

Agriculture Extension Systems : Issues and Strategies for Convergence

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The National Development Council has visualized an overall growth rate of 10 percent for XI Plan for which agricultural sector has to contribute a growth rate of about 4.1% which is in fact require a concerted effort. It is now widely accepted fact that sound agricultural development is essential for overall economic progress. Given its range of agro ecological setting and more than 120 million farmers, agriculture is faced with a great diversity of needs, opportunities and prospects. Therefore, there is an immediate need of a vibrant, dynamic and innovative approach to be adopted for agricultural extension. If it is to respond successfully to the new challenges posed, greater attention will have to be paid to information based technologies, convergence of extension efforts by different agencies to strengthen means of dissemination to transmit the information to farmers.

The major concern is duplication of efforts with multiple agencies doing extension work without convergence. A coordinated effort is a must to synergise and converge these efforts at the district and below to improve the performance of various stake holders. This paper examines the current scenario of the public extension system and issues related to the convergence of extension services functioning in the country.

Current Extension Scenerio:

Extension in this context includes all those agencies in the public, private, NGO and community based initiatives that provide a range of agricultural advisory services and facilitate technology application, transfer and management.. While public sector line departments, mainly the Department of Agriculture was the main agricultural extension agency in the 60's and 70s, the last two decades have witnessed the increasing involvement of private sector, NGOs, community based organisations and media. In the public sector, the extension machinery of the state Department of Agriculture (DoA) reaches down to the block and village level. The village extension workers of the DoA continue to be an important source of information for farmers in India, even though information is clearly targeted at grain production, visits are irregular, and the service is pre-occupied with the implementation of government schemes linked to subsidies

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and subsidised inputs. With the external support drying up with the end of the T&V (Training and Visit) system of extension in the early 1990s, states have been left to fund their extension machinery and this has led to considerable weakening of public sector extension.

In the case of public sector extension, the major reform in recent years has been the establishment of a district level co-ordinating agency, the ATMA (Agricultural Technology Management Agency), in 28 pilot districts with the World Bank support. Under ATMA, grass root level extension is mainly channelised through the involvement of BTTs (Block level Technology Teams) and FACs (farmer advisory committees), farmer groups/ farmer interest groups and self help groups. ATMA is a district level autonomous agency entrusted with the role of agricultural technology management in the district. The district collector/deputy commissioner heads ATMA Governing Body, with members drawn from the line department, KVKs, farmers and NGOs.

The number of KVKs (Krishi Vigyan Kendras) funded by the ICAR has increased during this period. Presently 562 KVKs are established in the country. The motto is to cover each district with one KVK with a mandate of technology application through OFTs, demonstrations and training. It is an institutional approach and is comprehensive in nature. It functions on farm based model with a built in research-extension linkage through a multi-disciplinary team. It ensures feedback and feed-forward through participatory management. It is the largest research based extension body in the country by the ICAR at the district level. However, the effective reach of these KVKs is marginal mainly due to inadequate linkages with other development agencies. Moreover, their main focus is on technology testing, assessment and application under farmers' condition through conducting on-farm trials, demonstrations and training.

Extension services in the case of animal husbandry and fisheries continue to remain weak. While public sector extension arrangements have weakened, the number and diversity of private extension service providers has increased during last two decades. These include NGOs, producer associations, input agencies, media and agri-business companies. Many provide better and improved services to farmers, but their effective reach is limited and many of the distant and remote areas and poor producers are neither served by the public nor the private sector.

Based on the experiences gained from the pilot district, the Ministry of Agriculture, Government of India in 2004-05 decided to expand the ATMA model across all the districts in the country. Apart from bringing some additional resources for extension activities to be decided at the district level in consultation with farmer representatives, ATMA is yet to fully address many of the institutional constraints affecting extension performance.

