT Enabled Knowledge Empowerment for Better Rural Livelihoods by Dr Sreenath Dixit, Evaluation of M-Agriculture in KAU- on ATIC's Agricultural Message Service Through Mobile Phones by Dr Sreevalsan J. Menon and Transfer of Paddy Cultivation Technology in College Development Block by Dr V.S. Shirke.

Based on the above presentations, following major recommendations were brought out.

## Recommendations

### Technology Issues

- Encouraging access and use of information through ICTs at farmers level
- Convergence of media and information from agriculture and other areas
- Collaboration among all actors in ICT/ICM
- Validation of need-based information and its updation
- Capacity development in use of ICTs and information

### Institutional Issues

- Increased and targeted investment in ICT/ICM in agriculture
- New Institutional arrangements - change in work processes
- Developing policies, strategies, rules, norms, regulations
- Recognition, rewarding and awarding systems
- Building institutional capacity for greater knowledge sharing.
- Strengthening of *Krishi Vigyan Kendras (KVKs)*, Rural Communities and Farmers' Organizations at local levels in order to play a key role in harnessing ICT/ICM at the grassroots level.

### Community Issues

- Creation of community-based organizations like Farmers' Clubs around ICT/ICM initiatives to improve community participation
- Involving community in assessment of information use
- Convergence of information related to agriculture and non-agriculture issues
- Capacity building of community on use of ICT tools and information.

## Theme IV: Networking for Agricultural Knowledge Management

Knowledge management envisages the ways of sharing knowledge among those who can develop it and those who can utilize it. The absence of knowledge exchange among and between farmers, and those who evolve the farm-appropriate knowledge, has unanimously considered as the focal issue in poor farmer-led agricultural development. Hence, several agricultural extension programmes, executed by both governments as well as international implementing agencies, have concentrated on diffusing knowledge to farmers who, ultimately, were supposed to gain from this knowledge in their production practices. Knowledge may be comprehended as information and skills, which may be acquired through personal experiences and exercising trials and errors, within a learning community, or from outsiders adapting it to local milieu.

Rural and farming communities are typically interested in the kind of knowledge that includes cultural and management practices; advanced agricultural technologies; diagnostic information about plant and animal diseases and insect pests and soil management related aspects; timely and adequate information on inputs and sales (prices, seller, buyers, retailers); market demand; and land records and government policies relating to new agricultural development. The term ‘Knowledge Management (KM)’ may be conceptualized as the concerted efforts and practices exercised by any organizations and individuals to identify, create, accumulate, re-use, apply and distribute knowledge. Knowledge management, in general, is two-dimensional. Firstly, it is explicit knowledge, which could be codified and articulated in formal language and secondly, the tacit knowledge i.e. personal knowledge embedded in experience.

Hence, to diffuse new knowledge among farmers, it is pre-requisite to nurture open access to people’s extensive tacit knowledge and to ensure learning and knowledge flow. Knowledge management in agriculture, especially in developing countries, has a different manifestation. For example, small farmers may not need to look for cutting edge technology. Rather, they may require access to the knowledge that can improve their livelihoods and which is often adequately available. Extension and development department attempts to help farmers in accessing this type of knowledge only. However, they are also biased towards certain technological and knowledge components like new plant varieties or processing technologies, where they feel comparative advantages. Resource poor farmers, on the other hand, may not feel satisfied to check and use one type of knowledge offered by a certain technology provider unless and until they cross-check its usefulness with other farmers, community members and related officials, other development agents, etc. The concluding point of above argument is that farmers always try to minimize the risk and uncertainty in use of technologies by contacting multiple sources of information before having confidence in a given technology.

Three concurrent sessions were held and based on the deliberations, following recommendations were made. The details of papers presented are given in Annexure IV.

### Concurrent Technical Session - 19

Chairperson	: Dr T. Nandakumar
Co-chairperson	: Dr Sudhir Bhargava
Conveners	: Dr C.V. Sai Ram and Dr V.S. Shirke

In this session 12 papers were presented which include three papers from panelists and nine papers from other delegates. The major theme areas presented include enhancing livelihood security of resource poor farmers by participatory extension, role of networks in knowledge management and innovations, economic empowerment of SHG’s through



entrepreneurship development, public-private-farmer partnership for developing resource poor farmers, institutional arrangements for irrigation management, village resource centre project in Kerala, convergent extension education model for India, extension delivery services under ATMA, and performance of microfinance in India.



## Recommendations

1. Public private partnership needs more emphasis in the process of agricultural knowledge management and the same should be a two-way process for accepting and promoting others technologies.
2. KVK system should deliver best technologies to the farmers irrespective of their sources.
3. Extension through participatory approach need to be holistic covering watershed development, technologies for higher productivity, increasing access to markets etc.
4. Role of NGO's and co-operatives is significant in agricultural knowledge management and the same may be promoted through effective convergence.
5. Participatory irrigation management through group dynamics needs to be promoted at micro level.
6. Concepts like village resource centre can be encouraged for technological knowledge communication at grass root level.

## Concurrent Technical Session – 20

Chairperson : Dr M. Mahadevappa  
Co-chairperson : Dr R.P. Singh  
Conveners : Dr Venkattakumar and Dr Rohilla

In this session, 14 papers were presented and the major areas themes covered were empowerment of women for sustainable livelihood through SHG's, road map for sustainable development of farmers' organization, contract farming, reorganizations of extension system for meeting current issues and challenges.



### Recommendations

1. Strengthening of linkages between SHG's and different technical institutions and NGO's is important in the process of agricultural knowledge management.
2. Proactive policy measures needs to be evolved and executed for sustainable development of farmers' organization.
3. Positive attitude needs to be cultivated among SHG women for overcoming the constraints in the process of entrepreneurship development.
4. Technologies need to be integrated for achieving sustainable livelihood in case of small and marginal farmers.
5. Retrospective studies on co-operative sector have to be undertaken for their convergence with other stakeholders in the process of agricultural knowledge management.
6. The process of success in case of vibrant SHGs needs to be studied in depth for their replications in other areas.

### Concurrent Technical Session - 21

Chairperson	: Dr S.N. Puri
Co-chairperson	: Dr Murari Suvedi
Conveners	: Dr V.J. Tarde and Dr S.K. Dubey

In this session 8 papers were presented and the major areas covered were knowledge sharing experimentation in farm sector, participatory approach for agricultural knowledge management, PPP for organic jute cultivation, constraints in privatized agricultural technology delivery system, sustaining the endogenous tourism in PPP mode, networking for agricultural knowledge management and field experiences in farmers' organizations / water users' association.

### Recommendations

1. The successful networking approaches like *Krisbi Mahotsava*, Community radio, *Krishak Samithi*, *Samaj Shilpi Dampatti* Model, Satellite approach and innovative mode of agro advisory services need to be strengthened, process documented and upscaled.
2. Revival of Jute cultivation through two pronged strategies by promoting organic jute cultivation and fostering partnership between farmers, public institutions and private partners are indispensable.
3. Participatory approach for managing the knowledge may be more effective if the primary stakeholders viz., the farmers may be successfully persuaded to share



their part in terms of labour, partial operational cost, land and other requirements. Moreover, support for establishment and sustaining the farmers' club by related institutions shall further add to the success of participatory approach.

4. Endogenous tourism needs greater attention by all the related partners / stakeholders for maintaining eco-sustainability in hill agro-ecosystem.

### **Theme V: Current Agrarian Issues and Agricultural Knowledge Management**

Witnessing a tectonic shift in GDP share, where contribution of agriculture has declined from 55 per cent in 1951-52 to 14.6 per cent at present, and Nation has embarked upon the path of development. However, agriculture remains the predominant sector in terms of employment and livelihood with about 52 per cent of the India's workforce engaged in it as the principal occupation. There are disheartening issues regarding food security, farmers' income and poverty, which need to be addressed with novel technologies, pro-active policy and renewed investment in agriculture. There has been a significantly slower growth rate in the agricultural sector as compared to other sectors of national economy. Low agricultural productivity is one of the greatest challenges facing Indian agriculture. Modernization of agriculture is the need of the hour to catapult the country from the loop of declining rate of growth.

Researchers and planners have to find means and strategies to manage climate change induced risks and uncertainty in agriculture; mounting concerns of food demand, escalating food prices, rising cost of inputs and cultivation; uncertain market prices; disenchantment with farming as livelihood option; gaps in yield and farm constraints; widening economic disparities between irrigated and rain-fed areas; equity concerns with regard to gender and farmers' stratification; lack of adequate incentives and appropriate institutions; increased demand of land for non-agricultural purposes; sluggish implementation of policy reform initiatives; emerging demands of crop diversification for meeting the changing food habits

and also non-food requirements like bio-fuel; etc. Emphasis has to be laid upon genetic improvement of crops, seed availability, and efficient management of natural resources, secondary agriculture and specialty agriculture, adopting approaches of Farmer FIRST through NARS and integrated farming system for shining agriculture, food empowerment and livelihood security.

### **Knowledge Management for addressing agrarian challenges**

Knowledge management is concerned with ways of exchanging knowledge among those who can develop it and those who can use it. The lack of exchange of knowledge among and between farmers, and those who produce farm-relevant knowledge, has often been regarded as the key issue in pro-poor agricultural development. For that reason, many agricultural extension and development programmes, run by both governments and international donor agencies, have focused on diffusing knowledge to farmers who, in turn, were expected to gain from applying this knowledge in their production practices. Knowledge can be understood as both information and skills that are acquired through individual experience and trial and error, within an organization or a learning community, or from outsiders adapting it to local contexts.

By applying a participatory approach called knowledge brokering (linking rural farmers with the national and international researchers) the farmers' community could develop a self-driven system to manage all those crucial issues. Designing ICT-enabled knowledge flows between these actors in any specific case requires careful consideration of the types of ICTs that are accessible by each group and the technological and conceptual packaging of information so that it can flow effectively from one user to the other. Effective ICT deployment explicitly considers the appropriate interfaces between the digital and non-digital worlds, so that those without access to digital ICTs can still benefit from an improved local information environment. From the perspective of the smallholder farmer, the key question is how to gain access to information and resources. These farmers need local support groups that will act as brokers between the available knowledge system and the individual needs of farming households. Developing economical local ICT access for the rural poor and ensuring appropriate content is the essence of bridging the digital divide. Agricultural knowledge and information needs to be managed like any other key business input.

