

Post Graduate Diploma in Agricultural
Extension Management
(PGDAEM)

A Compendium of PGDAEM- MANAGE Projects' Review



**National Institute of Agricultural
Extension Management (MANAGE)**
(An Organization of Ministry of Agriculture &
Farmers Welfare, Govt. of India)
Rajendranagar, Hyderabad – 500030, T.S.,INDIA.
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(2018)



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National Institute of Agricultural Extension Management (MANAGE)

(An Organization of Ministry of Agriculture & Farmers Welfare, Govt. of India)

Rajendranagar, Hyderabad – 500030, T.S.,INDIA.

www.manage.gov.in

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Foreword

There is a continuing demand on the public extension system for dissemination of up-to-date technology. This necessitates up-gradation of technical, managerial and extension skills of extension functionaries at various levels & sectors. In response to this imperative need and to bring out desired change in agriculture, National Institute of Agricultural Extension Management (MANAGE), launched a one year Post Graduate Diploma in Agricultural Extension Management (PGDAEM) in 2007, in distance mode under the Centrally Sponsored Scheme "Support to State Extension Programme for Extension Reforms. The programme is now supported both by DAC, MOA&FW and State governments.

Project work is a part of PGDAEM and prior to 2015, candidates prepared project report based on their field experience on the suggested topics. In 2015, mandatory field work was introduced in PGDAEM as Project work, providing an opportunity to candidates to field test their learning related to extension management acquired from PGDAEM programme. Steering forward this lofty initiative, the documentation of Project reports of PGDAEM is undertaken to capture field level experiences of the extension functionaries and to review, compile and publish salient details of outstanding, useful and replicable projects.

Such an initiative would also serve as a unique platform to motivate candidates and give due acknowledgement/recognition for their efforts and contribution to the development of agriculture and farmers' welfare. Hence, an exclusive publication namely, "A Compendium of PGDAEM-MANAGE Project Reports' Review" is being brought out.

The publication provides some useful insights on successful models, case studies, challenges faced, innovative ways of farming and implementation of extension activities / schemes in different parts of the country. Some of the lessons learnt through action research, experiences of grassroots level functionaries in implementing schemes, viewpoints of farmers/ stakeholders, etc. that are featured in this publication will be useful for policy makers and agencies involved in farmers' welfare.

MANAGE is grateful to the SNOs (ATMA), SAMETIs and State Govt. Departments of Agriculture & allied sectors, for their valuable support to PGDAEM programme and to the SAMETIs for implementing the program through them and facilitating the candidates.

A handwritten signature in blue ink, appearing to read 'Usha Rani', is positioned above the name in the bottom right corner.

(V. Usha Rani)

Introduction

A strong, vibrant and responsive extension with an expanded mandate is the pre-requisite for achieving faster, sustainable and more inclusive growth through agriculture. Agricultural extension system needs to respond to new challenges and reform itself in terms of content, approach, structure, processes and its delivery and implementation. To meet this objective, National Institute of Agricultural Extension Management (MANAGE), launched a one year Post Graduate Diploma in Agricultural Extension Management (PGDAEM) in 2007, in distance mode, initially sponsored by Department of Agriculture & Cooperation, Ministry of Agriculture & Farmers Welfare, Govt. of India and now supported by both Central and State governments, since 2015-16.

The overall objective of PGDAEM is to equip the extension functionaries with the latest tools and technologies for participatory decision making, provide insight into various extension models & developments in agricultural extension and enhance their techno-managerial competencies.

As part of PGDAEM curriculum, candidates are required to complete Project work (AEM 206) and submit a project report at the end of second semester. In the initial years of PGDAEM program, candidates prepared project reports based on their field experience on suggested topics. From 2015 onwards, mandatory field work was introduced for PGDAEM, under Project work, with an intention to provide an opportunity to the candidates to field test the learnings, related to extension management skills that he/she has acquired from PGDAEM programme and take up as a small pilot project.

Candidates have to choose a topic on (A) Technologies related to respective departments or (B) Government schemes or (C) Extension management approaches/ skills within the purview of the course, based on their interest, its utility for the farming community and related to their work situation in extension. The candidates implement project work, as a field activity in their jurisdiction and compile a report of the work done at the field level with the farmers / stake holders and its utility to the farming community. Impact of the project work is included in the report which is evaluated by the concerned SAMETIs.

An attempt has been made by the PGDAEM team, MANAGE to review the project reports of candidates from agriculture and allied sectors, under the three categories viz. A- Technology /B- Govt. Schemes /C- Extension approach. The project work objectives, coverage in terms of no. of beneficiaries or area included, methodology, findings, impact/outcome and recommendations wherever suggested were documented.

The reports of Project work that were reviewed, included studies related to (i) extension approaches viz block demonstrations, Farmers Field Schools, case studies on integrated farming systems, Entrepreneurship models for women groups for value addition in fruits, supply chain management in dairy, rural marketing, management practices and disease outbreaks in livestock, (ii) technology related viz Precision Farming, Integrated Pest Management, System of Rice and Wheat Intensification (SRI & SWI), Sustainable Sugarcane Initiative (SSI), Bio-village, role of ICT, and (iii) Govt. schemes MNREGA, Soil Health Card, Kisan Credit Card, Bringing Green Revolution to Eastern India (BGREI), Paramparaghat Krishi Vikas Yojana (PKVY), ATMA, etc.

In the past, highlights of some of the projects were published in MANAGE bi-monthly bulletin. However, it was felt necessary to have an exclusive compendium of PGDAEM project work reviews. Hence, the publication, titled "A Compendium of PGDAEM-MANAGE Projects' Review" is being brought out and will be published annually.

The publication contains information on successful models, case studies, indicating what works and what does not work, challenges faced, and innovative ways of farming overcoming hurdles in implementation of extension activities / schemes in different parts of the country. Efforts have been made to cover lessons learnt through action research, viewpoints of farmers/stakeholders, grassroot level functionaries.

