

**Proceedings of International Conference
on
Invigorating Transformation of Farm Extension towards Sustainable
Development: Futuristic Challenges and Prospects INTFES-18**

The International Conference on Invigorating Transformation of Farm Extension towards Sustainable Development: Futuristic Challenges and Prospects – INTFES 18 was held at Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, India on 9 & 10 March 2018. The conference was organized by Extension Education Society (EES), Coimbatore.

Background

Extension Education Society – The Extension Education Society established in 1990, takes up various activities to promote the cause of Extension Scientists in India by providing a platform for extension scientists in the country to meet periodically for discussion, exchange of information, findings and experiences on different aspects of agricultural extension. The Society works as an interface between researchers and the extension professionals. The Journal of Extension Education (JEE) is a peer-reviewed journal in the field of extension education published by the Extension Education Society since 1990. It publishes articles representing original work, analytical papers and papers grounded in theory in the field of Extension Education. The journal is published in both print and online versions and is available at www.extensioneducation.org

INTFES -18 – The importance of agricultural extension in the global agricultural development has been well documented. Majority of the farmers are still small landholders for whom agricultural extension is their primary gateway to access information on scientific farming techniques. Almost 80 percent of the world's extreme poor live in rural areas where most are dependent on Agriculture. Investing in agricultural extension and focusing on boosting the income of smallholder, foresters, fisher folk, rural women and youth are the key to achieving inclusive and equitable growth while tackling the root causes of poverty and hunger. A comprehensive approach to tackling food insecurity and malnutrition while promoting sustainable agriculture is an important step to achieve zero hunger (UN Sustainable Development Goal-2) and ushering in a new era of sustainable food production must be achieved for which agricultural extension could play a major role. Of late, extension systems in the developing nations are facing serious challenges where an effective extension system would lay a significant role in development process by disseminating information, new technologies, innovative approaches by adopting innovative extension methods and tools, decentralization process and participatory approaches. In India, the intensive and indiscriminate usage of inputs such as fertilizers,

pesticides, high yielding varieties and machinery had resulted in bio-system degradation, poor soil health, soil erosion, air and water pollution and depletion of natural resources, This after-effect, coupled with burgeoning population and decreasing irrigated area had complicated the situation, warranting an immediate solution for promotion of sustainable agriculture. There has been a growing realization that traditional extension models have not been sufficiently effective in promoting adoption of sustainable agricultural practices. Today's agricultural extension need to take into consideration environmental implications, social issues and overall economic growth within the agricultural sector. It is almost impossible to realize inclusive good agriculture in the absence of an efficient and effective extension system. Strenuous efforts are being made to raise productivity levels through effective extension – scientist- farmers contacts, improving out-reach capacity and focusing n electronic transfer of technology through manpower training and allocation of resources. Nevertheless, agriculture is in dire need of new extension models and approaches to overcome the futuristic challenges. Hence, global agricultural extension needs a complete transformation by reorienting the existing extension approaches and identifying alternative, sustainable approaches that are tailor-made to the needs of the society. Keeping these views in mind, an International Conference on “Invigorating Transformation of Farm Extension towards Sustainable Development: Futuristic Challenges and Prospects – INTFES 18” was planned and organized by the Extension Education Society, Tamil Nadu Agricultural University, Coimbatore during 9-10 March 2018 in Coimbatore.

This conference brought together leading academic scientists, researchers, extension functionaries, policy makers, research scholars and other stakeholders. It served as platform to have detailed interaction on the prevailing trends, concerns, practical challenges encountered and solutions adopted in the field of Agricultural Extension which included merits and demerits of existing extension approaches across the world.

Inaugural Session: 09 March 2018

The Vice Chancellor of Tamil Nadu Agricultural University, Dr. K. Ramasamy inaugurated the conference in the presence of Dr. V.V. Sadamate, Former Adviser (Agriculture), Planning commission, Govt. of India Dr. S.N.A. Jinnah, Chief General Manager, NABARD, Chennai, Dr. V. S. Sidhakaran, Principal Advisory Officer, Tea Research Institute, Sri Lanka, Dr. Paul Mansingh, Professor, Ambo University, Ethiopia, Dr. Nageeb Ibrahim Bakheit, Professor, El neelain University, Sudan, Dr. N.K. Sudeep Kumar, Director of Extension Education, TANUVAS, Chennai, Dr. H. Philip, Director of Extension Education, TNAU, Coimbatore, Dr. M. Asokhan, Professor and Head, TNAU, Coimbatore, Dr. P.P. Murugan, Professor and Head, TNAU, Madurai and Dr. D.Puthira Prathap, Chief Editor, JEE and Principal Scientist, ICAR-SBI, Coimbatore.