Extension continues to be funded as part of central and state level schemes/programmes without much operational freedom at the local level, though the strategic research and extension plans (SREP) under ATMA envisage bottom up planning for extension. While the farmers require a wider range of support to address the emerging challenges, extension mainly functions as an agency for technology

dissemination. Most of the organizations including the public sector departments continue to work in isolation. Marketing extension has been a recent addition but is understood and implemented mostly as provision of output price information in various markets and this is highly inadequate to address the challenges in marketing. Other extension support facilities created include, farmer training centres at the district level; SAMETI (State Agricultural Management Extension and Training Institute) at the state level, EEI (Extension Education Institute) at the regional level; and MANAGE (National Institute for Agricultural Extension Management) at the national level.

Convergence of Extension Services:

There are many extension service providers in the field, providing different kinds of useful services like information and service support to farmers. They are state, central government agencies, agribusiness companies, agripreneurs, input dealers, manufacturing firms, NGOs, farmers organisations and progressive farmers. There is duplication of efforts with multiplicity of agents attending extension work without convergence. There should be coordinated attempt to synergise and converge these efforts at the district and below to improve the performance of various stakeholders.

Some of the issues related to the convergence of extension services are:

- What type of institutional arrangement could be made keeping in view of the operational convenience, for achieving an effective convergence?
- What is the framework of reference and strategies for such convergence?
- Identification of need for convergence, drawing a convergence model, operational steps for convergence and coordinating the identified activities for effective convergence.
- What is the operational working plan for such convergence?

The critical areas in which such convergence effort is required are:

- Farmer empowerment and farmer organisational development
- Technology backstopping and management
- Public private partnership's
- Frontier areas for extension, HRD and skill development

An exercise has been made to indicate the possible convergence in the above critical areas of extension and presented given below.

1. Farmer empowerment and farmer organisational Development

As a first step the details of the areas of capacity building exercise in terms of training, method, or procedure of capacity building, infrastructure required need to be worked out. It is beyond doubt that combination of human performance with proper resource structure lead to development. An effective convergence of method/ procedure, Agency/ infrastructure no doubt will ensure proper use of scarce resources, time and energy. The details of the areas of capacity building, method/ procedure adopted and agency/ infrastructural convergence are given here under:

Sl. No.	Areas of capacity building	Method / Procedure	Agency/ Infrastructure/ convergence
1.	Farmers knowledge, skill and attitude		
	i) Breeding ii) Feeding iii) Health care and disease prevention iv) Value addition and marketing	i) Training/ Demonstration ii) Exhibition & farmers fair iii) Extension literature iv) Mass Media v) Use of ICT and cyber extension vi) Field campaign	KVKs, SIRD, NIRD, IIE, ICAR & SAU Extension system. State level livestock development agency and Department of Veterinary and Animal Husbandry.
2.	Leadership, communication, skill and managerial development		
	i) Strengthening of village level leadership ii) Developing inter-personal communication iii) Managerial skills such as planning, organizing, coordination etc.	i) Training/ Role play ii) Success stories and cases iii) Management games	KVKs, EEI, IIE, MANAGE, NIRD & SIRD