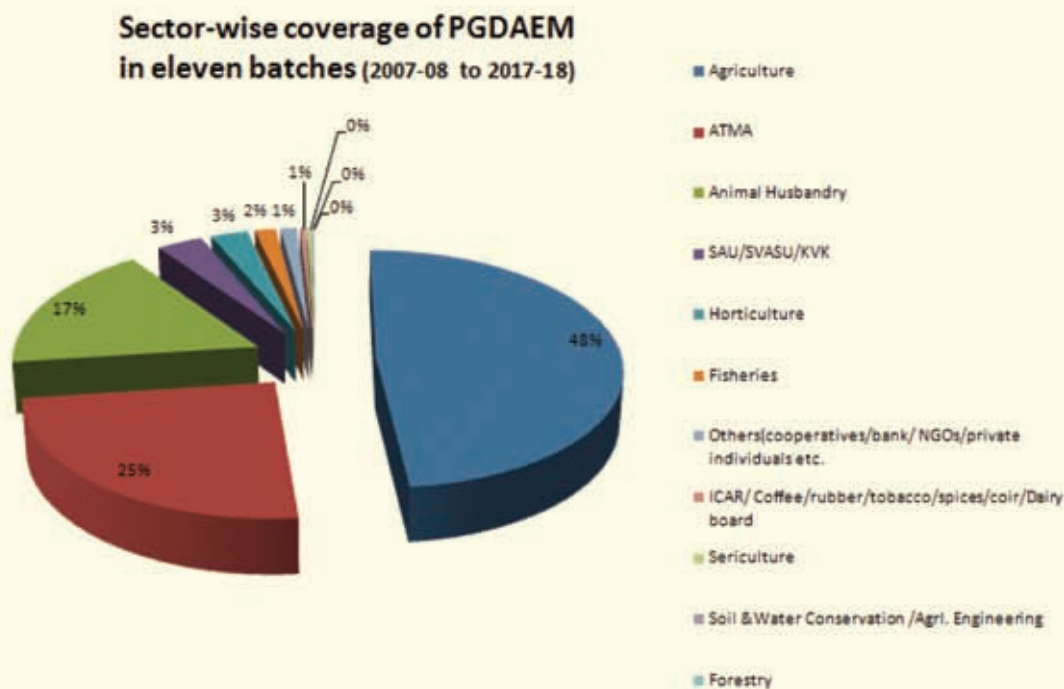
CONTENTS

		Page no.
Overview of PGDAEM		1
Title of Project Work	Author	
Sector –Agriculture		
System of Rice Intensification (SRI) method of rice cultivation in West Bengal (India): At Kumardihi of Pandabeswar Block of Burdwan District	Tapas Mandal, Burdwan, West Bengal	3
Audience Response Pattern Through Farm Field Schools Approach In Terms of Change In Knowledge, Skill & Attitude (KSA)	Santosh Dadarao Deshmukh, Parbhani, Maharashtra	4
Integrated Farming System for livelihood security of small and marginal farmers of Balasore district	Sudeshna Parida, Balasore, Odisha	6
A study on Sustainable Sugarcane Initiative (SSI) among the cane growers of Perambalur district, Tamilnadu	Dr. I. Gnanavel Perambalur, Tamilnadu	8
A project on Andharmanik Bio-Village, Block-Baduria, District-North 24 Parganas,	Selim Sahaji, North 24 Parganas, West Bengal	10
Impact Analysis of ‘Sahbhagi Dhan’ in Raniganj Block	Sudipto Chakraborty, Burdwan, West Bengal	12
Technology Management in Seeds (especially Rabi seeds)	Deepak Pal, Jabalpur, Madhya Pradesh	14
A study on Organic Manure and Bio-pesticides with respect to their bio-chemical properties and their effect on different crops	Suman Paul, Burdwan, West Bengal	15
A Study on Integrated Pest Management– Sub-Mission on Plant Protection included in National Mission on Agriculture Extension and Technology (NMAET)	Yogesh Gowda, Davangere, Karnataka	17
Project on Bringing Green Revolution to Eastern India (BGREI) In Andal Agricultural Block	Sumita Mukerjee, Burdwan, West Bengal	18
System of Wheat Intensification in Jhirniya Block of Khargone district	Anil Kumar Namdev, Khargone, Madhya Pradesh	20
Downward Knowledge Flow In Extension By Women Farmers To Motivate Themselves Through Various Channels	Sandip Paul, Nadia, West Bengal.	22
Sector-Agricultural Engineering		
Evaluation on Drudgery Aspects as Perceived by Farm Women with Existing Eight Row Direct Paddy Seeder	Dr. Jayshree, G.C. Bangalore Urban, Karnataka	23
Sector-Horticulture		
A study on Precision Farming and Cultivation & Marketing of Brinjal (var. Ellavambadimullu) in Vellore Block of Tamilnadu	Dr. G Mariappan, Vellore, Tamilnadu	25

Rural Marketing – A study on Marketing of Arecanut in Khasi Hills district of Meghalaya	Remdor Bha Dkhar, West Khasi Hills, Meghalaya	27
A Study on Entrepreneurial Qualities and Adoption Behavior of Banana Growers	Ashok Kumar Bennur, Gulbarga, Karnataka	29
Sector- Food Science and Nutrition		
Jackfruit: Value Addition and Branding – An Entrepreneurship Model for Women Groups of Bangalore Rural district	Dr. Savitha S. Manganavar, Bangalore Rural, Karnataka	31
Effect of Nutrition Counseling on Knowledge, Attitude and Practices Regarding Nutritional Status of Women	Dr. Shamshad Begum, S. Bangalore Urban, Karnataka	33
Sector- Animal Husbandry, Poultry Production and Dairy Development		
Supply Chain Management In Dairy Sector, Opportunities & Possibilities with Special Reference to Sitajakhala Dugdha Utpadak Samabay Samitee, Jagiroad, Morigaon	Ajit Sharma, Assam	35
Epidemiological Investigation of the Peste Des Petitis Ruminants Outbreaks in Karnataka India	Dr. Amitha Reena Gomes, Bengaluru, Karnataka	37
A Case Study on Vanaraja: a Dual Purpose Variety Developed Exclusively for Free Range Poultry Farming in Rural and Tribal Areas	Dr. Sanjaykumar Vithalrao Udharwar, Old Goa, Goa	39
Sector-Fisheries		
Fish cum duck integration	Dr.Yumnam Bedajit Singh, Thoubal, Manipur	41
Present Status and Awareness about Catfish Culture in Rain Fed Area of West Bengal	Sudipta Sarkar, Purulia, West Bengal	43
Government Schemes / ICT		
Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and Tribal Livelihoods: A Case Study in Khandwa District of Madhya Pradesh	Yogesh Birla , Khandwa, Madhya Pradesh	44
Studies on Performance and Progress of Kisan Credit Card (KCC)	Diasri Mondal, Hooghli, West Bengal	46
Agricultural Technology Management Agency (ATMA): A Study of Critical Evaluation of its Implementation in Nagaland with Special Reference to Tuensang District	Thongkoi, Tuensang District , Nagaland	47
Role of Information Communication Technology (ICT) in Agriculture Innovations	Imlisunep Ajem, Tuensang District , Nagaland	49