Dr. M. Asokhan, Vice-President, EES welcomed the dignitaries.

Mentioning that there has been no conference of this magnitude on Agricultural Extension in this part of the country for a long time, Dr.H.Philip, President, Extension Education Society & Director of Extension Education, TNAU, in his Theme address said that this conference has been organized to share the prevailing trends in extension in different regions and the concerns and challenges encountered. Informing that the entire manuscript submission process for the conference was conducted online, he said that altogether 457 abstracts were received under six themes.

Launch of online JEE

The Online JEE was formally launched by Dr. K. Ramasamy, the Vice Chancellor of TNAU.

Introducing the journal, Dr. D. Puthira Prathap, Chief Editor of JEE mentioned that JEE online runs using Open Journal Systems (OJS) and is available in www.extensioneducation.org . It doesn't charge readers money for access to scientific content. As of now, JEE is being indexed/abstracted in CAB, CrossRef, J-Gate, DOAJ, CIARD/RING, CrossRef, , Google Scholar, IndianScience, MIAR (Information Matrix for the analysis of Journals), ROAR (Registry of Open Access Repositories) and Indian Science Abstracts (NISCAIR), to name a few. JEE utilizes the LOCKSS preservation system to create a distributed archiving system among the participating libraries and follows APA style of referencing. Authors do not need to print, photocopy, and mail papers. - The site is social media – enabled too. Each JEE article is assigned a DOI (Digital Object Identifier) number. The author retains the copyright. All articles are under Creative Commons Licence Attribution; Non-Commercial; ShareAlike4.0. JEE, is committed to ensuring ethics in publication and quality of articles as defined by COPE (Committee of Publication Ethics) , he added. He informed that JEE is the only Indian Extension journal to be indexed in DOAJ - Directory of Open Access Journals, as of now. Following this, a brochure of JEE was released.

Inaugurating the Conference, Dr. K. Ramasamy, in his address, appreciated the role played by extension researchers and extension workers in increasing the agricultural production in the country despite reduced land, labour and water. However, reforms in the functioning of the extension system need to be introduced , especially in promoting public-private partnerships , networking of markets and assessing farmers' loan availing behavior. Extension professionals should come out with specific recommendations on alternate crops in the delta region of Tamil Nadu in view of the prevailing water crisis, he added.

Dr. S.N.A.Jinnah, Chief General Manager, NABARD in his Special address pointed out that the agricultural extension system is undergoing a paradigm shift in the country. Earlier, extension was involved in 'lab to land' programmes intensively whereas, nowadays a new category of farmers viz., Farmer scientists are being encouraged by the extension system.

Dr. V.V.Sadamate, Former Adviser (Agriculture), Planning Commission, Govt. of India in his Special address emphasized the importance of convergence of extension efforts at block level, which is crucial for the success of extension programmes. He also underlined the need for extension workers in agriculture and allied sectors to collect feedback from farmers and pass it on to the research system regularly.

Finally, Dr.P.P..Murugan, Secretary, EES proposed the formal vote of thanks.

Participants

About 400 participants including five overseas delegates registered for the meeting. Scientists from Indian Council of Agricultural Research Institutes, State Agricultural Universities, Krishi Vigyan Kendras, Banks, Non Government Organizations and Private Industries, Research Scholars and Students took part in the conference.

Sessions

Ten sessions including two plenary sessions, six technical sessions, poster session, inaugural and valedictory session were held during the two day conference.

Plenary Session

- Chairperson** : **Dr. H. Philip, Director of Extension Education, TNAU, Coimbatore**
- Co- Chairperson** : **Dr. D. Puthira Prathap, Principal Scientist, ICAR- SBI, Coimbatore**
- Rapporteurs** : **Dr. P. Balasubramaniam, Professor (AEX), ADAC&RI, Trichy,**
Dr. C. Karpagam, Senior Scientist, ICAR- CICR, Coimbatore