3.	Organisational Skills		
	<ul style="list-style-type: none"> i) Organisation of farmers groups. ii) Organisation of producer/ cooperatives/ societies/ union or federations. 	<ul style="list-style-type: none"> i) Training in leadership ii) Training in group dynamics & group formations iii) Performance linked specialized training iv) Record keeping v) Financial management 	<ul style="list-style-type: none"> i) Cooperative training institute. ii) IIE iii) NIRD/ SIRD iv) EEI
4.	Marketing and Business Skills		
	<ul style="list-style-type: none"> i) Market Analysis ii) Demand and supply Forecasting iii) Supply chain, Cold chain and networking iv) Retail marketing and creation of market network 	<ul style="list-style-type: none"> i) Lectures and skills training by practical ii) Exposure visits to progressive states and leading co-operative dairies 	<ul style="list-style-type: none"> i) Cooperative training institutes ii) MANAGE iii) IIE/EEI iv) NIRD/SIRD v) Leading management institutes in Rural development.
5.	Establishment of grass root level infrastructural facilities		
	<ul style="list-style-type: none"> i) AI Centres ii) Mobile unit iii) Fodder demonstration units iv) Milk Collection centres v) Bulk Coolers vi) Chilling centres vii) Rural Marketing Network and centres viii) Establishment of Milk Processing centres at regional level ix) Value addition and manufacturing facilities at district level 	<ul style="list-style-type: none"> i) Analysis of the types of breed requirement and quantity of semen requirement ii) Ensuring quality semen supply and availability of skilled insemination iii) Training of rural youths for paid insemination services. iv) Preparation and submission of suitable projects for the establishment of milk collection centres, chilling centres and rural marketing centres through funding agencies. 	<ul style="list-style-type: none"> i) Department of Animal Husbandry and Dairying ii) State Milk Federation iii) NDDB iv) NEDFI v) NABARD

2. Technology Backstopping and management

Technological backstopping to the centrally sponsored schemes such as NREGS and SGSY is a must at the ground level leading to sustainable development in rural areas. The appropriate technological support will help to create grass root level assets/ infrastructure through these schemes which in turn will help as a local resource in their command to undertake sustainable agriculture. Such an attempt ensures self reliance and less external input dependence agriculture. For example, under the NREGS one such attempt was made in Sikkim state which by means of convergence brought the organisations like Sikkim Government, KVKs, IGNOU, NIRD, ICAR Research Complex for NEH Region, and Zonal Coordinating Unit in solving the problems of farmers by using the NREGA fund. A multidisciplinary team constituted for the purpose visited villages in the South Sikkim District and analysed the grass root level problems, technological solutions and recommendations problems, technological solutions and recommendations for action were made. The problem areas identified were:

- Improper use and water management
- Non availability of seeds and planting material
- Lack of resource support for development of livestock

The details of the problems, technological solution and Action point suggested is briefly given under:

(1) Land Use and Water Management

Problems:

- i) Non-availability of water in lean seasons.
- ii) Unscientific soil working techniques
- iii) Problem of wasteland and non utilization of sloppy land

Technological solution:

- i) Soil and land use planning

- ii) GIS/ GPS aided development plan
- iii) Rain water harvesting
- iv) Development of irrigation channels using natural gradients by remote sensing
- v) Sloppy Agricultural Land Use Technique (SALT)
- vi) Soil and moisture conservation in hilly terrain, contour terracing across the slope for drought prone areas.

Recommendations/Action points under NREGS:

- i) Creation of local water shed
- ii) Creation of public drainage/ irrigation channels
- iii) Siltage removal of natural drainage/ irrigation channels/ water bodies.
- iv) Soil and moisture conservation by afforestation programme on public lands/ slopes/ degraded forests etc.
- v) Common property resource management

(2) Non Availability of Quality Seeds and Planting Materials

Problems:

- i) Poor quality of seeds and planting materials for ginger, orange and other food, vegetable crops as well as fodder.
- ii) Non availability/ lack of technical know-how on seed production.

Technological solutions:

- i) Use of seeds and planting material production technologies

- ii) Biotechnological means such as tissue culture
- iii) Production of hybrid seeds, establishment of progeny orchards.

Recommendations/ Actions Points:

- i) Establishment of community nursery facilities
- ii) Creation of community owned progeny orchards and planting materials production farms and operationalising it under community ownership or through SHGs.

(3) Livestock and Poultry Development:**Problems:**

- i) Non availability of quality semen of high yielding breeds
- ii) Inadequate fodder availability
- iii) High cost of concentrate feed

Technological Solution:

- i) Frozen semen and AI techniques
- ii) Embryo transfer
- iii) Establishment of community bull farms
- iv) Hybrid fodder varieties such as CO₃/ CO₄/ Lucerne/ Berseem etc.
- v) Silage and hay making
- vi) Enrichment of paddy straw
- vii) Mineral manure lick

Recommendations/ Action Points:

- i) Establishment of semen production centres and mobile units for reaching the unreached through AI.
- ii) Training the rural youth for AI as lay inseminators
- iii) Establishment of community fodder farms/ satellite fodder farms in the wastelands, sloppy lands etc.