Groups of educated youth from the particular farming community who are deeply rooted in the community and highly accepted within their society as knowledge brokers could be involved. They will be following a useful approach; mapping out the information and communication needs of clients within their agricultural economic/social system and assisting the key elements in that system to find information they need, when they need it, in accessible terms and language, and at prices that are realistic given available resources and sustainable development needs to incorporate growth, equity, and

environmental dimensions. From this starting point, an effective ICT strategy can take a knowledge brokering approach: identifying who needs information, who can supply the information, what formatting and delivery mechanism will allow the knowledge provider and consumer to communicate and share information, and what institutional/market structure will provide the appropriate incentives for such sharing to take place.

### Concurrent Technical Session – 22

Chairperson : Dr J.N.L. Srivastava  
Co-Chairperson : Dr P.S. Minhas  
Convener : Dr O.M. Bambawale

Dr J.N.L. Srivastava, Former Secretary, ICAR chaired the session. There were 3 panelists' presentations and 6 presentations of papers.

The main agrarian issues, which emerged were impact of climate change in agriculture and the need for knowledge management for mitigation.

### Recommendations

1. Climate changes are the broad based multidimensional issue. Prioritisation of short term and long term issues and goals for mitigation is necessary.
2. There is urgent need for comprehensive study and systematizing the efforts in aggregating information on various aspects of climate change and its dissemination through development of a dedicated climate change portal.
3. NRM and Extension Divisions of ICAR need to jointly organise a session on climate change and agriculture.



### Concurrent Technical Session – 23

Chairperson : Dr G. Trivedi  
Co-Chairperson : Dr Partha R. Das Gupta  
Conveners : Dr R.P. Singh Ratan and Dr P.B. Kharde

The details about papers presented in this session are given in Annexure IV. The following recommendations emerged through discussions on various current agrarian issues and agricultural knowledge management.

## Recommendations

1. In order to conserve the natural resources, resource conservation technologies are to be promoted on large scale focusing mainly the soil and water.
2. For promotion of resource conservation technologies and also to save labour with economy, custom hiring services for farm implements and machinery at *Panchayat* level should be made available to the farmers.
3. For increasing input use efficiency with the objective of increasing factor productivity and profitability, appropriate technologies related to water and nutrient management are to be shared on large scale.
4. In view of shrinking size of holding of the farm families, there should be ban on converting agricultural land to other purposes. Simultaneously massive programme should be launched for converting the degraded and wasteland into cultivable lands.
5. In view of climate change, the climate resilient technologies should be tested and refined with traditional knowledge systems for their dissemination. The technology modules being developed by KVKs under NICRA should be replicated through convergence with line departments of State Governments.
6. The recommendations emerging from on-farm trials conducted through KVKs are to be part of package of practices of the district for smooth horizontal expansion of the technologies.
7. In order to increase the profitability in farming and ensuring sustainable livelihood security to the marginal and small farmers, secondary agriculture need to be emphasized and appropriate technologies for post-harvest and value addition to the produce are to be made available to the farmers.
8. Land consolidation should be given rethinking for promotion of mechanization and precision farming technologies.
9. Land records of the farmers are to be updated and made online and every farm family should be provided a land possession card.
10. Capacity building programme for agricultural labourers should be carried out in the field of improved agricultural technologies is to be carried out.
11. Prices of agricultural commodities should be fixed keeping in view the regional realities and a Composite Input Produce Procurement Centre is to be established at *Panchayat* level.



12. For agricultural knowledge management at farmers level, a proper blending is to be done between the farmer participatory approaches and information communication technologies.
13. In view of labour problem in agricultural activities, the provision of Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA) is to be extended to the agricultural activities.
14. In addition to “Research for Development” the concept of “Extension for Research and Development” should be operationalized in view of addressing various current agrarian issues and agricultural knowledge management particularly in respect of emerging risks in rainfed agriculture.

## VALEDICTORY SESSION

---

The Valedictory Session was organized on November 11, 2011 at NASC, Pusa, New Delhi. Hon’ble Union Minister of State for Agriculture, Food Processing Industries and Parliamentary Affairs Shri Harish Rawat Ji was the Chief Guest of Valedictory function.

Chairman, ASRB-Dr Gurbachan Singh was the Guest of Honour on this occasion. Dr A.G. Sawant, Vice-President, INSEE presided over the function. At the outset, Dr K. D. Kokate, DDG (Agril. Extn.) extended warm welcome to all the Guests and delegates.

The Chief Guest on this occasion Shri Harish Rawat Ji, Hon’ble State Minister for Agriculture, Govt. of India, congratulated the organizers for holding such conference, which was aptly needed for Indian agricultural extension systems. He endorsed the recommendations emanated from this conference and ensured the policy backstopping for the same.



Dr Gurbachan Singh, Chairman, ASRB and Guest of Honour in valedictory function appreciated the efforts of various partners of the conference in arranging the platform for sharing experiences in agricultural knowledge management in global perspectives. He also applauded the methodological progress in extension science and complemented the recommendations presented in this session.

Drs V.P. Chahal, V. Venkatasubramanian, R.N. Padaria, Dileep Kumar Guntukku, S. Attaluri and P.B. Kharde presented the recommendations of technical sessions in Theme I: Agricultural Knowledge Generation Refinement and Dissemination, Theme II: Capacity Development for ARM, Theme III: Use of ICT for Agricultural Knowledge Management, Theme IV: Two Special Themes on Framework for Global e-extension Academy and e-extension platform of ICAR (ICAR-ISU Consortium) and Openness in Agricultural Information and Knowledge Sharing (APAARI) and Theme V: On Current Agrarian Issues and Agricultural Knowledge Management, respectively.

On this occasion, the Chief Guest also released the current issue of International Journal of Extension Education published by the society.

The valedictory session ended with vote of thanks to the Chair and all the delegates by Dr L.B. Kalantri, Secretary General, INSEE.





## RECOMMENDATIONS OF THE INTERNATIONAL CONFERENCE

1. Research in extension education should be based on appropriate sampling, quasi experimental designs and statistical tools. The extension research findings should be utilized for agricultural research and development. There is a need to tap the large reservoir of farmers' tacit knowledge to consider their perspective and it is blending with the scientific findings to develop applicable knowledge and appropriate technologies. The impact assessment of the technological interventions need to be researched and carried out with appropriate use of new tools focusing on profitability and livelihood security indicators rather than only yield data. Extension researcher should take care while making meaning of the results of adoption research so that effective communication and dissemination can be made. Future extension course curriculum should focus on comprehensive 'know how' and 'do how' of ICTs enabling future extension personnel to be e-ready. For all Knowledge Management initiatives, methodology for benchmark surveys and impact assessment are to be developed and standardized.
2. In order to have appropriate convergence and integration of research, education and extension, the ICAR may specifically encourage SAUs and DUs on this issue. The good extension models and best practices evolved and developed by various institutes and agricultural universities, which are found relevant in particular situations may be up-scaled by the main extension system responsible for large scale extension delivery. Integrated technology dissemination system (ITDS) combining all the available technologies from research institute, extension organization, input dealers, corporate R&D companies and marketing agencies need to be promoted for effective adoption of agriculture technologies and development of business models.
3. The KVK- a unique intermediary institution created as part of NARS in India to assess, refine, demonstrate and function as knowledge and resource centre of agricultural technologies has emerged as very successful model. This model may also be tried and tested in other developing countries as part of their NARS. Being the district level science based institution, KVK play the role of knowledge and resource centre for better knowledge management, but expectations from KVK should be confined to mandated activities.
4. All the extension/ KVK staff may be provided with mobile phones and there need to be provision for funds for operational expenses. Mobile based advisory may be provided by district based institution (eg. KVK/ATMA/BTT/CSC etc.). To enhance the uses of ICT in agriculture, there is a need of capacity building and training of users, KVK staff and farmers for exploiting the strength of ICT for extension purposes. Feasibility studies may be conducted

by KVK system formobile advisory to farmers and to find out the most preferred information. The recommendations emerging from on-farm trials conducted through KVKs need to become part of package of practices of the district for smooth horizontal expansion of the technologies.

5. ATMA as a reform measure needs to be projected as an innovative institutional arrangement at district level and not as a scheme or project. Hence, regular interfaces with frontline systems are necessary to dispel any misconceptions about ATMA and its importance as mainstream extension interface at cutting edge level.
6. Human resource development is critical to ensure transition of agricultural extension system for effective Agricultural Knowledge Management. Hence, there has to be a serious re-look at the policy of restricted recruitments. This problem is alarmingly acute in allied sectors like animal husbandry, fisheries, horticulture, sericulture, etc. which have significant contribution to agricultural GDP. It is, therefore, strongly recommended for rigorous HRD, training and capacity building of all stakeholders.
7. There is a need to promote transnational exchange of extension knowledge. When it comes to translate this imported knowledge into action, due care has to be exercised to test it for relevance, feasibility and profitability in terms of local conditions, and then adapt/adopt it. The implication is that one universal model fits all is not proper and we need to explore the ‘best fit model’ in terms of the local adaptability.
8. Entrepreneurial success depends on personal factors and external support systems. Hence, there is a need to strengthen the entrepreneurial attributes of farmers by capacity building and providing facilitative measures like credit, technical backstopping, policy support and sustained cooperation till they independently manage their enterprises, besides promoting entrepreneurship in value chains of livestock, fisheries, horticulture, apiculture, sericulture, etc.
9. Amongst various options of capacity building, awareness generation, frontline demonstrations, vocational education and training programmes and training/retraining of extension education functionaries are advocated. Frontline demonstrations which emphasis on learning by doing and seeing is believing for effective technology application are to be strengthened. Focus should also be made in print and electronic media.
10. Open and distance learning is considered as the most viable means for broadening education access, while improving the quality of education, advocating peer-to-peer collaboration and giving the learners, a greater sense of autonomy and responsibility for learning. The learning system needs to be adapted along the way, according to the situation and the adaptation required in that particular situation. Vocational training should also be imparted by

the scientists on village and *panchayat* levels. Need based pre-service and in-service training programmes, keeping in view of their educational level may be incorporated as essential component of human resource development. Training needs to be promoted for increased knowledge of rural women to change their attitude to a significant level regarding value added products.