Table 1.
Lead Lectures presented

Sl.No.	Talk	Speaker
1.	Addressing Challenges and Reforms in Agricultural Extension for Effective Performance & Enhanced Impact	V.V. Sadamate, Former Adviser (Agriculture), Planning Commission, Govt. of India
2.	Innovative ICT applications in Agricultural Extension – the TNAU Experience	N.Sriram, H. Philip & M.Senthilkumar, TNAU
3.	Strengthening Animal Husbandry Extension Services for Increased Livestock Productivity and Enhanced Income	Dr. N.K.Sudeep Kumar, TANUVAS
4.	Specialty Agriculture : Farmers' Perspectives	Dr. S. Prabukumar, Former ZPD, Bangalore
5.	Indigenous Knowledge and Sustainable Agricultural Development	Dr.M.Sundaramari, Gandhigram Rural Institute, Gandhigram
6.	Digital tools for technology dissemination process	Dr. N. Kishore Kumar, KAU, Kerala
7.	Innovative Extension Strategies for Sri Lanka's Tea Plantation Sector	Dr. V.S.Sidhakaran, Tea Research Institute, Sri Lanka
8.	Challenges facing Agricultural Research, Education and Extension in India	Dr. S. Senthil Vinayagam, ICAR-NAARM, Hyderabad
9.	Review of Agricultural Extension approaches in Ethiopia	Dr. Paul Mansingh, Ambo University, Ethiopia
10.	Farmer Producers Company – Strategies for Doubling the Farmers Income	Dr. R.Venkattakumar, ICAR-IIHR, Bangalore
11.	The Role of Farmers' Organizations in Major Irrigation Projects: The Case of Gezira Schemes in Sudan	Dr. Nageeb Ibrahim Bakheit, Elneelain University, Sudan
12.	Strategic Extension Approaches for doubling of farmers income in Indian aquaculture sector	Dr. C.V.Sairam, ICAR-CIBA, Chennai
13.	Is Open access empowering extension researchers? : case of Open Access Journals	Dr. D. Puthira Prathap, ICAR-SBI, Coimbatore

14.	Attracting, Sustaining and Motivating Youth in Agriculture – Opportunities, Challenges and The Way Forward	Dr. P. Gireesan, Rajiv Gandhi National Institute for Youth Development
15.	Gender Mainstreaming and Sustainable Agriculture	Dr. Charles Jeeva, ICAR-CIWA, Bhubaneswar
16.	Role of Extension Research in Professional Development	Dr P. Sethuraman Sivakumar, ICAR-CTCRI, Thiruvananthapuram
17.	The Power of Farmer Innovation in Farmer FIRST Programme (FFP)	Dr. P Venkatesan, ICAR-NAARM, Hyderabad

TECHNICAL SESSION I

Theme Area: Sustainable Extension Approaches for Technology Delivery

Chairperson : **Dr. Senthilvinayagam, NAARM, Hyderabad**

Co- Chairperson : **Dr. V.S. Sidhakaran, Sri Lanka**

Rapporteurs : **Dr. M. A. Vennila, Assistant Professor (Agricultural Extension)**

Dr. M. Nirmaladevi, Assoc.Professor (Agricultural Extension)

Dr. R. Manimegalai, PC, KVK, Tirur

There were 38 presentations made in this session. Papers on technology delivery through FFS for Clean milk production, technology transfer for livestock farmers, eco-friendly pest management in paddy, technological backstopping to overcome infertility in dairy cattle, climate oriented extension, Market led extension, attitude of farmers on rabbit farming, constraints in the ATMA system, adoption of drip irrigation system, effectiveness of dairy service, Analysis of FPOs, , Communication patterns Cluster approach for technology delivery, enhancing the livelihood of tribal farmers, training needs, farmer participatory research and performance of Self Help groups were the major topics deliberated.

Recommendations

- ❖ Studies on the impact of eco- friendly management practices may be taken up for all the pests and diseases

- ❖ Possibility to include Community approach in all the areas may be studied
- ❖ Comparative studies on the Present ATMA system with previous systems may be taken up
- ❖ Extensive studies on Farmers Producers Organisation may be taken up
- ❖ In-depth studies on the practical constraints faced by farmers in adopting the micro irrigation may be studied
- ❖ Studies on Farmers Field Schools for all pest, disease and nutrient management in crop and animal husbandry may be taken up.