Overview of PGDAEM

Realizing the paramount importance of public and private extension system, MANAGE launched a one-year Post-Graduate Diploma in Agricultural Extension Management (PGDAEM) in distance learning mode during 2007 under the Centrally Sponsored Scheme "Support to State Extension Programme for Extension Reforms." The programme has completed eleven years and the twelfth batch is about to commence. Over the period more than 18,000 candidates from 29 States and 5 Union Territories have been enrolled in PGDAEM from agriculture and allied sectors. The PGDAEM being a unique intervention for strengthening the capacities of extension personnel, has gained a lot of interest in recent times.



Objectives of the PGDAEM Programme:



To enhance the techno-managerial competence of extension functionaries



To acquaint the extension functionaries on the latest developments in the field of agricultural extension



To equip the extension functionaries with the tools and techniques for participatory decision making.



To develop an insight into various extension models to enrich the agri-value chain.

Course Structure and Contents:

The programme has 32 credits and will be offered in two semesters. First semester has 14 credits and second semester has 18 credits. One credit is equal to 30 hours of study. The programme has five courses with five assignments, one in each course in the 1st semester and five courses with one assignment in each course and a project work in the 2nd semester.

The programme is supported with printed reading material, e-learning resources (Pre-Recorded DVD module) and Lecture series-cum-contact classes.

Framework of courses for semester I & II

Semester I

Course No	Name of the course	Credits
AEM 101:	Introduction to Agricultural Extension Management	(4 credits)
AEM 102:	Communication of Agricultural Innovations	(3 Credits)
AEM 103:	Principles and Practices of Extension Management	(3 Credits)
AEM 104:	Participatory Approaches in Agricultural Extension	(2 Credits)
AEM 105:	Research Methods in Agricultural Extension	(2 Credits)

Semester II

Course No	Name of the course	Credits
AEM 201:	Market-Led Extension	(4 Credits)
AEM 202:	Agri-Business and Entrepreneurship Development	(3 Credits)
AEM 203:	Project Management in Agricultural Extension	(2 Credits)
AEM 204:	Information and Communication Technology in Agriculture	(3 Credits)
AEM 205:	Sustainable Livelihood in Agriculture	(3 Credits)
AEM 206:	Project work	(3 Credits)

For whom:

Extension functionaries graduated in Agriculture and Allied sectors such as Horticulture, Veterinary, Fisheries etc. and other Graduates currently employed in the departments of Agriculture / Allied sectors of Central / State / UT Governments and State Agricultural Universities(SAUs) are eligible to enroll for the programme. Preference is given to government extension functionaries in the above Departments. BTMs, SMS of ATMA and KVKs are also eligible for the programme.

Graduates in Agriculture, Allied subjects and other Graduates working in Agri-business companies, NGOs, Cooperatives, Farmers' Organizations, Agri-entrepreneurs and Input dealers are also eligible.

“System of Rice Intensification (SRI) Method of Rice Cultivation in West Bengal (India): at Kumardihi of Pandabeswar Block of Burdwan District”

- Mr. Tapas Mandal

Introduction:

The enhancement in rice production from 605 million tonnes in 2004 to 696 million tonnes in 2010 has been mainly due to the high yielding varieties, whereas the harvested area (rice) for the corresponding period expanded from 31 m ha to about 44 m ha, accounting for only 42 percent increase. However, according to Department of Agriculture, GOI 2011, to maintain the present level of self-sufficiency, India needs to produce 115 million tonnes of rice by the year 2020 which can be brought either by horizontal or vertical expansion. There is little scope to increase in the area, hence increase in production and productivity with an improvement in efficiency of production through some improved management practices like SRI was implemented in many parts of India.

Objective:

To conduct a Farm School (ATMA) under FIAC-Pandabeswar Block for SRI cultivation of Paddy to achieve increased yields of paddy particularly with irrigation by fresh water from colliery and rain and optimum water usage.

Coverage and interventions:

An area of 7.5 ha of land of Farm School was selected for the project to demonstrate useful technology of SRI through farm school under ATMA. In Kumardihi village of Pandabeswar Block of Bardhaman district in West Bengal, 26 farmers were selected for Farm School under Kharif for SRI Paddy cultivation with green manuring and using bio-input 'Amrut Jal'. A 'Participatory' method was followed and inputs were provided through ATMA.

Documentation of the different stages was done by interviewing SRI farmers personally with help of structured schedules.

Findings:

For SRI and farmers' methods in Kumardihi, production cost of one kilogram of rice was found to be Rs. 2.80 and Rs.6.0 respectively while Cost-Benefit ratio was 1.58 and 1.25, respectively. In Kumardihi of Pandabeswar, an evaluation of SRI practices on comparison plots, side-by-side with conventional practices, on 100 farms in Kumardihi and Joal Bhanga revealed that total labor inputs were 8% less under SRI. There was a noticeable change in gender participation. Mens' labor went up by 59% while womens' work load decreased by 25%, because in SRI weeding was done 'mechanically,' using Kono weeders that were mostly operated by men.