Convergence: NREGA, Ag. Dept, KVK, IGNOU, ICAR, Panchayat Institution, NGOs, Farmer Interaction group, Spice Board etc.

3. Swarnjayanti Gram Swarojgar Yojana (SGSY) – SHGs – Technology - Financial Institutions – Linkages

The SGSY provides credit cum subsidy for various income generating activities of SHGs including those related to irrigation and land development, horticulture, animal husbandry and dairy development, fisheries, village and agro based industries, rural handicrafts, handlooms etc. The key issue under SGSY is a social mobilization of rural poor into SHGs; setting up of sustainable micro enterprises by selection of key economic activities depending on available resources, occupational skills, appropriate technology and; financial assistance through a mix of Bank Credit and Government Subsidy; infrastructure, technology and marketing support with forward and backward linkages.

The appropriate technologies developed by ICAR and KVKs for these sectors need to be demonstrated and disseminated through SHGs. One such example of convergence of efforts by KVK, ICAR Institute, DRDA and SHGs in developing entrepreneurship development in East Godavari district, Andhra Pradesh is given here under.

A total number of 293 SHG groups with 2158 beneficiaries from 143 villages established 514 household units. Each individual is earning about Rs. 1000 to Rs. 3000/ month depending upon the activity they have taken up. The KVK CTRI, Rajamundry developed very good linkages with various financial institutions and rural development agencies of state, central and NGOs in a more effective way for economic viability and sustainability of these units in rural areas. These organisations besides acting as a resource centres and programme sponsors, provided financial support, scheme and subsidy components. The details of linkages is given in the figure presented below:

4. Case Studies on Convergence:

Under this section five case studies drawn across the country are presented. The case studies presented shows the details of the technology source, output and outcome achieved due

to the convergence efforts of different stakeholders in the development process. The details are presented here under.

CASE – 1

Banana Fibre Extractor: A case of successful convergence:

The manual fibre extraction process from banana stem is a cumbersome process. In the manual process an expert person can hardly produce a maximum quantity of 500 to 600 grams of dry fibre in eight hours. It is a tedious process involving patience, drudgery by means of straining palms of the person who extracts the fibre. Blackening of nail ends, finger tips and nail ulcers are some of the common problems associated with the manual extraction process. In addition it also creates a poor working condition due to the spillage of juice and waste pit in and around the extractor. Due to this cumbersome process with less economic output the extraction of fibre from the pseudo stems of banana has not receive desired attention and therefore no commercial extraction of the fibre is made from the pseudo stem of banana even though good quality of fibre material can be extracted and used for commercial purposes.

The survey conducted by the KVK- CTRI confirmed the above problems associated with the banana fibre extraction process. Therefore, it was felt that a suitable user friendly fibre extraction device which is highly essential to solve the above problem is essential. An inter institutional project team consisting of V. Venkatasubramanian, R. Sudhakar, K.Deo Singh from CTRI, Hyderabad designed and developed the need based user friendly machine “Banana Fibre Extractor” for the commercial exploitation of unutilized Banana wastes such as pseudo stems, peduncles and leaf stalks.