11. In the context of climate change and other pressing agrarian challenges, ICT mediated Knowledge Management Strategies should focus on improving the access to risk management knowledge products and advisory through mobile phones. It is recommended that extension systems have in place, capacity building of farmers and extension workers in optimum use of mobile networks. Most of the advisories being issued through mobile facility are text based. Text based advisory can be used only by literate farmers. The voice based SMS in vernacular language can be easily understood by illiterate farmers. There is a need for NARS to focus on application of sensor/based networks for precision farming as there seems to be less focus in this direction. Low cost teleconferencing may be encouraged to enhance the knowledge sharing and problem solving capabilities of extension personnel.
12. Various Content Management tools used in different portals may be adapted for extension systems. Knowledge Portals may be developed with vernacular language content to meet out local needs. There is a need to work on strategies for technologically empowering input dealers as that of MANAGE's initiative for agri-business. More focus should be given to farmers' success stories through print media and ICT tools. Market Information Systems should be integrated with KVK system so that knowledge is provided along with market information. Quality content creation at national level with active participation of concerned crop research institutions and experts (In-service and retired) is need to be done.
- 13 Public/private partnership needs more emphasis in the process of agricultural knowledge management and the same should be a two-way process for accepting and sharing technologies. Extension through participatory approach needs to be holistic covering watershed development, technologies for higher productivity, increasing access to markets etc. Role of NGOs and co-operatives is significant in agricultural knowledge management and the same may be strengthened through effective convergence. Participatory irrigations management through group dynamics needs to be promoted at micro level. Concepts like village resource centre can be encouraged for agricultural knowledge sharing at grass root level. Strengthening of linkages between SHG's and different technical institutions and NGO's is important in the process of agricultural knowledge management.

14. The successful networking approaches like *Krishi Mahotsava*, Community radio, *Krishak Samithi*, *Samaj Shilpi Dampatti* Model, Satellite approach and innovative mode of agro advisory services need to be strengthened, process documented and upscaled. Participatory approach for managing the knowledge may be more effective if the primary stakeholders viz., the farmers may be successfully persuaded to share their part in terms of labour, partial operational cost, land and other requirements. Moreover, support for establishment and sustaining the farmers' club by related institutions shall further add to the success of participatory approach. Endogenous tourism needs greater attention by all the related partners / stake-holders for maintaining eco-sustainability in hill agro-ecosystem.
15. Climate changes are the broad based multidimensional issue. Prioritisation of short term and long term issues and goals for mitigation is necessary. There is urgent need for comprehensive study and systematizing the efforts in aggregating information on various aspects of climate change and its dissemination through development of a dedicated climate change portal. NRM and Extension Divisions of ICAR need to jointly organise a session on climate change and agriculture. In view of climate change, the climate resilient technologies should be tested and refined with traditional knowledge systems for their dissemination. The technology modules being developed by KVKs under NICRA should be replicated through convergence with line departments of State Governments.
16. In order to conserve the natural resources, resource conservation technologies should be promoted on large scale focusing mainly the soil and water. For promotion of resource conservation technologies and also to save labour with economy, custom hiring services for farm implements and machinery at *Panchayat* level should be made available to the farmers. For increasing input use efficiency with the objective of increasing factor productivity and profitability, appropriate technologies related to water and nutrient management should be popularized on large scale. In view of shrinking size of holding of the farm families, there should be ban on converting agricultural land to other purposes. Simultaneously massive programme should be launched for converting the degraded and wasteland into cultivable lands.
17. In order to increase the profitability in farming and ensuring sustainable livelihood security to the marginal and small farmers, secondary agriculture should be emphasized and appropriate technologies for post-harvest and value addition to the produce should be made available to the farmers.
18. Land consolidation should be given rethinking for promotion of mechanization and precision farming technologies. Land records of the farmers should be updated and made online and each and every farm family

should be provided a land possession card. Capacity building programme for agricultural labourers should be carried out in the field of improved agricultural technologies. Prices of agricultural commodities should be fixed keeping in view the regional realities and a Composite Input Cell Produce Procurement Centre should be established at *Panchayat* level. In view of labour problem in agricultural activities, the provision of Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA) should be extended to the agricultural activities.

19. In place of “Research for Development” the concept of “Extension for Research and Development” should be operationalized in view of addressing various current agrarian issues and agricultural knowledge management particularly in respect of emerging new risks in rainfed agriculture.



## ADVISORY COUNCIL

### Chief Patron

**Dr. S Ayyappan**

Secretary, Department of Agricultural Research and Education (DARE) &  
Director General, Indian Council of Agricultural Research (ICAR)  
Ministry of Agriculture, Government of India

### Patrons

**Dr R.S. Paroda**

Chairman, Haryana Kisan Ayog  
Former Secretary, DARE & DG, ICAR  
New Delhi, India

**Dr Mangala Rai**

Advisor (Agriculture) to the CM,  
Govt. of Bihar &  
Former Secretary, DARE & DG,  
ICAR, New Delhi, India

### Chairman

**Prof. A.G. Sawant**

Former Vice-Chancellor, Dr BSKKV,  
Dapoli & Former Member, ASRB &  
President, INSEE

### Co-Chairman

**Dr K.D. Kokate**

DDG (Agril. Extn.), ICAR, New Delhi,  
India & Vice-President, INSEE

**Dr R.R. Sinha**

Vice President, INSEE  
Former Director of Extension  
Dr PDKV, Akola, India

### Members

**Dr H.S. Gupta**

Director & Vice-Chancellor, Indian Agricultural Research Institute(IARI),  
Pusa, New Delhi, India

**Dr G. Trivedi**

Former Vice-Chancellor, Rajendra Agricultural University, Bihar, India &  
Vice-President, INSEE

**Dr C. Prasad**

Former Deputy Director General (Agricultural Extension.), ICAR, New Delhi, India

**Dr R.P. Singh**

Former Vice-Chancellor, Maharana Pratap University of Agriculture and Technology, Udaipur, India & Vice-President, INSEE.

**Dr K. Narayana Gowda**

Vice-Chancellor, University of Agricultural Sciences, Bangalore, India

**Dr P.N. Mathur**

Former Joint Director (Extension), Indian Agricultural Research Institute, Pusa, New Delhi, India

**Dr V.V. Sadamate**

Advisor (Agriculture), Planning Commission, Government of India

**Dr B.S. Hansra**

Director, School of Agriculture, Indira Gandhi Open University, (IGNOU), New Delhi, India

**Dr B.P. Sinha**

Former Head, Agricultural Extension, Indian Agricultural Research Institute, Pusa, New Delhi, India

**Dr Baldeo Singh**

Former Joint Director (Extension), Indian Agricultural Research Institute, Pusa, New Delhi, India & President, Indian Society of Extension Education, New Delhi, India

**Dr V. Veerabhadraiah**

Former Director of Extension, University of Agricultural Sciences, Bangalore, India & Former Secretary General, INSEE

**Dr L.B. Kalantri**

Former Director, Directorate of Sericulture, Government of Maharashtra, Nagpur, India & Secretary General, INSEE

**Dr A.K. Mehta**

Assistant Director General (Agricultural Extension), ICAR

**Prof. V Venkatasubramanian**

Assistant Director General (Agricultural Extension), ICAR, New Delhi, India

**Dr (Mrs). Krishna Sreenath**

Director, Directorate of Research on Women, Bhubaneswar, India

**Dr A.M. Narula**

Zonal Project Director, Zone-I, Ludhiana, India

**Dr A.K. Singh**

Zonal Project Director, Zone-II, Kolkata, India

**Dr A.K. Gogoi**

Zonal Project Director, Zone-III, Barapani, India

**Dr A.K. Singh**

Zonal Project Director, Zone-IV, Kanpur, India

**Dr N. Sudhakar**

Zonal Project Director, Zone-V, Hyderabad, India

**Dr Y.V. Singh**

Zonal Project Director, Zone-VI, Jodhpur, India

**Dr U.S. Gautam**

Zonal Project Director, Zone-VI, Jabalpur, India

**Dr S. Prabhukumar**

Zonal Project Director, Zone-VIII, Bengaluru, India

**Dr M.J. Chandre Gowda**

Additional Commissioner (Extension), Department of Agriculture and Co-operation, Ministry of Agriculture, Government of India



## ORGANIZING COMMITTEE

### **Chairman**

**Dr K.D. Kokate**

Deputy Director General (Agricultural Extension)  
Agricultural Extension Division  
Indian Council of Agricultural Research  
Krishi Anusandhan Bhawan-I  
New Delhi 110 012 India

### **Organizing Secretary**

**Dr K. Vijayaragavan**

Joint Director (Extension)  
Indian Agricultural Research Institute  
Pusa, New Delhi 110 012, India

### **Co-Organizing Secretaries**

**Dr P. Adhiguru**

Principal Scientist, Agricultural Extension Division  
Indian Council of Agricultural Research  
Krishi Anusandhan Bhawan-I  
Pusa, New Delhi 110 012, India

**Dr V.P. Chahal**

Principal Scientist, Agricultural Extension Division  
Indian Council of Agricultural Research  
Krishi Anusandhan Bhawan-I  
Pusa, New Delhi 110 012, India

## NATIONAL ORGANIZING COMMITTEE

Committees	Names
<b>1. Program &amp; Publication</b>	
<i>Chairman</i>	Dr K D Kokate
<i>Vice-Chairman</i>	Dr K Vijayaragavan
<i>Members</i>	Dr A K Singh, ZPD, Zone-IV Dr P Adhiguru Dr Premlata Singh Dr R N Padaria Dr V P Chahal Dr B T Rayudu Dr V Sangeetha
<b>1. (a) Sub-group for protocol</b>	Dr A K Mehta Dr J P Sharma Dr V P Chahal Dr P Adhiguru
<b>2. Resource Mobilization</b>	
<i>Chairman</i>	Dr A G Sawant
<i>Vice-Chairman</i>	Dr C Prasad
<i>Members</i>	Dr R R Sinha Dr K D Kokate Dr A K Mehta Dr Narayana Gowda Dr L B Kalantri Dr V V Sadamate Dr K Vijayaraghavan Dr A M Narula, ZPD, Zone-I Dr A K Singh, ZPD, Zone-II Dr A K Gogoi, ZPD, Zone-III Dr A K Singh, ZPD, Zone-IV Dr N Sudhakar, ZPD, Zone-V Dr Y V Singh, ZPD, Zone-VI Dr U S Gautam, ZPD, Zone-VII Dr S Prabhukumar, ZPD, Zone-VIII Dr M J Chandre Gowda Dr V P Chahal Dr P Adhiguru