TECHNICAL SESSION II

Theme Area: Technology Assessment for Sustainable Agriculture

Chairperson : **Dr. C. V. Sairam, ICAR-CIBA, Chennai**

Co- Chairperson : **Dr. P. Venkatesan, ICAR-NAARM, Hyderabad**

Rapporteurs : **Dr. T. Saravanan, KVK, Vridhachalam**
S.Subash, ICAR-NDRI- RS, Bangalore

Altogether, 42 papers were accepted in this session, of which, 28 were presented.

Major themes of the papers were cluster frontline demonstrations on oilseeds, pulses, combating climate change, technologies in poultry production, integrated farming systems, integrated pest management in rice, Integrated crop management , popularization of varieties, drudgery reduction etc.

Based on the presentations and the discussion that followed, the following recommendations were made:

- ❖ Successful technologies of frontline demonstrations may be taken up for large scale adoption through convergence approach
- ❖ In case of technologies on variety/breed, emphasis to be given on seed village concept mode.
- ❖ In case of Integrated Crop Management, critical technologies to be identified, prioritized and focused.
- ❖ Extension strategies need to vary based on agro climatic and cropping/farming system and socio economic factors.

- ❖ Participatory Rural appraisal (PRA) techniques need to be periodically done in operational villages.

TECHNICAL SESSION III

Theme Area: Stocktaking of Extension Research and Strengthening of Extension Education

- Chairperson** : **Dr.N. Kishore Kumar, KAU, Kerala**
- Co- Chairperson** : **Dr.P.Sethuraman Sivakumar, ICAR-CTCRI, Thiruvananthapuram**
- Rapporteurs** : **Dr. M. Ramasubramaniam, AP (AEX), AC&RI, Madurai**
Dr. Nazreen Hassan, AP (AEX), AC&RI, Killikulam

There were 22 papers in the session out of which 13 were presented. Based on the presentations and the discussion that followed, the following observations and recommendations were made:

- ❖ Social Network Analysis has gained lot of importance due to the formation of farmers collectives like Farmer Producer Companies. From the presentation made on Social Network analysis, it is recommended that more studies on dynamics of interaction in Farmer Producer companies may be conducted to get to know the reasons for success or failure or sustainability of groups.
- ❖ The Livelihood Sustainable Index (LSI) developed for paddy and cassava, may be tried for various crops grown in other districts and states also.
- ❖ It is recommended that an institutional mechanism should be in place for water budgeting and suggesting crops in line with water availability
- ❖ It is recommended that various logistic regression models may be used by Extension researcher if they confront with categorical dependent variables.
- ❖ Extension methodology workshops may be conducted by societies such as Extension Education Society (EES), from time to time at regional, state and national level to take Extension researchers into confidence about innovative regression models.

- ❖ It is recommended that more research studies are warranted in 'Adaptive learning' of e-resource materials by various stakeholders of Agriculture

TECHNICAL SESSION IV

Theme Area: ICT and Technology Delivery

Chairperson : **Dr. R. Venkattakumar, ICAR- IIHR, Bangalore**

Co- Chairperson : **Dr. Gireesan Krishnapishatroti, RGNIYD, Sriperumpudur**

Rapporteurs : **1. Dr.M.Shanthasheela,, FC&RI, Mettupalayam**
2. Dr.Periyar Ramasamy, AP (AEX), ADAC&RI, Trichy

Altogether, 22 papers were presented in this session. ICT tools presented under this theme were Mobile apps, Facebook, Social media, WhattApp, YouTube, Radio and television.

Based on the presentations and the discussion that followed, the following observations and recommendations were made:

- ❖ Need based synergy and convergence of compatible ICT tools has to be developed
- ❖ Networking projects on ICT applications to be initiated for the benefit of large number of farmers
- ❖ Create awareness on the positive and negative consequences of social media
- ❖ Monitoring mechanism has to be developed for authenticated agricultural information delivery through social media
- ❖ YouTube and other video tools are a potential medium for promoting production technologies in agricultural and allied sectors, which could be effectively tapped by extension professionals
- ❖ Data repository has to be created for ITK, identified by both scientist and farmers and preserved for wider usage

TECHNICAL SESSION V**Theme Area: Gender and Rural Youth for Sustainable Development**

Chairperson : **Dr. Santha Govind, Annamalai University**

Co- Chairperson : **Dr. Charles Jeeva, ICAR-CIWA, Bhubaneswar**

Rapporteurs : **Dr. G. Lethadevi, ICAR-NIANP, Bangalore**

Dr. A. Janakirani, CC&RI, Madurai

Based on the presentations and the discussion that followed, the following observations and recommendations were made:

- ❖ Focus should be given to entrepreneurial empowerment of women by the research and development institutions
- ❖ Invigorating Technological and Institutional interventions has to be taken care
- ❖ Extension services may be enhanced in remote villages for women economic upliftment
- ❖ Gender budgeting has to be developed for women empowerment
- ❖ Proper recognition has to be given for women in terms of work allocation and labour cost
- ❖ Capacity building programmes has to be increased in rural areas in order to increase the entrepreneurship activities
- ❖ Women friendly equipment can be introduced in order to reduce drudgery
- ❖ Emphasis should be given for kitchen/roof gardening to improve the nutritional security
- ❖ Rejuvenation of rural youth clubs, strengthening ICT linkage in villages among the youth
- ❖ Basic infrastructure facilities, capacity building, forward and backward linkages and adequate incentive from government are the pillars of attracting youth to agriculture and bringing up more entrepreneurs in agriculture

TECHNICAL SESSION VI

Theme Area: Futuristic Challenges and Prospects in Sustainable Agricultural Development

Chairperson : **Dr. K. N. Selvaraj, TNAU, Coimbatore**

Co- Chairperson : **Dr. R. Sendhilkumar, KAU, Kerala**

Rapporteurs : **1. Dr.S.Kalaivani, AC&RI, Thanjavur**
2. R.Senthilkumar, ICAR-CIAE, RS, Coimbatore

Altogether, 27 oral presentations of this theme brought out wide range of issues and recommendations on crop insurance, water conservation technology organic agriculture, agro based entrepreneurs, tribal welfare, climate change, dairy sector, Post harvest technology and Information and Communication Technology.

The major recommendations that emerged from these presentations and the following discussion were :

- ❖ Production strategies for crop and livestock like using water poverty index to overcome water crisis, promoting industry based agro forestry, increasing storage facilities for jasmine, speeding up soil health scheme and screening of good breeds for commercial purpose.
- ❖ Marketing Strategies like strengthening of market intelligence on coleus cultivation, promoting new generation cooperatives and shortening value chain to increase the farmers share .
- ❖ Mitigation / adaptation strategies like disaster assessment for crop and livestock, wider awareness on insurance and better insurance delivery, stakeholder analysis for tribal livelihood security.
- ❖ Utilizing ICT Technologies for sustainability like digitizing farmers data, voice messages for management of livestock apart from radio and mobile phones

VALEDICTORY SESSION (10 MARCH 2018)

Dr. S.Usharani, Principal Scientist, Central Institute of Cotton Research welcomed the gathering.

Dr. Y.G.Prasad, Director, Indian Council of Agricultural Research -Agricultural Technology Application Research Institute (ATARI), Hyderabad, delivered the Valedictory address during the valedictory session of the Conference.

Delivering the Valedictory address, Dr Prasad said that such international conferences provide an opportunity for sharing of knowledge on various extension approaches being practised in other countries for customizing to local situations. The average monthly income of an Indian farmer is only around Rs.6400/- at present;. To double it by the year 2022, there should be increase in productivity, decrease in cost of production, increase in income and adoption of the best package of practices. Value addition at farm level is one of the effective ways of increasing the income of the farmers, he added.

Delivering the Presidential address at the valedictory function, Dr. H. Philip, President, Extension Education Society (EES), Director of Extension Education and the Organizing Secretary of the Conference, mentioned that over 400 delegates from different parts of the world had attended the conference. The conference had six technical sessions besides a plenary session, wherein renowned extension experts delivered talks on the burning issues in the field of agricultural extension, he said. The 'Journal of Extension Education', whose online open-access version was launched during the conference, would help in sharing of prevailing trends in extension in different parts of the world, and the concerns and the challenges encountered by the extension professionals, he added. He hoped that the recommendations that emerged out of the deliberations would find a place in the policy documents of research and extension institutions.

Dr. D. Puthira Prathap, Chief Editor, Journal of Extension Education and Principal Scientist, ICAR-Sugarcane Breeding Institute proposed the formal vote of thanks at the valedictory session.

Senior doyens in the field of Agricultural Extension were honoured by the Chief Guest. As many as fifty awards were given away and eleven senior experts in the field of agricultural extension were honoured during the valedictory session of the conference. Dr. P. Sivaraj & Dr. S. Sangeetha bagged the prestigious EES (Extension Education Society) *Young Scientist* awards.

Glimpses of INTFES-2018



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