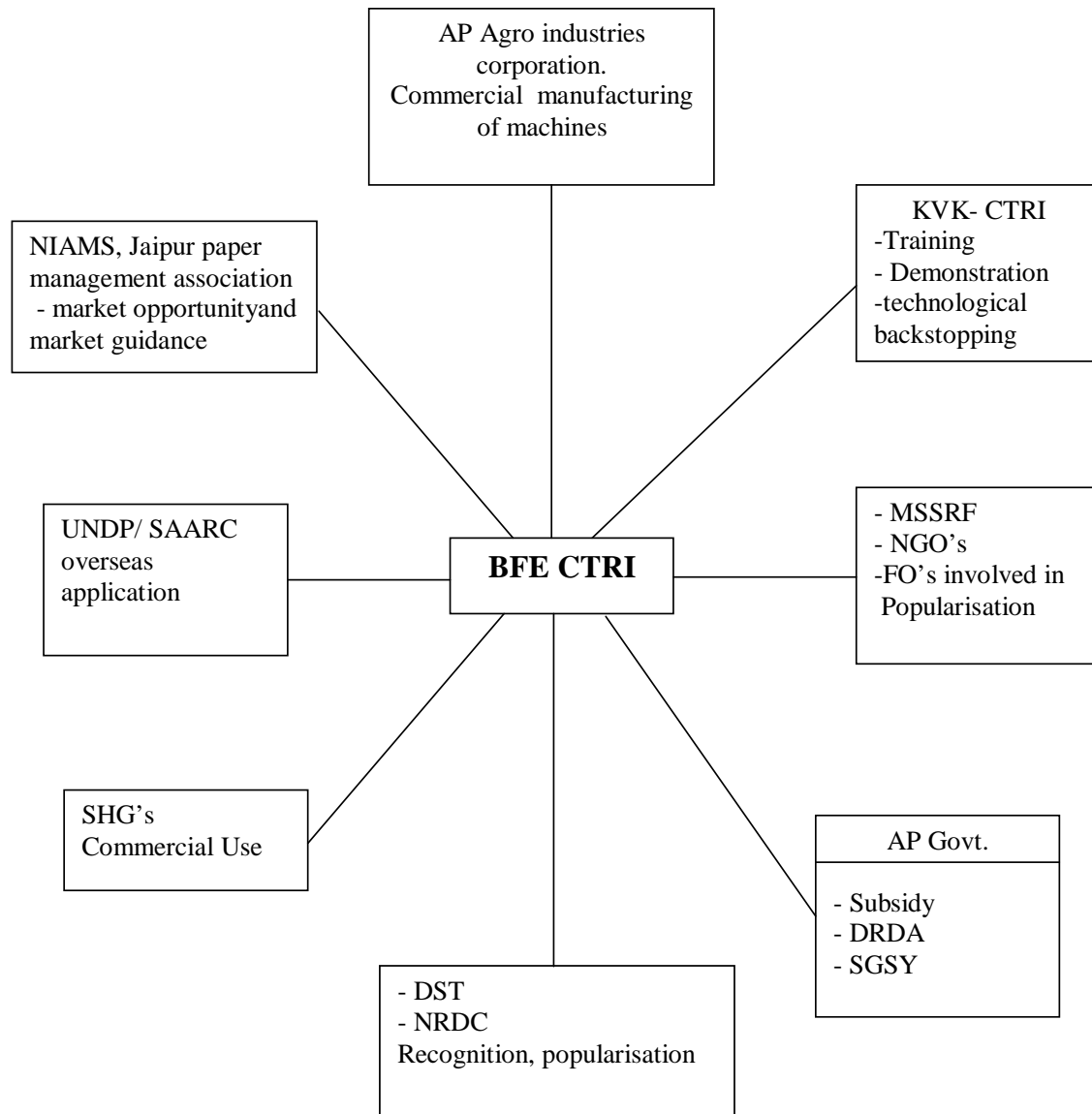
Machine Highlights

- Reduces drudgery
- 50 times increase in fibre production compared to manual process
- User friendly and economic
- Less maintenance cost and safe to operate
- Clean work atmosphere and clean hands
- 25 kgs of fibre production/ day against 500 grms through manual operation.
- Superior quality fibre in terms of length , softness, strength and colour.

The machine helps banana cultivators to get an additional income of Rs. 2500/ per acre @ Rs. 5/ per plant with an average of 500 plants in an acre.