Committees	Names
<b>3. Award Guidelines</b>	
<i>Chairman</i>	Dr P N Mathur
	Dr M J Chandre Gowda
<i>Member Secretary</i>	Dr P Adhiguru
<b>4. Award Committee</b>	
<b>a) Life time achievement award</b>	
<i>Chairman</i>	Dr C D Mayee
<i>Members</i>	Dr A G Sawant
	Dr K D Kokate
	Dr P N Mathur
<b>5. Prof. Dwarakinath Young Innovative Farmer Award</b>	
<i>Chairman</i>	Dr V R Kubde
<i>Members</i>	Dr V D Patil
	Dr V S Tekale
<i>Member Secretary</i>	Dr L B Kalantri
<b>6. Souvenir</b>	
<i>Chairman</i>	Dr S Prabhukumar, ZPD, Zone-VIII
<i>Vice-Chairman</i>	Dr J P Sharma
<i>Members</i>	Dr Premlata Singh
	Dr R N Padaria
	Dr P Adhiguru
	Dr C V Sairam, Zone-VIII
	Dr Lakhan Singh
	Dr K Dattatri
	Dr Keshav, Zone-III
	Dr R R Burman
	Dr S K Dubey
	Dr N V Kumbhare
	Dr V Sangeetha
	Dr Vasisht
	Ms Pooja Sah
	Sh Ajaib Singh
<b>7. Venue Management</b>	
<i>Chairman</i>	Dr Premlata Singh
<i>Vice-Chairman</i>	Dr R N Padaria
<i>Members</i>	Dr P Adhiguru
	Dr Manjeet Singh Nain

Committees	Names
<b>8. Media &amp; Publicity</b>	Dr C B Singh Dr B N Chattopadhyaya Sh Dasgupta Sh B K Chaturvedi Sh Rana Sh Ramesh Chandra Ms Anita Narayan
<b>9. Registration</b>	Dr J P S Dabas Dr B N Chattopadhyay Dr R R Burman Dr Manjeet Singh Nain Mr. Deepak Mr Harish Kumar
<i>Chairman</i> <i>Vice-Chairman</i> <i>Members</i>	Dr Ram Bahal Dr U S Gautam Dr Monika Wasan Dr Ramesh Chandra Dr S R K Singh Dr Prem Chand Ms.Nishi Sharma Ms Shashi Gupta
<b>10. Accommodation</b>	Dr V Venkatasubramanian Dr A K Singh, ZPD, Zone II Dr B K Singh Dr Rashmi Singh Dr N V Kumbhare Dr Rajendra Reddy, Zone-V Dr Keshav, Zone-I Shri. Ajab Singh Shri. Harish Kumar Shri. Madan Pal Shri. Kisan Singh, CATAT Shri. Kamlesh Kumar, Floriculture Shri. Satish Pal, Library
<i>Chairman</i> <i>Vice-Chairman</i> <i>Members</i>	

Committees	Names
<b>11. Food &amp; Hospitality</b>	
<i>Chairman</i>	Dr A K Mehta
<i>Vice-Chairman</i>	Dr N Sudhakar
<i>Members</i>	Dr V P Chahal Dr K M Mahadev Reddy Dr J P S Dabas
<b>12. Transport</b>	
<i>Chairman</i>	Dr A M Narula
<i>Vice-Chairman</i>	Dr S K Dubey
<i>Members</i>	Dr R R Burman Dr N V Kumbhare Dr J P S Dabas Shri. Ramesh Chandra Shri. Eswari Singh
<b>13. Facilitation Centre</b>	
<i>Chairman</i>	Dr Amrish Sharma
<i>Vice-Chairman</i>	Ms Shashi Gupta
<i>Members</i>	Ms Pooja Sha
<b>14. Poster Presentation</b>	
<i>Chairman</i>	Dr Monika Wason Dr V K Yadav, DMR Mr Harish Kumar, ATIC Ms Shashi Gupta
<b>15. Entertainment</b>	
<i>Chairman</i>	Dr J P S Dabas Dr Anna Poorna, Microbiology

## PROGRAMME

**November 9, 2011 (Wednesday)**

### **Inaugural Session**

Venue: Vigyan Bhavan, New Delhi

Lighting of Lamp	:	Smt. Pratibha Devisingh Patil THE PRESIDENT OF INDIA
Welcome	:	Dr A.G. Sawant President, International Society of Extension Education (INSEE), Nagpur, India
<i>Felicitations</i>		
Speech	:	Dr K.D. Kokate, Deputy Director General (Agricultural Extension), ICAR and Chairman, Organizing Committee
Speech	:	Dr S. Ayyappan, Secretary, DARE & DG, ICAR
Release of two Publications	:	Shri Sharad Pawar, Union Minister of Agriculture and Food Processing Industries and presentation of the first copies to THE PRESIDENT OF INDIA
Speech	:	Shri Sharad Pawar, Union Minister of Agriculture and Food Processing Industries, Govt. of India
Conferment of Awards (Seven)	:	THE PRESIDENT OF INDIA
Address	:	THE PRESIDENT OF INDIA
Vote of thanks	:	Dr R.R. Sinha, Vice President, INSEE

**November 9, 2011**

**Technical Session - 1**

**Theme I: Agricultural Knowledge Generation, Refinement and Dissemination**

1500 - 1830 hrs (Symposium Hall, NASC)

Chairperson : Prof. R.B. Singh  
Co-Chairperson : Dr P. Das  
Conveners : Dr R. Parshad and Dr V.P. Chahal

<b>1500 hrs</b>	<b>Panelists' Presentation</b>	<b>Speakers</b>
1.	Technology Integration for Diverse Farm Environments: Role of Krishi Vigyan Kendras	K.D. Kokate
2.	Knowledge Generation, Refinement and Dissemination in Horticulture	H.P. Singh
3.	Knowledge sharing in Livestock and Poultry Sectors for Poverty Alleviation Interventions	K.M.L. Pathak
4.	ICTs in Fisheries Sector-Successful Interventions	B. Meena Kumari and Nikita Gopal
5.	Basic Issues, Experiences and Futurology of Agricultural Extension System in India	C. Prasad
<b>1645 hrs</b>	<b>Lead Presentation</b>	
1.	Innovative Extension Models of IARI	K. Vijayaragavan
2.	Agricultural Knowledge Generation and Dissemination Processes- A Participative Approach	B.P. Sinha
3.	Cypriot Farmers' Preferences for Extension Service Communication Practices	Eftychia Charalambous-Patreese Ingram-Snow
4.	Analysis of Indigenous Knowledge System and Mechanism for Up Scaling	Nwakwasi R.N., Nnadi F.N. Matthews-Njoku
	<i>Chairperson's Remarks</i>	

**November 10, 2011**

**Concurrent Technical Session – 2**

**Theme I: Agricultural Knowledge Generation, Refinement and Dissemination**

**Sub-Theme: Recent Innovations and Reforms in Extension**

0900-1300 hrs (Lecture Hall, Second Floor, NASC)

Chairperson : Dr V.V. Sadamate

Co-Chairperson : Dr B.S. Hansra

Conveners : Dr M.J. Chandregowda and Dr Bharat Sontak

<b>0900 hrs</b>	<b>Presentation of Lead Papers</b>	<b>Speakers</b>
1.	New Dimensions in Agricultural Extension	P.N. Mathur
2.	The Needed Paradigm Shift in Extension Mechanism for Ushering into the Era of Ever Green Revolution and Commercial Agriculture	P. N. Jha
3.	Strategic Extension: An Innovative Approach for Inclusive Agricultural Development	R.P. Singh
<b>Presentation of Papers</b>		
1.	Agricultural Innovations in India – Experiences of ATMA Model	Krishna M. Singh and M.S. Meena
2.	Redesigning Agricultural Extension in India for Knowledge Management: Opportunities and Challenges	Bharat S. Sontakki, R. Venkattakumar and P. Vijender Reddy
3.	Impact of Integrated Pest Management-Farmers' Field School Programme on Vegetable Growers' Ecological Knowledge	Rakesh Sharma and Rajinder Peshin
4.	Front Line Extension Strategies Through Agricultural Knowledge Management: Experiences of KVKs in Arid and Semi -Arid Regions of Rajasthan and Gujarat State	R.S. Dohare, R.N. Kumawat and P.K. Satapathy
5.	Enabling Innovation Uptake by Resource Poor Farmers	Ujjwal Kumar and K.M. Singh
6.	Knowledge Level of Krishak Mitras About Improved Farming Practices	S.K. Thakur, D.S. Yadav and Pankaj Sood



7.	Impact of KVK Programme: A Correlation and Regression Approach	J.K. Das, D. Mazumdar and G. Mazumder
8.	Assessment of Yield in KVK Programme: A Multivariate Approaches	G. Mazumder, J.K. Das and D. Mazumdar
9.	Biodiversity Orientation in Extension: Concepts, Importance and Evaluation Technique	P. Venkatesh, V. Sangeetha and Lijo Thomas
10.	Enhancing Livelihood of Rural Women through FFS Approach	G. Nagesha, H. Hanumanthappa and Jayashree S.
11.	Extension Strategies to Foster the Knowledge Management on Agricultural Risks	Sendilkumar R., V. Ravichandiran and C. Cinthia Fernanadaz
12.	Transfer of Technology Approach for Integrated Pest Management (IPM) in Rice	P.V. Satya Gopal, K. Sreedevi and S.V. Prasad
13.	Transfer of Technology Clubs – A New Approach for Evergreen Revolution in West Godavari District, Andhra Pradesh.	E. Karuna Sree, S. Amarender Reddy and N. Veerabhadra Rao
14.	Assessing The Generation of Income and Employment Through Agricultural Technological Interventions in Northern Disadvantaged Districts of West Bengal	P.S. Patra, K. Pradhan, and S.C. Sarker
15.	Experiences Gained by the Safed Musli Growers About Its Cultivation	G.G. Chauhan and R.M. Naik
16.	Yield Gap Analysis in Chrysanthemum through Technology Dissemination	D.K. Mishra and A.K. Deshwal
17.	Flag Method of Extension- Simple and Effective Method in TOT	P. Gidda Reddy and P. Punna Rao
18.	Comparative Study of Two Farmer-Led Extension Approaches in the Kumaon Hills in Uttarakhand	S.R.K. Singh, K. Srinivas and N. Chandra
19.	Telephone- A Source of Agro-technology Information	C.K. Timbodia
20.	An Innovative Extension Model for Integrated Rural Development: A case of <i>Samaj Shilpi Dampati</i> Scheme	B.L. Manjunath, D.U.M. Rao and Rashmi Singh
	<i>Chairperson's Remarks</i>	

### Concurrent Technical Session – 3

#### Theme I: Agricultural Knowledge Generation, Refinement and Dissemination

##### Sub-Theme: Knowledge Generation and Dissemination

0900 - 1300 hrs (Committee Room-I, Ground Floor, NAAS)