Conclusions and Recommendations:

The SRI method increases production at a lower cost, thereby making rice production more profitable, hence this practice should be popularized. Governments, international agencies and environmental organizations should come forward in a collaborative manner to promote adoption of SRI, since water to meet agricultural production is becoming scarce.



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Designation	: Asst. Tech. Manager
Department	: ATMA
Qualification	: B.Sc. (Bio)
Study Centre	: SAMETI-West Bengal



Farm School Achiever
Sri Prasenjit Banerjee

“Audience Response Pattern through Farm Field Schools Approach in Terms of Change in Knowledge, Skill & Attitude (KSA)”

- Mr. Santosh Dadarao Deshmukh

Introduction:

Farmers' Field School (FFS) was started initially in Indonesia during 1989, as an attempt to promote integrated pest management among rice farmers. Gradually it was spread to other countries in Asia, Africa, South America and selected countries in Europe. Today FFS methodology is followed in 122 countries. In India, FFS was started during 1994 and States like Andhra Pradesh and Maharashtra, became the pioneering States in adopting this methodology. The overall experience of FFS in different countries show that it is an effective methodology to empower farmers and to help farmers understand complex practices such as IPM and make right decisions to improve farm productivity and sustainability.

The overall Purpose of the study was to analyze relevance and effectiveness of FFS-based training in Yavatmal district so as to come up with ways to make training demand-driven or client oriented and effective.

Objectives:

1. To study farmers' participation and interest in the knowledge dissemination programme.
2. To understand farmers' attitude in implementation of knowledge and
3. To find out change of practices to empower farmer with knowledge and skills.

Coverage:

The research was undertaken in Yavatmal district. Out of 16 blocks in Yavatmal, 4 villages of Kelapur (Pandharkawada) block namely Pathari, Mangurda, Kinhala and Tadumari were selected purposively, as being the largest area under Cotton cultivation. The study was undertaken in Pandharkawada block of Yavatmal district (following simple percentage technique). The total sample size was 852 comprising of 722 men farmers and 130 women farmers, selected purposively through secondary source from four villages of Pandharkawada block where FFS was carried out by an NGO. The farmers were interviewed using a structured interview schedule at their respective FFSs by participatory rural appraisal technique and group discussion.

Data was gathered through a structured interview schedule with the help of AFPRO Team through group discussion & participatory rural appraisal with the respondents. The collected data were subjected to statistical analysis i.e. percentage, for meaningful interpretations.



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Designation	: Scientist (Agronomy)
Department	: Krishi Vigyan Kendra, Parbhani
Qualification	: B. Sc. Agriculture
Study Centre	: VANAMATI Maharashtra



Findings:

Adoption level was found lower than knowledge level, except health and safety measures, as farmers were very concerned about health and preventive safety measures. The study showed that participation of farmers in FFS had helped them to use less hazardous pesticides and reduced poisoning cases due to use of pesticides. Important constraints in promotion of FFS as perceived by farmers were: 'lack of extension back up', 'inadequate training and lack of qualified trainers', 'time constraints', 'shortage of skilled labour'. Therefore, FFS methodology was found to be an effective extension tool to enhance farmers' knowledge and adoption related to complex crop management practices in Cotton.



Conclusions:

The study concluded that FFS is an effective extension tool in dissemination of agricultural technologies to farming community. The results confirm that FFS is a justifiable investment and also suggest that the demand for FFS may continue to be higher in those areas where pesticide overuse is widespread and pesticide reduction can lead to high benefits. Therefore, FFS methodology was found to be an effective extension tool to enhance farmers' knowledge and adoption related to complex crop management practices in Cotton

Recommendations:

FFS should be encouraged as an intensive teaching method among farmers for transfer of technology in Pandharkawada block of Yavatmal district, in particular.

Integrated Farming System for Livelihood Security of Small and Marginal Farmers of Balasore District”

- Ms. Sudeshna Parida

Introduction:

Development of economically profitable and eco-friendly production technologies tailored to the needs of the farmers and locally available resources deserve high priority. Integrated Farming System (IFS), therefore, assumes greater importance for sound management of farm resources to enhance farm productivity, reduce environmental degradation and improvement of the quality of life of resource poor farmers. In Odisha, 82% of the farmers are small and marginal with an average holding size of 0.8 hectare. Integrated Farming System provides opportunity to these farmers of Odisha to increase yield per unit area. This project is an attempt to document a few successful case studies on Integrated Farming Systems in Balasore district of Odisha.

Case study 1:

Pond based farming system in the coastal agro-ecosystem, Balasore district :

Out of the many IFS models promoted by Krishi Vigyan Kendra, Balasore, the case study of Sri Ranjan Kumar Bhuyan of Katishai village of Baliapal Block was analyzed for simulation elsewhere by potential farmers and farm women. The farm pond based model is intended for farmers of the coastal district having two ha of land with a pond. The components are multi-tier cropping with coconut, turmeric, ginger and pineapple, poultry unit and pond with fish, ducks, livestock (draught animals), biogas unit, rabi and summer vegetables, fruit trees, fodder along with an ornamental unit near the farm house.

Case study 2.

Integrated Farming Systems model for the North Eastern Coastal Plain Zone :

Case study was documented at Regional Research & Technology Transfer



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Department	: Agriculture
Qualification	: M.Sc. Agriculture
Study Centre	: IMAGE- Odisha



Stations, Ranital, Bhadrak, of Orissa University of Agriculture & Technology under RKVY .The IFS Unit is having land based enterprises like pisciculture, dairy, poultry, fruit crops, vegetables, vemicompost and field crops. The size of farm is about 10 acres.

Case study 3:

Sri Debendra Prasad Kalapahad of Bahadalpur village of Khaira block:

The IFS Unit is having land based enterprises like pisciculture, dairy, poultry, fruit crops, vegetables, vemicompost and field crops. The size of farm is about 10 acres. The study revealed that 10 acres farm area



generated net returns of Rs.8,39,500 with an investment of Rs.2,80,500 annually.