How convergence happened?

- Andhra Pradesh Agro industries Ltd, Hyderabad purchased the commercial manufacturing rights of the machine.
- Andhra Pradesh announced 50% subsidy for the machine and ensured the training and distribution of the mission through DRDA and SGSY.
- KVK-CTRI offered the training/ technology backstopping demonstration of the machine.
- NGOs like Abhyodhay, Harsek Parshed, Amma Society, MSSRF, etc. were involved in the popularization of the machine in their respective operational areas.
- SHGs taken up the fibre production activities.
- DST, GOI selected the machine for meritorious invention award and popularized the machine through their channels/ exhibition.
- Machine was imported by the South Asian Centres and recently to Trinidad under UNDP programme for livelihood assurance project.
- In NE Region alone, more than 60 machines are under operation and recently all the Home Science SMS of the KVKs – NE region were trained by KVK, CTRI, sponsored by Zonal Project Directorate, Zone- III.



Thus, the BFE technology has been successfully commercialized for the benefit of farming community and rural women for their income generation activity using the locally available materials which are otherwise known as wastes.

CASE-2: Mithun Identification Using Microchip Installation: Arunachal Pradesh

Traditionally the mithuns are identified with the identification markings made through ear cut, branding, tattooing etc. since these methods can be easily be manipulated, many times farmers are disputed over the ownership. Theft and ownership dispute is a common problem due to the lack of full proof identification practice adopted by the farmers. KVK Papumpare district has come out

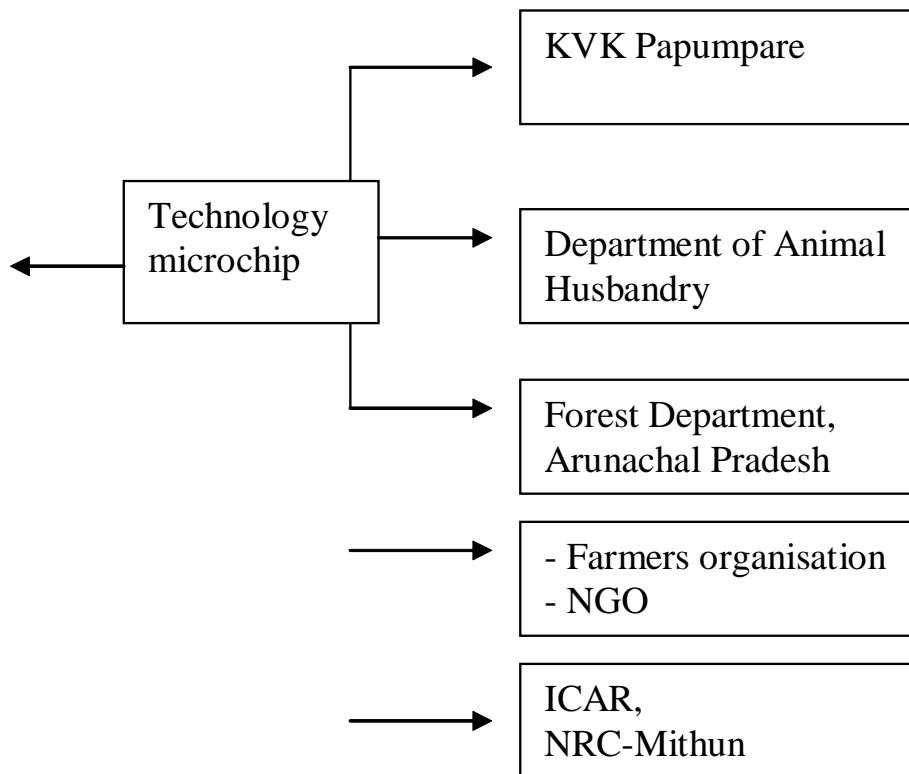
with the solution of installing microchip installation on the mithuns for the scientific identification. This programme was initiated with the help of forest department of Arunachal Pradesh for technical collaboration and animal husbandry department for the field level support. The farmers organisation, local NGOs were also actively involved in the above project. The details of the convergence , output and outcome of the programmes are given here under.