Chairperson : Dr A.G. Sawant

Co-Chairperson : Dr B.P. Sinha

Conveners : Dr Jancy Gupta and Dr R.R. Burman

0900 hrs	Presentation of Lead Paper	Speakers
1.	Role of KVKs in Promoting Horticulture-based Crop Diversification	A.K. Mehta
2.	Causes of Yield Gap in Pulse Production in India	R. Bahal, S.K. Dubey and N.V. Kumbhare
3.	Adoption Gap as the Determinant of Instability in the Indian Legume Production: Perspective and Implications	M.S. Nain, Ram Bahal, and N.V. Kumbhare
4.	Integrated Farming System (IFS) for Enhancing Sustainable Rural Livelihood Security in Sahibganj and Pakur Districts of Jharkhand	S.C. Prasad, Valeria Lakra and Chaya Prasad
5.	Constraint Analysis and Impact of Improved Jute Cultivation	Rajendra Chapke
6.	Transfer of Agricultural Technologies in Hills of Uttarakhand – Some Experiences	Purushottam, Shailesh Kumar and S.R.K. Singh
7.	Integrated Technology Dissemination System (ITDS) for Enhancing Quality and Productivity of Vegetables through Market Integration	B. Balakrishna, M. Prabhakar and S.S. Hebbar
8.	Knowledge Management for Rural Livelihood Empowerment: An Experience from West Bengal, India	A.Sarkar, S.C. Barker and I Samajdar
9.	Knowledge Management in Agriculture-Ways and Means	M. Jagan Mohan Reddy, K. Madhubabu and Sailaja Kurra
10.	Participatory Approaches for Effective Dissemination of Technology	V.J. Tarde, V.S. Shirke and H.P. Sonawane
11.	Strengthening of Transfer of Technology and Promotional	N.S. Shivalinge Gowda

	Approaches Relating to Agriculture and Rural Development Programmes of IFFCO	and P. Pradeepkumar
12.	Realizing Yield Potential of Pulse Crops Through Front Line Demonstrations	J.S. Brar, Deepak Arora and G.S. Aulakh
13.	Knowledge and Adoption of Improved Animal Husbandry Practices by Livestock Keepers of Dausa District	Ramakant Sharma and R.A. Sharma
14.	Factors Affecting Knowledge Level of Vegetable Growers	Arvind Kumar
15.	Agricultural Knowledge Management: Global Extension Experience and the Way Forward	Samareskumar Das
16.	Role of Front Line Demonstration in Boosting the Pulse Production	Jagannath Pathak, Ajeet Singh, Ishwar Singh and Preeti Patel
17.	Knowledge Management in Dairy : Experiences and Challenges	Jancy Gupta
18.	Comparative Performance of Frontline Extension on the Productivity and Economics of the Mustard Grown in Rajasthan and Gujarat	R.N. Kumawat, Y.V. Singh, R.S. Dohare, PK. Satapathy and Shayam Das
19.	Realization of Potential of Single Bud Planted Sugarcane ( <i>Saccharum Qfficinarum</i> ) Intercropped with Pulses in Subtropics of Punjab	Sat Pal Saini, Amandeep Singh Sidhu, and Pritpal Singh
20.	Advanced Statistical Models for Analysis of Data in Adoption Research	Sivaramane N. and Sanjeev Panwar
	<i>Chairperson's Remarks</i>	

**November 10, 2011**

**Concurrent Technical Session - 4**

**Theme I: Agricultural Knowledge Generation, Refinement and Dissemination**

**Sub-Theme: Knowledge Generation and Dissemination**

0900 -1130 hrs (Committee Room-II, Ground Floor, NAAS)

Chairperson : Dr P.N. Jha  
 Co-Chairperson : Dr Baldeo Singh  
 Conveners : Dr U.S. Gautam and Dr V.B. Dixit

0900 hrs	Presentation of Papers	Speakers
1.	Structural and Functional Dynamics of Kerala Homegardens	Allan Thomas, S. Bhaskaran and C. Bhaskaran
2.	Quantifying Balanced Fertilizers Use Effect Through Yield Attributes, Crop Efficiency and Energy Relationships of Maize ( <i>ZeamayzLJ</i> ) Grown in Subtropical Acquicustorthernt Soils	Pritpal-Singh, Sat Pal Saini and Amandeep Singh Sidhu
3.	Front Line Demonstration- An Effective Tool for Enhancing Gram Productivity	Nirmaljit S.Dhaliwal, Gurdarshan Singh and Karamjit Sharma
4.	Performance and Preference of Broccoli Varieties Grown Under Low Hill Conditions of Himachal Pradesh	Ravinder Singh, Subhash Kumar and Reena Kaushal
5.	Prospect of Linseed Agriculture For Omega-3 Nutritional Security in The Country: An Action Research	Mahabaleshwar V.Hegde, Prakash B Ghorpade and Bharat Kakade
6.	Ornamental Fisheries of Kerala: A Case Study	Shyma J. and K.T. Thomson
7.	Front Line Demonstrations to Bridge the Yield Gap of Soybean in Jhalawar District of Rajasthan	Arjun Kumar Verma, Ram Raj Meena and R.L. Suwalka
8.	A Study of Satisfaction Levels of Farmers Using Navratna DAP : A Case Study of Jhansi District, U.P., India	Sudhakar Reddy

9.	Constraints Experienced by Coconut Farming Entrepreneurs in Production and Marketing of Coconut	S. Thyagarajan and G. Tamilselvi
10.	Impact of Frontline Demonstrations on the Yield of Cumin: A Case Study of Rajasthan	N.K. Sharma and M.L.Meena
11.	Facilitating Adoption of Effective Agronomic Package for Productivity Improvement in Paddy Through Experiential Learning Approach by KVK in Palakkad District of Kerala	Ameena M. and Yamini Varma C.K. and Moossa P.P.
12.	Assessment of Varied Pruning Intensities on the Performance of Starking Delicious Apple Under Farmers' Resource Management and Simultaneous Dissemination of the Technology Through Farmers Groups in North Western Himalayas	L.K. Sharma, Vinod Sharma and K.C. Sharma
13.	Front Line Demonstration: An Applied Approach for Boosting The Productivity of Pigeonpea in Eastern UP	R.K. Singh, V.B. Singh, and S.K. Kannaujia
14.	Role of Backyard Rabbit Farming in Poverty Alleviation: A Case Study	R.K. Singh, C. Rajkhowa and A.K. Singha
	<i>Chairperson's Remarks</i>	

**November 10, 2011**

**Concurrent Technical Session - 5**

**Theme I: Agricultural Knowledge Generation, Refinement and Dissemination**

**Sub-Theme: Indigenous Knowledge Systems**

1145-1300 hrs (Committee Room-II, Ground Floor, NAAS)

Chairperson : Dr P.L. Gautam

Co-Chairperson : Dr P.N. Mathur

Conveners : Dr C.L. Acharya and Dr Lakhan Singh

1145 hrs	Presentation of Papers	Speakers
1.	Sustainable Sugar Cane Initiative (SSI)- A Case of Generation, Evaluation and Dissemination of A Methodology	N. Loganandhan, Biksham Gujja and V. Vinod Gaud
2.	Indigenous Innovations in Agriculture: Some Cases of Farmers' Innovation from Uttar Pradesh and Uttarakhand	C.Y. Manikanhaiya, Lakhan Singh and A.K. Singh
3.	Quantifying Indigenous Knowledge (QulK): An Innovative Participatory Approach to Validate Indigenous Technical Knowledge	Sanjit Maiti, Sanchita Garai and K.K. Baruah
4.	Evaluation of Indigenous Traditional Knowledge Techniques for Safe Storage of Pulses - An On-Farm Study	Ravinder Kumar, R. Kooner and S.R Saini
5.	Indigenous Technical Knowledge (ITK) Utilization in Boro Rice by The Farmers of Kamrup District of Assam, India	R.K. Talukdar, S.Barman and A. Hussain
6.	Indigenous Water Management Practices and Its Sustainability Mechanisms in South India	P. Jaisridhar, O.K. Meena and G. Sankhala
7.	Indigenous Beliefs and Practices Adopted by Urban Women During Prenatal and Postnatal Periods	S. Laddha, S. Singhal and S. Singh
8.	Client-led Technology Generation: A Study of The Research System in Fisheries	J.C. Jeeva, J.V. Kumar and S. Balasuhramaniam
	<i>Chairperson's Remarks</i>	

**November 10, 2011**

**Concurrent Technical Session - 6**

**Theme I: Agricultural Knowledge Generation, Refinement and Dissemination**

**Sub-Theme: Agri-business Approaches and Entrepreneurial Development**

0900-1130 hrs (Committee Room-III, Ground Floor, NAAS)

Chairperson : Dr S.A. Patil

Co-Chairperson : Dr A.P. Srivastava

Conveners : Dr J.P. Sharma and Dr Rashmi Singh

0900 hrs	Presentation of Papers	Speakers
1.	Development of Farm-Based Entrepreneurship - A Suggested Framework	A.K. Singh, RP Pal and S.K.Roy
2.	Sustainable Rural Livelihood Through Agribusiness Initiatives in Backward Districts of Maharashtra	B.K. Kakade, RP Karmarkar and S.M. Patil
3.	Business Incubation- Prospects in Indian Fisheries	C.N. Ravishankar, Nitin Singh and Razia Mohamed A.
4.	Technology Transfer and Commercialization Through Business Incubation	D. Nag
5.	Sustainability of Farm Income Through Multi Enterprise Farming Intervention- A Case Study of Wynad District of Kerala	Devadas V.S., Sunil K.M., and Indiradevi P.
6.	Role of Future Markets in Indian Farming	Lavleesh Garg, Ashok Kumar and Rajinder Peshin
7.	Successful Farm Entrepreneurial Innovators of Rajasthan and Gujarat	RR Rohilla, R.S. Dohare and Y.V. Singh
8.	Success Story of Dairy Farmers of Gulbarga, Karnataka	Manjunath Patil, Ramesh B.K., Kantharaju V. and Shashikala S. Ruli
9.	Backyard Poultry Farming in Ambala District of Haryana	R.K. Dular, Upasana Singh and Ramesh Kumar
	<i>Chairperson's Remarks</i>	

**November 10, 2011**

**Concurrent Technical Session - 7**

**Theme I: Agricultural Knowledge Generation, Refinement and Dissemination**

**Sub-Theme: Gender Mainstreaming**

0900 -1130 hrs (Conference Room, Second Floor, NASC)