Case study 4:

Sri Ghana Shyam Nayak is a successful IFS entrepreneur from Gopinathpur village in Soro Block of Balasore district. Initially he dug out two pisciculture tanks, one in each acre of his land, raised mango, tissue culture banana, vegetables and constructed a vermicompost unit on the bund of the tank. From the income generated, area under IFS was further expanded and number of enterprises were also increased and upscaled to 6 acres under IFS unit

Findings:

1. The above farmers have demonstrated a harmonious integration of crop, horticulture, live stock and allied agri components with emphasis on inter component interaction as well as recycling of products and by-products, which form the main stay towards food security and sustainable livelihood.
2. The success of Integrated Farming System at RRTTS, Ranital is an eye opener for thousands of farmers visiting the campus. It is a boon for small and marginal farmers. Some of them have started enterprises of their own with guidance from Scientists of Orissa University of Agriculture & Technology. Thus, by adopting Integrated Farming system approach a profit of about Rs.1,70,000 (approx.) could be generated in one year from an area of one hectare of land.
3. The case studies revealed that 10 acres farm area generated net returns of Rs 8,39,500 for an annual investment of Rs.2,80,500
4. Expansion of area under IFS, up scaling and diversification fetched a gross return of Rs. 7,45,000 for an investment of Rs 1,87,500 with an annual net profit of Rs 5,57,500.
5. These case studies have revealed that one rupee investment has generated a return of Rs 3.97.

Recommendations:

1. Pisciculture dominated pond based farming system, with 4 broad components like crops, horticulture, fishery and allied non-crop, (mushroom, apiary, lac etc.) can be advocated for food security and sustainable livelihood support of small and marginal farmers / farm women of Balasore district.
2. The stability of Integrated Farming System can be enhanced by establishing connections among different components that maximizes resilience capacity, optimum productivity with maximum input use efficiency and higher sustainability.

A Study on Sustainable Sugarcane Initiative (SSI) among the Cane Growers of Perambalur District (Tamilnadu)

- Dr. I. Gnanavel

Introduction:

Sugarcane, after cotton, forms the second major agro-industrial crop in India. Considering its economic and social advantages, sugarcane is considered as the future crop of India. Sugarcane is the most important commercial crop grown in Tamilnadu. Out of the 3,35,397 ha of area under Sugarcane, 63.4% is planted and 37.6% is ratoon. Tamil Nadu with nearly 6 per cent of the total of the country's total area under sugarcane, accounts for about 11 per cent of production and has remarkable distinction of the highest yield of 1,067.8 quintals/hectare. Perambalur district is one of the major sugarcane growing districts in Tamilnadu with 4700 hectares under sugarcane cultivation and a productivity of 42 tonnes per hectare.

Cane growers are now facing innumerable problems in sugarcane cultivation such as low yield, varietal degeneration, high input costs, incidence of diseases and pests, soil degradation, salinity, water logging and drought, due to which the area under sugarcane is gradually shrinking. Water is a major constraint limiting cane production. The Sustainable Sugarcane Initiative (SSI) is a system of cultivation that follows an innovative set of agronomic practices with limited number of seedlings, water and fertilizer to maximize yield per acre with minimum expenditure. SSI is clearly the foremost option available right now to address many of these problems.

Purpose of the study:

To bring out the profile variations on awareness and knowledge among cane growers, which could be used by the planners and administrators to develop appropriate strategies and impart knowledge to the cane growers effectively.

Objectives :

1. To determine the existing awareness and knowledge level of respondents about recommended SSI practices in Perambalur district.
2. To find out extent of adoption of recommended SSI practices in Perambalur district.
3. To identify the constraints experienced by the respondents in adopting the recommended SSI practices and to suggest remedial measures to overcome those constraints.

Coverage and Interventions:

This study was confined to the cane growers in Perambalur, a district with two sugar mills namely Perambalur Sugar Mills Ltd. and Dhanalakshmi Srinivasan Sugars Pvt. Ltd. Nearly two thousand farmers in this district are engaged in sugarcane cultivation over an area of approximately 4500 hectares. All the taluks under both the mills were selected. From these taluks, 60 registered SSI growers were selected by proportionate random sampling. The data were collected from the respondents with the help of a well-structured and pre-tested interview schedule. Three dependent variables viz. awareness, knowledge and extent of adoption were included in the study. Percentage analysis and cumulative frequency methods were used for analyzing the data.



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Department : Agriculture
Qualification : Ph.D.Ag. (Agronomy)
Study Centre : STAMIN-Tamil Nadu



Intercropping of Onion with Sugarcane

Findings:

From the results of this study it was learnt that -

1. Majority of the respondents were found to have high level of awareness (83.33%), knowledge (73.33 %) and adoption (58.33%) about the recommended SSI practices.
2. With respect to practice-wise adoption of recommended SSI practices, the respondents had low level of awareness, knowledge and adoption regarding Fertigation (45.83%) mulching and earthing up (50.83%.
3. Nearly three-fourth of the respondents (73.33 per cent) had high level of knowledge on recommended SSI practices.
4. All respondents possessed knowledge on six of the SSI practices viz. varieties, bud selection, main field preparation, transplanting, irrigation management and harvesting, while numbers of respondents possessing knowledge on other SSI practices viz. inter cropping, nutrient management, weeding, nursery preparation, plant protection, earthing up, mulching and fertigation varied and were less than the total.
5. In general, 58.33 per cent respondents had high level and 37.50 per cent had medium level of adoption for SSI practices.
6. Non-availability of labour (91.66 per cent), high cost of labour (75.00 per cent), mechanization (63.33 per cent), complexity of new practices (50.00 per cent) and late cutting order (45.00 per cent) were the major constraints faced by the respondents .



Intercropping of Onion with Sugarcane



Mechanical Harvesting of Sugarcane

Conclusions and recommendations:

1. Stopping the MGNREGA scheme in peak cropping season, providing machineries on rental basis when required, sanction of cutting order on time, need of more credit facilities, need of more technical advices for complexity practices and conducting more road side trials by sugar mills were the remedial measures suggested to overcome major constraints faced by the cane growers.
2. It was suggested to design more number of trainings on SSI practices. Result demonstration and field visits may be encouraged for enhancing adoption of SSI practices.
3. The Sugar mills may arrange for seminars, exhibitions and video shows. SSI practices may be effectively promoted through distribution of printed literature like, booklets, leaflets and pamphlets etc. to the farmers at regular intervals, as majority of the respondents were well literate.