Output

- 1. Successful installation of microchip scientific identification of mithun.
- 2. Helped to settle the ownership dispute and prevents theft

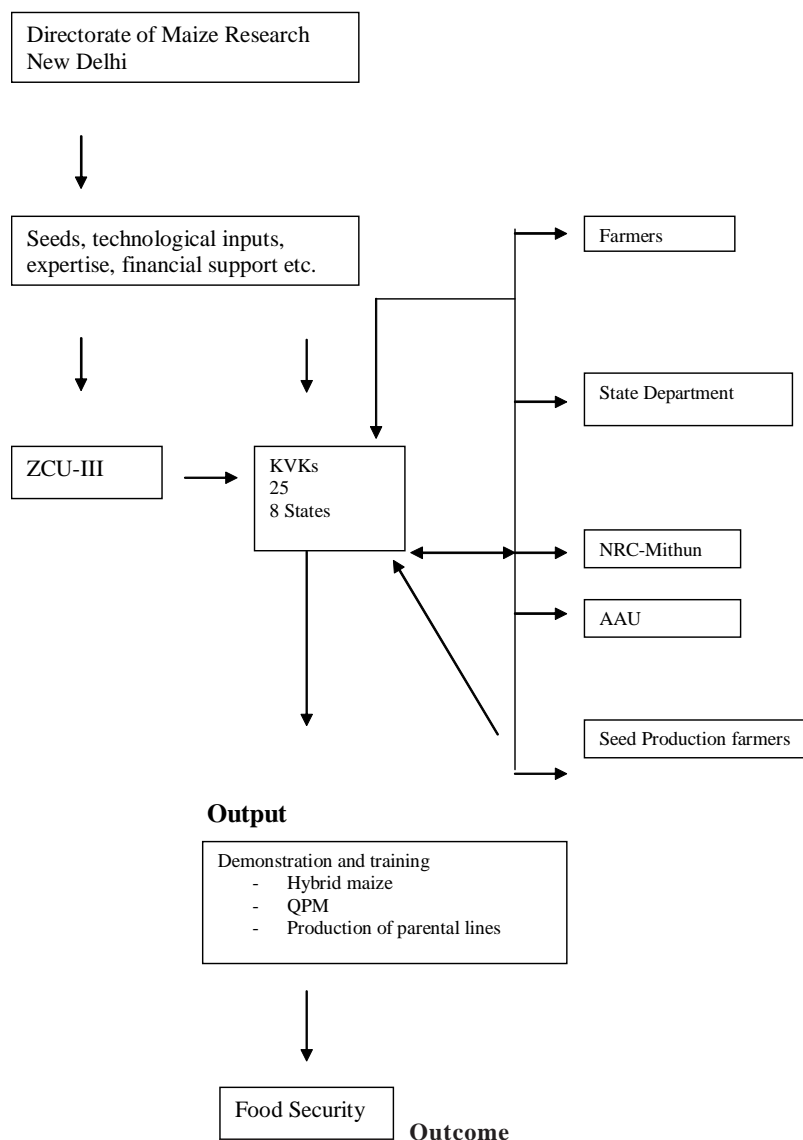
Outcome

Peace of mind to farmers and communal harmony



CASE- 3:

Similarly, we can site one of the successful convergence attempt made in the NE Region is the hybrid maize seed production programme where in a successful convergence of various stake holders was facilitated by Zonal Coordinating Unit, Zone-III. The partners are PD Maize, 27 KVKs distributed in 8 states, NRC-Mithun, AAU, State Department of Agriculture of respective states, farmers organisation, NGOs etc.