Chairperson : Dr C. Prasad

Co-Chairperson : Dr Krishna Srinath

Conveners : Dr Premlata Singh and Dr. K. Ponnuswamy

0900 hrs	Presentation of Papers	Speakers
1.	Food and Nutritional Security: A Gender Perspective	Premlata Singh
2.	SHG-led Gender Empowerment	Monika Wason, Premlata Singh and R.N. Padaria
3.	Mainstreaming Women Farmers to the Agricultural Extension Services in India: Perception of Extension Personnel	Uma Sah, S. Kumar and S.K. Singh
4.	Issue of Gender Mainstreaming in Agricultural Knowledge Generation and Dissemination in India: A Dream Yet to be Fulfilled	Surya Rathore
5.	Traditional Phulkari: A Successful Enterprise for Rural Women in Patiala	Gurupdes Kaur and G.R.S. Sodhi
6.	Women in Sericulture - Some Initiatives	Mukund V. Kirsur, Radhalakshmi Y.C. and Shetty K.K.
7.	Perceived Effect of Honey Bee Rearing on Crop Productivity. A Gender Perspective	K. Ponnusamy, M. Prusty and A.K. Shukla
	<i>Chairperson's Remarks</i>	



**November 10, 2011**

**Concurrent Technical Session – 8**

**Theme II: Capacity Development for Agricultural Knowledge Management**

0900-1300 hrs (Lecture Hall, Ground Floor, NASC)

Chairperson : Dr Mangala Rai

Co-Chairperson : Dr M.L. Madan

Conveners : Dr V. Venkatasubramanian and Dr T.P. Trivedi

<b>0900 hrs</b>	<b>Panelists' Presentation</b>	<b>Speakers</b>
1.	Capacity Building for Agricultural Knowledge Management: Challenges Facing the Agricultural Extension Profession	Murari Suvedi
2.	Design, Implementation and Effectiveness of Capacity-Oriented Workplace Learning in East Africa	Martin Mulder, Hansje Eppink and Leonoor Akkermans
3.	Feed The Future with the Graduates that Can Make an Impact in the World	Thomas H. Bruening, Melanie Miller-Foster and Ed Rajotte
4.	Current Issues in Livestock Sector and Animal Science Knowledge Management	M.C. Sharma and Rupasi Tiwari
5.	Enriching Knowledge: Empowering Farmers	A.K. Singh
6.	Towards Developing a Framework for Knowledge Management in KVKs	V.P. Chahal and K.D. Kokate
7.	Training Needs of Extension Personnel in Agricultural Engineering	Nirmal Kumar
8.	Training Modules for Promoting Buffalo Husbandry Among Different Categories of Respondents	V.B. Dixit, A. Bharadwaj and P. Sikka
9.	Competency Development in Agricultural Education and Extension	K. Ghadei
10.	Impact of Beekeeping Training Programme on Farm Women and Unemployed Youth of District Kullu (HP)	R. Lal, S.D. Sharma and J.K. Sharma

Annexures

11.	National Agricultural Science Museum and Its Role in Management and Knowledge Dissemination About Agriculture	Sushila Kaul
12.	Assessment of Training Needs of Fishery Officers of Tripura	D.K. Pandey
13.	Use of Semantic Reusable Learning Objects Technology in Open and Distance Learning	P.K. Jain and B.S. Hansra
14.	Training Needs Assessment of Academic Staff Members of Dr. PDKV, Akola	Umesh R.Chinchmalatpure
15.	Methods and Training Modules for Enhancing Management Skills Among Extension Professionals	Bharat Singh and A.P.S. Dhaliwal
16.	Appraisal of Agricultural and Allied Occupations' Training Course for Young Farmers of Punjab	T.S. Riar and Manjinder Singh
17.	Training Needs of Cotton Farmers on Organic Cotton Production Technologies	P. Prashanth, M. Jagan Mohan Reddy and I. Sreenivasa Rao
18.	Knowledge Indexing of Farmers for Designing Entrepreneurship Development Course in Seed Production Technology	Puja Srivastava and G.P.S. Sodhi
19.	Empowerment of Resource Poor Trainees Through Frontline Demonstration on Scientific Turkey Rearing	K. Devaki and P. Kumaravel
20.	An Assessment of Training Mode of Knowledge Dissemination Techniques for Rural People by NIRJAFT, Kolkata, India: Exploiting the Assets of Item Response Theory	Utpal Sen, S.B. Roy, S. Das and K. Mitra
	<i>Chairperson's Remarks</i>	

**November 10, 2011**

**Concurrent Technical Session – 9**

**Theme III: Use of ICT for Agricultural Knowledge Management**

0900 -1130 hrs (Symposium Hall, NASC)

Chairperson : Dr Panjab Singh

Co-Chairperson : Dr M. Moni

Conveners : Dr B.N. Chattopadhyay and Dr R.N. Padaria

<b>S.N.</b>	<b>Panelists' papers</b>	<b>Speakers</b>
1.	Opportunities and Challenges for Using ICTs for Agricultural Extension and Advisory Services in Africa	Kwadwo Asenso-Okyere and Daniel Ayalew Mekonnen
2.	Virtual Extension and Research Communication Network	Sophie Treinen
3.	Aurora Project- Integration and Education of Family Farmers in Rural Areas Using WiFi Connectivity and Computer of Plan CEIBAL	Jorge Ortiz Ramos and Edinson Aldao
4.	Teleconferencing – An Effective ICT Tool for Transfer of Agricultural Technologies	K. Narayana Gowda
5.	Use of ICT to Improve Risk management Knowledge on the Farm Level-Experiences From Kenya	Fritz Brugger
6.	ICT Mediated Agricultural Knowledge Management : Tools and Processes for Extension (Experiences of Indian Rice Knowledge Management Portal)	Shaik Meera N.
7.	Factors that Influence Farmer Information Search Behavior and Agricultural Information Needs- Case Study in Tamil Nadu, India	C.J. Glendenning, K. Asenso-Okyere, S.C. Babu and S.K. Govindarajan
8.	Factors Influencing Open Academy for Philippines Agriculture (OPAPA) as a Useful Delivery Strategy for Rice Information Extension	Rhemilyn Z. Relado and Rama B. Radhakrishna
9.	e-Choupal – An ICT Initiative for Empowering Indian Farmers	J.P. Tandon and Nirmal Reddy
10.	Scientific Animations Without Borders: A New Approach to Capture, Preserve and Share Indigenous Knowledge	Julia Bello-Bravo, F. Seufferheld and Barry R. Pittendrigh
	<i>Chairperson's Remarks</i>	

**November 10, 2011**

**Concurrent Technical Session – 10**

**Theme III: Use of ICT for Agricultural Knowledge Management**

1145 -1300 hrs (Conference Room, Second Floor, NASC)

Chairperson : Shri Suresh Kumar

Co-Chairperson : Dr V.P. Sharma

Conveners : Dr Anupam Mishra and Dr C. Himanshu

S.N.	Presentation of Papers	Speakers
1.	Short Message Service (SMS) as Rural Information Tool	V. Sangeetha, R.R. Burman and S.K. Dubey
2.	Role of ICTs in Mainstreaming Rural Women: Analysis of Content, Reach and Impact	Sajesh V.K., P. Ramasundaram and N.J. Kalaivani
3.	ICT Use in Rural Development – A Success Story	Nataraju M.S., Arun Babu A. and Lakshmana Reddy B.S.
4.	Effect of Training Through Information KIOSK on Knowledge Level of Farmers on Maize Production Technologies	I.J. Mathur, S.K. Intodia and Neha Singh
5.	Development of E-Learning Modules for Aquaculture Knowledge Management Through ICT Projects	P. Mahalakshmi, A.G. Ponniah and M. Krishnan
6.	Innovative Advisory Through CROPSAP	M.C. Ahire and P.B. Kharde
7.	ICT Based Interactive Multi Media Agriculture AdvisorySystem	Devendra Jalihal, S. Subramanian and A. Jhunjhunwala
8.	Dissemination of Agro-Met Advisory Bulletins Through ICTs	B.S. Meena
9.	Development of E-Learning Modules for Aquaculture Knowledge Management Through ICT Projects	P. Mahalakshmi, A.G. Ponniah and M. Krishnan
10.	Integration of SMS and Mobile Technology With Community Radio: Challenges, Barriers and Remedies	KrishanYadav, Bharat Singh and Satyakaam Malik
	<i>Chairperson's Remarks</i>	

**November 10, 2011**

**Concurrent Technical Session - 11**

**Theme III: ICT and Knowledge Management Approaches in support of Global Extension  
Systems-Towards Developing a Framework for Global e-Extension Academy**  
(ICAR-ISU Consortium Session)

0900 -1130 hrs (Board Room, First Floor, NASC)

Chairperson : Dr K.D. Kokate

Co-Chairperson : Dr John Lawrence

Conveners : Dr Dileepkumar Guntuku and Dr P. Adhiguru

<b>S.N.</b>	<b>Panelists Presentation</b>	<b>Speakers</b>
1.	Need of New Professionals in Designing ICT Mediated Extension Services	Sanjay Chaudhary
2.	Role of Telecenters in Providing Rural Extension Services	Ahamad Basheer Shadrach
3.	Participatory Video and Media Interaction for Agricultural Extension: Experiences from Digital Green	Rikin Gandhi
4.	Agropedia: A Knowledge Management Platform	N.T. Yaduraju
5.	e-Extension Platform	P. Adhiguru
6.	Extension: Past, Present and Future	Dileep Kumar Guntuku
	<i>Chairperson's Remarks</i>	

### Concurrent Technical Session - 12

#### Openness in Agricultural Information and Knowledge Sharing

#### APAARI Inaugural Session 14:00-14:45hrs (Symposium Hall, NASC)

Chairperson : Dr Raj Paroda

Co-Chairperson : Dr K.D. Kokate

14:00 hrs	Panelists Presentation	Speakers
1.	Welcome Remarks	Raj Paroda
2.	A Global Overview	Ajit Maru
3.	Regional Agricultural Information System (RAIS) for Knowledge Sharing	S. Attaluri
	Breaking into three groups	

**November 10, 2011**

### Concurrent Technical Session (APAARI) - 13 GROUPS-I Technological Issues to Usher Openness

14:50-17:15 hrs

(Lecture Hall, Ground Floor, NAAS)

Convener : Dr Paolo Ficarelli

1450 hrs	Panelists Presentation	Speakers
1.	Cases on Technological Issues on Mobile Devices	Paolo Ficarelli
2.	Technological Issues to Usher Openness	V.K. Bhatia
3.	Using ICT for Knowledge Generation, Refinement and Dissemination in Indian Agriculture	Bangali Baboo
4.	E-Agriculture Initiatives in Tamil Nadu Agricultural University for Accelerating Agricultural Profession and Improving Livelihood Status of Farming Community	P. Murugesu Boopathi
5.	Agricultural Research for Development (AR4D) Through Information and Communication Technologies	H. Chandrasekharan
	Group Discussion	