“A project on Andharmanik Bio-Village, Baduria Block, North 24 Parganas District”

- Mr. Selim Sahaji

Introduction:

Andharmanik, a Municipality of Baduria block consists mostly of small and marginal farmers but progressive. The major crops grown in the area are paddy, vegetables, pulses and oilseeds. A Bio-village programme was started in Andharmanik village during the kharif season 2015-16 by the Agriculture department in collaboration with a local NGO, Andharmanik Swanivor. The project was implemented in an area of 10.39 ha involving 40 progressive farmers. As part of the programme trials were conducted on the use and effectiveness of Bio-fertilizers and Bio-pesticides.

Objectives:

1. To create awareness on Soil Health Management.
2. To demonstrate low cost production techniques of Organic Manures, Vermi-compost and some Bio and botanical pesticides using local resources in order to avoid or minimize dependence on chemical pesticides.
3. To promote production of ‘Pesticide residues free Agricultural Produce’.
4. To introduce different Biological, Botanical and microbial pesticides.
5. To create awareness regarding ecological balance, conservation of natural enemies and health hazards caused by Agricultural Pollution.

Coverage and Interventions:

The programme in which 40 progressive farmers participated, covered an area of 10.39 ha in Andharmanik village of Baduria Municipality, Baduria block in North 24 Parganas district of West Bengal. Activities included, formation of guidelines, benchmark survey, selection of farmers, selection of crops with special preference to the locally grown varieties having local demand and plots with assured irrigation facility. Awareness meetings were held initially with the help of local NGO. Trainings were imparted to farmers prior to execution of the programme on preparation and use of herbal and Bio pesticides, Bio fertilizer, organic manure etc. by the experts from the department, university and other related departments including Central Integrated Pest Management Centres (C.I.P.M.C.s). Demonstration of Agro Eco System Analysis (AESAs) was done. Series of trainings were also imparted during the programme implementation phase on various aspects of bio-control methods and use of bio-pesticides etc. in which, farmers of neighbouring plots also participated. Regular monitoring and tests to determine residual toxicity were conducted through notified agency after harvest of each crop.



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Findings:

- Bio-village vegetable produce namely, brinjal, tomato, pointed gourd, plantain, dolichos bean, radish were tested at Bidhan Chandra Krishi Viswa Vidyalaya for residual toxicity and all samples were found free from Chemical Pesticidal Residues.
- Problem of non-availability of quality Organic Manure, Vermi-compost, Bio and Botanical Pesticides, etc. was overcome through training and assistance to farmers for producing the same using local resources.
- Problems in marketing the organic produce were resolved with the help of Andharmanik and an Swanirvor a local NGO associated with the programme by setting up an exclusive stall for marketing of the organic produce in the local market.
- Farmers in the project area are now producing quality organic produce from their fields.
- Average Cost Benefit ratio for cultivation of crops by organic methods for brinjal, bitter gourd, papaya, chilli and ginger was 1:2.85
- The Bio-Village programme may in long term form the basis to supply or get 'good quality – fresh food materials for safe life.

Recommendations:

- There is a need for close liaison with farmers of Bio-village and during next Rabi season, a 16 weeks long training related to Rabi crops similar to kharif programme is to be imparted to them.
- This programme was a long term experiment and it is needed to assess economic viability, so that farmers can be motivated to grow more and more bio-products.
- An INM package for vegetable cultivation in sandy loamy soil under medium to upland condition with different combination of organic and inorganic source of fertilizer may be standardized.

“Impact Analysis of Sahbhagi Dhan in Raniganj Block”

- Mr. Sudipto Chakraborty

Introduction:

Raniganj is considered to be an industrial area of Burdwan district. However, in the recent past agriculture has been one of the important occupations of people in villages near Raniganj such as Jemari and Beliabathan. Major crop grown by the farmers is paddy. This area receives less frequent and untimely rainfall, which makes it difficult for the farmers to provide adequate water for irrigation. A new short-duration paddy variety *Sahbhagi Dhan* (SD) was introduced to the farmers of this area to meet the geographical and climatic challenges of these areas. This variety requires less water for irrigation and provides a better yield and the seeds used in India are designed to withstand up to two weeks of drought exposure.

The purpose of the study was to understand the welfare effects of adopting *Sahbhagi Dhan* (SD) rice in a drought-prone environment, particularly with respect to its impact on yield and livelihood.

Objectives:

- 1 To measure changes in yield/ productivity levels of different varieties and variability of these varieties, using data from yield trials of farmer's fields and
2. To determine cost and benefits of research and diffusion programs on drought tolerant variety “Sahbhaghi” through participatory plant breeding methods in Jemeri Gram Panchayat, Raniganj Block, Burdwan.



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Study Centre	: SAMETI- West Bengal



Overview of the field of Arjun Ch Mahato, a participating farmer



Focused group interview at Beliabathan Village

Coverage:

The study covered three villages Jemeri Gram Panchayat of Raniganj Block, Burdwan viz. Chalbalpur, Beliabathan and Jemeri. Training was imparted to 50 farmers on cultivation of drought tolerant variety “Sahbhaghi”. 12 of the trained farmers were selected for frontline demonstrations in Jemeri Panchayat, Raniganj block - 1 acre each.