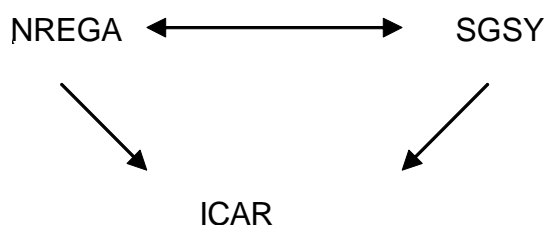


Hybrid Maize Production Programme in NE Region- A successful case of convergence

CASE-4: Convergence of NREGA and ICAR- KVK.

Ministry of Rural Development implements various schemes for employment generation and alleviation of rural poverty and infrastructure development in the rural areas. The major schemes being implemented by the ministry are the National Rural Employment Guarantee Scheme (NREGS) and the Swarnjayanti Gram Swarojgar Yojana (SGYS). After a series of high level interface meetings held between Ministry of Rural Development and Indian Council of Agricultural Research (ICAR), it has been decided that appropriate technological backstopping to the schemes of NREGS and SGYS would be provided by the Krishi Vigyan Kendras (KVKs) of ICAR at the ground level leading to sustainable development in the rural areas. The KVKs have developed appropriate technologies for on farm and off farm activities. Initially, 50 districts have been identified on a pilot basis for technological interventions by KVKs based on the requirements of the districts.

The detail guidelines mentioning the need for convergence, parameters for convergence, strategies for NREGA (MARD) and ICAR (MOA) convergence, have been worked out. Initially, the process of convergence with ICAR is to begin with those areas of natural resource management where the KVKs have developed technical experience. The concern for quality is central to NREGA and KVK is expected to promote appropriate technologies for NREGA works. An illustrative list of NRM activities where the expertise of KVKs can be used in conjunction with the choice of works under NREGA was prepared and provided. The list includes, water conservation, ground water recharge, drought proofing, development of irrigation facility, land development, flood control and protection works etc. In addition, the value adding activities on NREGA work also proposed to be attempted through convergence with ICAR technologies.



CASE- 5:

Assuring a Livelihood Security to Tribals in East Godavari District- Convergence of KVK-CTRI, ITDA, AP Forest Department, SAU and NGO.

An inter institutional project was undertaken by CTRI, KVK-CTRI and Integrated Tribal Development Agency, East Godavari District towards farming system analysis and agricultural development in the tribal areas. It was revealed from the findings that tamarind collection and marketing was the main source of income to the tribal family. The findings further revealed that the tribals were facing the problem of declining yield of tamarind and so their income was constantly declining inspite of good demand for tamarind in the market. The senile plantation and cutting of tamarind trees were the main cause of yield decline and it was estimated that around 25,000 fresh tamarind trees to save the tribal from the approaching livelihood crisis due to declining forest produce of tamarind.

A joint action was conceived by the KVK-CTRI, ITDA, AP Forest Department, SAU and local tribal NGO to plant fresh tamarind tree saplings so that after 6 to 8 years, tamarind fruits will be available. With the help of forest department, College of Forestry and ITDA about 25,000 tamarind saplings were procured and with the community participation through local NGOs in the agency area, the afforestation drive with PK-Variety of tamarind was initiated. Within a span of three months before monsoon, all saplings were planted and at the end of third year it was reported by the forest department that about 16,000 saplings were alive and grown well. It is now beyond doubt the convergence efforts of these organisation have resulted in assuring the tribals with their livelihood source.

Conclusion:

To summarise, the efforts of different development agencies need to be successfully channelised by means of arriving at a common understanding and working out suitable implementation strategy for achieving the common goal. Our country provides wide opportunities for fruitful convergence of various extension systems operation with a common goal. Such efforts not only save our precious resources but also ensures effective utilization of various facilities created at the grass root level including the human resources and time required for achieving the target. Creating an inbuilt coordination mechanism in these agencies will help to work out fruitful convergence in the possible areas as well as its effective implementation.