**November 10, 2011**

**Concurrent Technical Session (APAARI) – 14**

**GROUP-II: Institutional Issues to Usher Openness**

14:50-17:15 hrs (Committee Room-1, Ground Floor, NAAS)

Convener : Dr Ajit Maru

<b>1450 hrs</b>	<b>Panelists Presentation</b>	<b>Speakers</b>
1.	Cases on Institutional Issues: Global experiences	Ajit Maru
2.	Cases on Institutional Issues	S. Mauria
3.	ICTs for Agricultural Extension in India: Innovations, Lessons and Way Forward	R. Saravanan
4.	Web based Information Dissemination System for Agricultural Development in Jharkhand	B.K. Jha
5.	Envisioning e-Extension and Agricultural Knowledge Management	P. Adhiguru
	Group Discussion	

**November 10, 2011**

**Concurrent Technical Session (APAARI) – 15**

**GROUP-III: Community Issues to Usher Openness**

14:50-17:15 hrs (Committee Room-it, Ground Floor, NAAS)

Convener : Dr Rikin Gandhi

<b>1450 hrs</b>	<b>Panelists Presentation</b>	<b>Speakers</b>
1.	Cases on Community Issues: Experience of Digital Green	Rikin Gandhi
2.	Cases on Community Issues	K.D. Kokate
3.	ICT Enabled Knowledge Empowerment for Better Rural Livelihoods	Sreenath Dixit
4.	Evaluation of M-Agriculture in KAU- on ATIC's Agricultural Message Service Through Mobile Phones	Sreevalsan J. Menon
5.	Transfer of Paddy Cultivation Technology in College Development Block	V.S. Shirke
	Group Discussion	

### Concurrent Technical Session – 16

#### Theme III: Use of ICT for Agricultural Knowledge Management

1450 - 1715 hrs (Lecture Hall, Second Floor, NASC)

Chairperson : Dr N. Mohan Ram

Co-Chairperson : Dr Ashwini Srivastava

Conveners : Dr R.C. Agrawal and Dr Meharban Singh

Presentation of contributory papers

S.N.	Presentation of Papers	Speakers
1.	Role of ICT in Livestock Management and Animal Husbandry	A. Raut, Yash Pal and R.A. Legha
2.	Image Based Expert System for Rice Disease Identification: An Effective Extension Tool	Rohit Sharma, Chander Mohan Ohri and M.S. Gill
3.	Applicability of an Expert System in Livestock Production: An Opinion Study	V. Sasikala, R. Tiwari and M.C. Sharma
4.	'E-Velanmai' – An ICT Enabled Agro-Technology Transfer Model	C. Karthikeyan
5.	Use of Video Compact Disc (VCD) in Knowledge Dissemination	Archana Raj Singh and Anuradha
6.	E-Learning Readiness of the Scientists and Institutional Mechanism: A Study at CSWRI, Avikanagar	Debabrata Sethi, Raksha and L.R. Meena
7.	Application of Expert System in Agriculture	M. Sharma, Keshava and Ajaib Singh
8.	Use of Mobile Phones for Sustainable Production of Oilseed Crops With Special Reference to Castor	M. Padmaiah, G.D.S. Kumar and K. Alivelu
9.	Analysis of Kisan Mobile Advisory Service in South Western Punjab	Hardevinder Singh, Gurdeep Singh and Jagdish Grover
10.	Consortium for e-Resources in Agriculture (CeRA): A Resources Sharing Approach for NARS	Sarita Patle, H. Chandrasekharan and Amit Pandey
11.	Impact of Dissemination of Agriculture Knowledge Through Short Message Service (SMS) to the Farmers of Gulbarga District, Karnataka	Sidramappa V. Manige, Devaraj Nayak and Shashikala S. Ruli
12.	Telephone – A Source of Agro-Technology Information	Timbadia C.K. and C.D. Pandya
	<i>Chairman's' Remarks</i>	



**November 10, 2011**

**Concurrent Technical Session - 17**

**Theme-III: Use of ICT for Agricultural Knowledge Management**

1450 – 1715 hrs (Conference Room, Second Floor, NASC)

Chairperson : Dr S.L. Mehta  
Co-Chairperson : Dr P.K. Malhotra  
Conveners : Dr P.S. Pandey and Dr Shaik Meera

S.N.	Papers	Speakers
1.	ICT for the Use of Women Empowerment	P.P. Pal, A.K. Singh and A.K. Dewanji
2.	Content Analysis of IFFCO Kiosk at Pantnagar	Kumar Gaurav, Anup Prakash Upadhayay and Amardeep
3.	Agricultural -Knowledge Management System – Role in Improving the Rural Farming Community	M. Babu. K.S. Kurra and J.M. Reddy
4.	Cell phone– a Decision Support System for Sustainable Plant Protection of the District South 24 Parganas, West Bengal	L.C. Patel, C.K. Mondal and D.K. Roy
5.	Assessing the Potential and Use of Mobile Phones by Farmers	M.A. Ansari and Neha Pandey

**November 10, 2011**

**Technical Session (APAARI) - 18**

**Openness in Agricultural Information and Knowledge Sharing Session on  
Lessons Learnt and the Way Forward hrs**

(Symposium Hall, NASC)

Chairperson : Dr S. Ayyappan  
Co-Chairperson : Dr Ajit Maru  
17:30-18:30 hrs Groups' Recommendations Conveners  
Concluding Remarks Chair/Co-Chair

**November 11, 2011**

**Technical Session – 19**

**Theme IV: Networking for Agricultural Knowledge Management**

0900 - 1130 hrs (Lecture Hall, Ground Floor, NASC)

Chairperson : Dr T. Nandakumar  
 Co-chairperson : Dr Sudhir Bhargava  
 Conveners : Dr C.V. Sai Ram and Dr V.S. Shirke

S.N.	Presentation of Papers	Speakers
1.	Convergent Extension Education Governance Model for India: A Conceptual Paper on Networking for Agricultural Knowledge Management	S.N. Ojha and M. Krishnan
2.	Public Private Partnership (PPP) Approach – for sustainable development of agriculture	Nishi Sethi
3.	Farmers' preferences and their opinion towards public & private agricultural extension services under WTO regime	S. K. Meti
4.	Institutional Arrangements for Irrigation Water A Case Study in Orissa, India Management:	Souvik Ghosh
5.	The role of networks in knowledge management and innovations in Ethiopia and Rwanda	Teferi Mequaninte and Paul Thangata
6.	Progress and performance of microfinance in India	Pramod Kumar, T.S.V. Bangara Raju and V.P. Tyagi
7.	Intervention points at grossroot level in participatory process of watershed development and management programmes	Bankey Bihari
8.	Coordination Among Agencies Delivering Extension Services Under Agricultural Technology Management Agency	V. Lenin, Baldeo Singh and K. Vijayaragavan
9.	Economic empowerment of self-help groups through low cost mushroom cultivation	Narula, A.M Goyal, S.P Singh and Harinder
10.	Public-Private-Farmer Partnership for Developing Resource - Poor Farmers	V. Veerabhadraiah
11.	Entrepreneurship development through SHGs: Women Empowerment	Shashi Kanta Varma
12.	Enhancing Livelihood Security of Resource poor Farmers by Participatory Extension – Syngenta Foundation India's Experience	B. T. Seshadri
13.	Village Resource Centre (VRC) project in Kerala- strategies and issues of inter institutional linkages	P. Rajeev and Jiju Jaipal
	<i>Chairman's Remarks</i>	

**November 11, 2011**

**Concurrent Technical Session – 20**

**Theme IV: Networking for Agricultural Knowledge Management**

0900 - 1130 hrs (Training Room, Second Floor, NASC)

Chairperson : Dr M. Mahadeppa  
Co-Chairperson : Dr R.P. Singh  
Conveners : Dr Venkattakumar and Rohilla

<b>S.N.</b>	<b>Presentation of Papers</b>	<b>Speakers</b>
1.	Women Empowerment Through Self -Help Groups	Chander Kanta
2.	Impact of Field Demonstrations on Adoption of Improved Dairy Practices by Women Self Help Groups	Deepali Kapoor
3.	Status of Women Self Help Groups in Tamilnadu and Empowerment of Women Through Adoption of Animal Husbandry Technologies	P. Mathialagan
4.	Self Help Groups – A Budding Avenue for Women Empowerment	N. Mamathalakshmi and N.S. Shivalinge Gowda
5.	Analyzing the stakeholders' perceived attributes related to Cauliflower production in a participatory mode	Soma Biswas
6.	Self-help groups and their sustainability for socio-economic empowerment of rural women : Field experiences	Suman Agarwal
7.	Agricultural Knowledge Management through Women's Collective Action – a case of Women Dairy Cooperatives	Amtul Waris
8.	Technology Integration in Coconut Enterprise for Sustainable Livelihood Involving Groups of Small Farmers-Field Experiences of CPCRI	C. Thamban, P. Anithakumari, S. Jayasekhar and K. Muralidharan
9.	Knowledge Management for Rural emocratization and Participatory Planning at the Grassroots: Dimensions, Issues and Prospects	Jiju P. Alex
10.	Opinion and preferences of farmers vis-à-vis the service of Private Extension Service Providers: A study in Tarai region of Uttarakhand	Itigi Prabhakar
11.	Reorganisation of Extension System: Perspectives of Farmer's Organisations	S.Parthasarathi
12.	Practice Pro active Policy: Road mapping for sustainable Farmers' Organizations-A Concept Paper	B. Seema, C. Bhaskaran and AllenThomas
13.	Empowerment of Rural Women Through Self-Help Groups	R. M. Naik, G.G. Chauhan, M.R. Prajapati and B.A. Desai
14.	Self Help Group Formation a significant milestone to women empowerment	Meena Siwach, A.S. Dahiya, Sulakshana Sharma and Sunita Ahuja
	<i>Chairman's remarks</i>	

**November 11, 2011**

**Concurrent Technical Session – 21**

**Theme IV: Networking for Agricultural Knowledge Management**

1145-1300 hrs (Committee Room-I, Ground Floor, NASC)

Chairperson : Dr S.N. Puri  
 Co-chairperson : Dr Murari Suvedi  
 Conveners : Dr V.J. Tarde and Dr S.K. Dubey