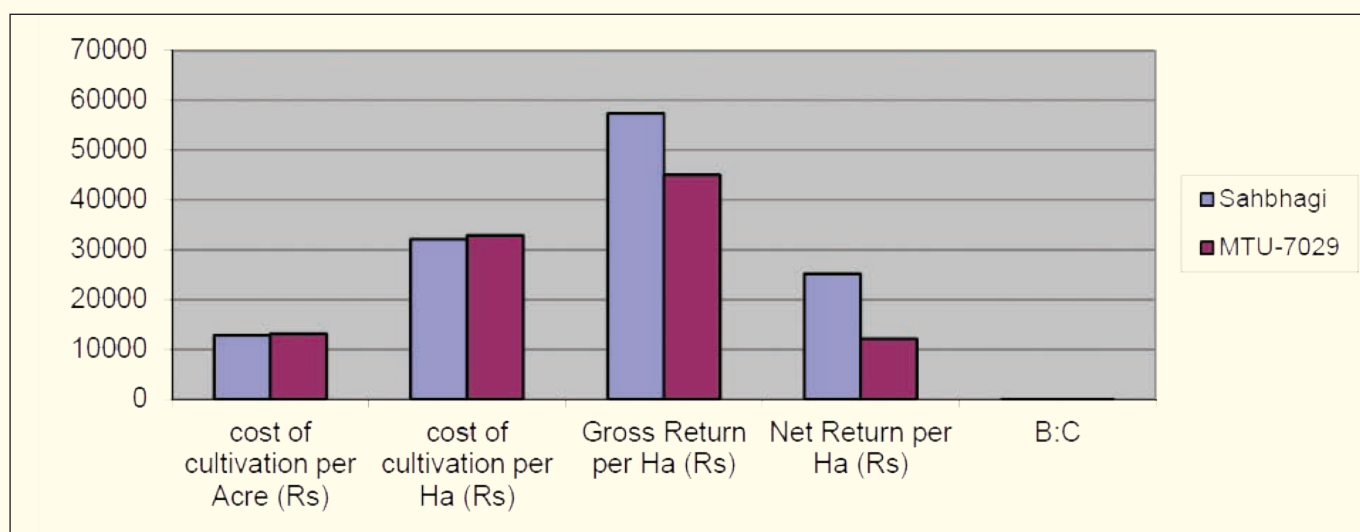
Findings:

- Due to its drought tolerance and higher tillering capacity, “Sahbhaghi Dhan” has performed exceptionally well, with higher productivity and more income than the predominant varieties like “Lal Swarna”, “Lolat”.
- “Sahbhaghi Dhan” being an early maturing variety, provided early access to food; opportunity for advancing Rabi wheat sowing by one month, growing mustard or vegetables as cash crops in the additional time available for summer vegetable cultivation.
- There was reduction in cultivation costs because of low irrigation requirement
- New rice was ready for consumption right after its harvest on account of good grain quality and slightly “sweet” taste.
- All farmers, not only retained seed for their next crop, but also distributed seed to other farmers and relatives and few farmers of Beliabathan had started a small cooperative to produce seeds, for sale in the next season to the other local farmers
- Additional benefit was better straw yield and quality of straw from Sahbhaghi Dhan. Buffaloes preferred Sahbhaghi Dhan straw.



Sahbhaghi in Beliabathan 60 days after transplant

Cost of Cultivation, Gross Return, Net Return and B : C Ratio of Sahbhaghi Dhan x MTU-7029



Conclusion/Recommendation:

The cultivation of paddy Sahbhaghi dhan was found to be more productive and can replace the local check since it fits to the existing farming situation for higher productivity and income and also it had been appreciated due to its drought tolerance and higher tillering capacity

“Technology Management in Seeds (especially Rabi seeds)”

- Mr. Deepak Pal

Introduction:

Among the major pulse crops grown in Madhya Pradesh, Gram is one of the most important crops. Gram commonly known as chickpea or Bengal gram is an important pulse crop and one of the major grain legume crops grown as sole or mixed crop in India. Madhya Pradesh is the biggest chickpea producing State in the country. There is tremendous opportunity for increasing the production of gram by adopting suitable improved technologies. “Technological Gap” is a gap between modern and traditional technology.

Objectives:

1. To identify the technological gaps in seed management in chickpea (Rabi pulse crop) and
2. To propose a model to bridge the gaps at Katni district.



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Coverage:

The study was conducted in Vijayraghavgarh block of Katni district of Madhya Pradesh. A survey was conducted to obtain data regarding Chickpea cultivation and other constraints in production of chickpea in Vijayraghavgarh block of Katni district.

Findings:

In Vijayraghavgarh block of Katni district, the area under pulse crop (Chickpea) cultivation was 1.87 lakh hectares while production & productivity were 1.28 lakh tonnes & 63 kg./ha respectively.

Though the area under Chickpea is more, production is very low due to low seed replacement rate (farmers depend on farm produced seed) in Vijayraghavgarh block of Katni district.

Conclusions:

Study suggested that farmers should adopt seed treatment and improve soil health by practicing organic way of farming for better crop establishment.

Recommendations:

1. It is proposed to have Cluster demonstration of pulses, where inputs like true seed, fertilizer, pesticides are provided by the govt. and technical guidance to motivate farmers to grow chickpea extensively and increase seed replacement rate are provided.
2. As Vijayraghavgarh block of Katni district experience extreme climates like uncertain rains, hails, cold wave etc., emphasis has to be given on resource conservation/ management aspects.

“A study on Organic Manure and Bio-pesticides with respect to their Bio-Chemical Properties and Effect on Different Crops’

- Suman Paul

Introduction:

Organic farming is a holistic management system which promotes and improves health of an agro-system related to biodiversity, nutrient biocycles and soil microbial and biochemical activities. Organic farming emphasizes management practices involving substantial use of organic manures and green manures. Organic farming provides eco-technological stability, sustainable agriculture, pest management and is an alternative to inorganic fertilizers.

Purpose of the Project:

Organic farming can provide quality food without adversely affecting soil's health and the environment. However, a concern is whether large-scale organic farming will produce enough food for India's large population. Certified organic products including all varieties of food products including basmati rice, pulses, honey, tea, spices, coffee, oilseeds, fruits, cereals, herbal medicines and their value-added products are produced in India. To understand the need of organic farming in sustainable agriculture & its relevancy, production of these organic crops and products is reviewed with regard to sustainable agriculture in northern India.



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Organic(PKVY) Field in Kamarhati, Raina-II Block,

Objectives:

- To find out the ill effects of chemicals on agro ecology & on human beings.
- To study about different kinds of organic farming
- To understand the role of organic farming in maintaining sustainability.
- To have in depth knowledge on the constraints associated with the use of organic resources.