<b>S.N.</b>	<b>Presentation of Papers</b>	<b>Speakers</b>
1	Constraints in Privatized Agricultural Technology Delivery System of Tata Kisan Sansar	Anirban Mukherjee, Ram Bahal, R. Roy Burman and S.K Dubey
2	Production potential and profitability of Potato Based Crop Sequence under Rainfed Mid-Hill condition of Uttarakhand	Chinpilhing Kipgen
3	Participatory approach for Agricultural Knowledge Management	Warule D. R.
4	Networking: A necessity for Agriculture Knowledge Management	Rakesh Nanda
5	Field Experiences in Farmers' Organizations/Water Users Associations in Mharashtra Through Collective Action	R.B. Bharaswadkar Prof. T.S. Gayke
6	Sustainable Development Project Development Through Endogenous Tourism in PPP Mode : A Case Study on ECO CAMP	Atul Borgohain
7	Knowledge Sharing Experimentations in Farm Sector in India	Lakhan Singh and A.K. Singh
8	Organic jute cultivation through-public-private-partnership	S.K. Jha, Shailesh Kumar and Shamna A.
	<i>Chairman's Remarks</i>	

**November 11, 2011**

**Concurrent Technical Session – 22**

**Theme V: Current Agrarian Issues and Agricultural Knowledge Management**

0900-1130 hrs (Lecture Hall, Second Floor, NASC)

Chairperson : Dr J.N.L. Srivastava

Co-Chairperson : Dr P.S. Minhas

Convener : Dr O.M. Bambawale

S.N.	Presentation of Papers	Speakers
1.	Extension Strategies for Enhancement of Human and Social Capital to Manage Underutilized Crops for Combating Climate Change in the Uttarakhand Himalayas	Anuradha Dutta, M. Dutta, Vijay Yadav, T.P.Singh, Abhishek Bahugana
2.	Recycling of Organic Wastes by Different Composting Techniques for Sustainable Agriculture	A.B. Singh and A. Subba Rao
3.	Climate Change and Health	Kanchan Sandhu
4.	Climate Change Adaptive Strategies used by Rural Households in the Niger Delta Region of Nigeria	Chukwudumebi Leticia Egbule and Agwu Ekwe Agwu
5.	Cover and Management Research on Horticultural Crops for Nutrient Management and Conservation Planning	Girish K. Panicke
6.	Livestock Sector vis- a-vis Climate Change: Implications for Adaptation, Mitigation Strategies and Policy	P.V.K. Sasidhar
7.	Role of Extension Education in Agricultural Conservation & Climate Change Mitigation with Special Reference to J & K	Afifa S. Kamili
8.	Intervention Points at Grossroot Level in Participatory Process of Watershed Development and Management Programmes	Bankey Bihari
9.	Development, diffusion and impact of farmers' innovation: A case of System of Rice Intensification (SRI)	Johnson. B
10.	Print Media Journalists' Coverage of Climate Change News in Nigeria	Agwu Ekwe Agwu and Chiebonam Justina Amu
11.	Farmers' Knowledge Perceptions and Adaptation Measures Towards Climate Change in South India and Role of Extension in Climate Change Adaptation and Mitigation	K. Ravi Shankar
	<i>Chairman's Remarks</i>	

**November 11, 2011**

**Concurrent Technical Session – 23**

**Theme V: Current Agrarian Issues and Agricultural Knowledge Management**

0900-1130 hrs (Conference Room, Second Floor, NASC)

Chairperson : Dr G. Trivedi

Co-Chairperson : Dr Partha R. Das Gupta

Conveners : Dr R.P. Singh Ratan and Dr P.B. Kharde

<b>S.N.</b>	<b>Presentation of Papers</b>	<b>Speakers</b>
1.	Implementation of Conservation Agriculture Technologies in Punjab	Ajaib Singh, Keshava and Mandeep Sharma
2.	Sustainable Agriculture Development in An Environmental Perspective	Talata C Ratnayake, G. Prasad Babu, Jancy Gupta and N.K.A. Rupasinghe
3.	Impact of Climate Change on Livelihood Security in Drought Prone Area of District Jhansi in Bundelkhand Zone of UP : A Case Study	Mukesh Chand, Pravesh Kumar, Dev Leena Singh, Nishi Roy, Jiya Lal Gupta, R. B. Singh, Dhananjai Singh and T. S. Reddy
4.	Irrigation-Micro Irrigation Management and Climate Change	S. Amarendra Reddy, E. Karuna Sree and A. Srinivas
5.	Demonstration of System of Rice Intensification Method of Rice Cultivation in Bishnupur District, Manipur	R.K. Imotomba, Sakhen Sorokhaibam, A. Tarajit, A.K. Gogoi and A.K. Singha
6.	<i>On-Farm</i> Participatory Technology Development on Resource Conservation Technologies in Rainfed Upland Paddy in Mandi District of Himachal Pradesh	Anil K. Choudhary, S.K. Thakur, Amar Singh, D.S. Yadav, Shakuntla Rahi, Pankaj Sood and Kalpna Arya
7.	Hand-Guided Cloning – Prospects and Challenges to Augment Bubaline Production and Diversity Conservation	Singla, SK; B.Singh; Chuahan, MS; Manik, RS and Palta P
8.	Assessment of Microbial Inoculants in Combination with NPK Fertilizers on the Performance of Vegetable Pea under Farmers Resource Management in Mid Hill Sub-Humid Conditions of Himachal Pradesh	Vinod Sharma, K C Sharma and L.K. Sharma
	<i>Chairman's Remarks</i>	

**November 11, 2011 (Friday)**

**Valedictory Session**

November 11, 2011 (Friday) Venue: NASC Complex, New Delhi

Welcome and Introductory remarks	: Dr K D Kokate, Deputy Director General (Agril. Extn.)
<i>Felicitations of Guests</i>	
<i>Presentation of Recommendations</i>	
Theme-I: Agricultural Knowledge Generation Refinement and Dissemination	: Dr V P Chahal
Theme-II: Capacity Development for Agriculture Knowledge Management	: Dr V Venkatasubramanian
Theme-III: Use of ICT for Agricultural Knowledge Management	: Dr R N Padaria
Theme-IV: Networking for Agricultural Knowledge Management	: Dr R P S Rattan
Theme V: Current Agrarian Issues and Agricultural Knowledge Management	: Dr R P S Rattan
Openness in Agricultural Information and Knowledge Sharing (APAARI)	: Dr S Attaluri
Special Theme: Framework for Global e-extension Academy and e-extension platform of ICAR(ICAR-ISU Consortium)	: Dr Dileepkumar Guntukku
Release of Publications (Four) by Chief Guest	: Shri Harish Rawat, Hon'ble Union Minister of State for 'Agriculture and Food Processing Industries' and Parliamentary Affairs
Remarks by the Chair	: Dr A G Sawant, President of INSEE
Special Remarks by the Guest of Honour	: Dr Gurbachan Singh, Chairman, ASRB
Address by Chief Guest	: Shri Harish Rawat, Hon'ble Union Minister of State for 'Agriculture and Food Processing Industries' and Parliamentary Affairs
Vote of Thanks	: Dr L B Kalantri, General Secretary, INSEE

### **Publications**

1. Book on Making a Difference in Farming.
2. CD on Expert System for Precision Computation of Automatic Weather Station Data.
3. International Journal of Extension Education.
4. Release of Asian Journal of Extension Education.

### **Best Research Paper Award**

1. Paper published in Asian Journal of Extension Education Vol. 27.
2. Paper published in Asian Journal of Extension Education Vol 28.







ICAR at a Glance

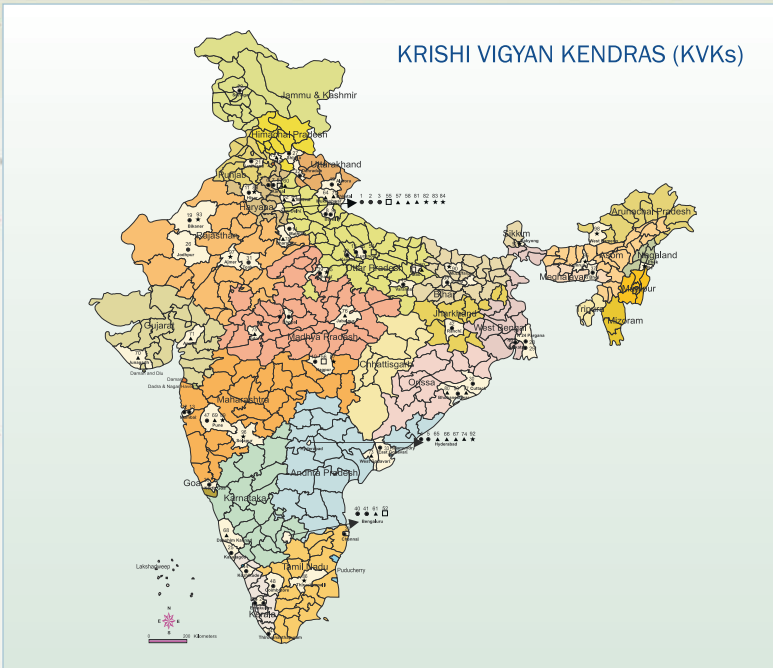
- About us
- Vision 2030
- ICARPs & National Projects
- Research Institutes
- Zonal Project Directorates
- Krishi Vigyan Kendras
- Technologies and Knowledge Resources
- Commercialisation of Technology
- ICAR Awards 2012

Divisions

- Crop Sciences
- Horticulture
- Natural Resource Management
- Agricultural Engineering
- Animal Science
- Fisheries
- Agricultural Education
- Agricultural Extension
- Knowledge Management
- Administration
- Finance

Important Links

- AgriCat
- Agricultural Scientists Recruitment Board
- AgriInnovate India Limited
- ARS Scientists Forum
- Consortium for e-Resources in Agriculture (CeIA)
- CSICAR
- Department of Agricultural Research and Education
- Design Resources Server
- ICAR Library
- ICAR Visitor March
- International Agricultural Organisations



ip@

Quick links

- ICAR e-Courses
- Weather Based Agro Advisory
- Current Seasonal Bulletin
- District wise Agriculture Contingency Plan
- Agricultural Universities
- Capacity Building Program
- Employment
- Scholarships & Fellowships
- Capacity Building Programmes 2002-12
- Examinations/Results
- ICAR Non-Plan Budget Book 2012-13
- Guidelines / Circulars / Notifications of Education Division
- Results-Framework Documents
- The Draft Delegation of Powers in ICAR for comments
- Guidelines for Uniformity in Contents of Websites of all the ICAR Institutes
- GPF Status for HQ employees
- Record Retention Schedule

Resources

- National Agricultural Science Centre Complex
- International Conference Facilities
- International Guest House
- Museum
- Virtual Tours of Museum
- Offices at NARS Complex