Coverage and Methods:

A Participatory method was followed to demonstrate organic paddy cultivation under Paramparaghat Krishi Vikas Yogana (PKVY) in Kamarhati village, Gotan G.P. Raina - II Block, Burdwan district of West Bengal. An area of 20 ha was demarked as PKVY plots and 50 farmers were covered under PKVY scheme.

Farmers were supplied with inputs namely Seed (variety-Gobindabhog), Vermicompost. (1.5 kg/satak), PROM. (0.55gm/satak), VAM, Concentrated Liquid manure, *Trichoderma viridi*, *Pseudomonas*, Azadiractin, Plastic Drum for making liquid fertilizer(organic)/ TaralSar, Dhaincha seed for making boundary of the D.C plots. The farmers' contribution included cow dung, mustard cake, materials for Panchagovya and labour.

Findings and Conclusions:

Yield recorded was 3000 Kg/ ha (According to CCE report).The yield was low as compared to the conventional yield but the aim of the project was to maintain a sustainable agriculture system maintaining low cost of cultivation along with a healthy life style.

Success in Organic cultivation was low due to:

- 1) insufficient organic (cow dung) application in farmers' field,
- 2) non-availability of effective bio-pesticides and
- 3) lack of positive attitude towards organic farming

Recommendations:

Organic farming may be practiced stage by stage with gradual reduction of chemical fertilizers and pesticides over a two or three year period.

A good market and market price of organic product will inspire farmers.



Cultivation of Dhaincha at Kamarhati

“A study on Integrated Pest Management-Sub-Mission on Plant Protection included in NMAET (National Mission on Agriculture Extension and Technology)”

- Mr. Yogesh Gowda

Introduction:

In National Mission on Agriculture Extension and Technology (NMAET) plant protection aspects are included under Sub-Mission on Plant Protection (SMPP), which envisages increase in agricultural production by keeping the crop disease free, using scientific and environment friendly techniques through promotion of Integrated Pest Management. Strengthening and modernization of Pest Management approach aims at this vital aspect of Plant Protection and also covers regulatory requirements of pesticides. The component on National Institute of Plant Health Management (NIPHM) will promote environmentally sustainable Plant Health Management practices in diverse and changing agro-climatic conditions, pesticide management and bio-security through capacity building programmes.

Objectives:

- 1) To assess the level of IPM adoption in Davangere district
- 2) To identify factors which influence adoption of IPM program for growers in paddy and cotton crops.
- 3) To carry out comparative analysis between integrated pest management practices (as per State Agriculture Universities recommendation) and farmer practice on sustainable environment system in paddy and cotton ecosystem in Jagalur, Harapanahalli and Davangere taluks of Davangere district.

Coverage:

The study involved 40 growers from three taluks namely Jagalur, Harapanahalli and Davangere in Davangere district of Karnataka. Comparative On-farm trials of IPM in Cotton and Paddy i.e. IPM methods in rice and cotton versus farmers' "normal" pest control strategy were carried out in fields of selected farmers of the above three taluks. Observation of ongoing systems and practices and the agronomic practices as per recommendation of University of Agricultural Sciences, Bangalore were recorded and analyzed. Questionnaires were used to gather information regarding adoption of IPM from the respondents.

Findings:

- Growers' perception of their understanding of an IPM tactic was positive.
- Result also indicated that younger growers were not found to be more likely to adopt IPM than elderly growers.
- Less than half of the growers have moderately adopted IPM technology.

Conclusions/ Recommendations:

Government could stimulate more overall IPM adoption by investing in educating consumers about the importance and benefits of IPM.

To accelerate dissemination of IPM practices within agricultural community, Dept of Agriculture / KVK / Agrl. Universities could also sponsor a series of IPM training courses through the off-season months which would specifically, yet simply, address IPM and how it relates to various commodities (i.e cereals, vegetable, fruit, ornamental, etc.).



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“Project on Bringing Green Revolution to Eastern India (BGREI) In Andal Agricultural Block”

- Ms. Sumita Mukherjee

Introduction:

Bringing Green Revolution to Eastern India (BGREI) program was launched in the year 2010-11 in seven States of Eastern India namely; Assam, Bihar, Chhattisgarh, Jharkhand, Eastern Uttar Pradesh, Orissa and West Bengal based on strategic action plans developed by these States as a sub-scheme of Rastriya Krishi Vikas Yojana. High yielding varieties of certified seeds are supplied under BGREI scheme for increased production, which is the main objective of this scheme.

The BGREI scheme was started at Andal Block in 2011-12 on Aman Paddy in Kharif season. Under the scheme, beneficiaries receive certified paddy seeds that are distributed among the farmers under selected Gram Panchayat area for Demonstration Centre (DC) of Aman Paddy. All extension workers (from Asst. Director Agriculture level to Assistant Technology Manager level) assist the farmers in these DC plots. At the end of cultivation period, few crop-cutting programs are made in the DC plots by extension functionaries of the block to calculate total production of Aman paddy in the block area.



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Objectives:

- To understand the process and successful implementation of BGREI scheme
- To know the detail procedure of block demonstration on Aman Paddy under BGREI scheme in Andal Block.
- To increase production & productivity of rice (Aman Paddy) under BGREI scheme at Andal Block.
- To carry out this scheme successfully in the next (Boro) season in Andal Block.



Seed distribution

Coverage:

167 farmers (General-78, Scheduled Caste-64, Scheduled Tribes-13, Women-10, Minority-2) from 3 localities namely Ukhra, Kumardihi and Shyamsundarpur were selected under Block Demonstrations. Other farmers were provided need-based inputs like micronutrient, plant protection chemicals etc. To promote System of Rice Intensification (SRI) with organic manure through the Govt. Scheme, BGREI, a Participatory method was followed.



Distribution of Soil health card

Interventions:

Selection of 100 ha area for the project implementation on Aman Paddy in Kharif Season under BGREI, 2016-17 scheme, was done with involvement of Andal Panchayat Samiti and Pandaveswar Panchayat Samiti members and the Asst. Director of Agriculture of Andal Block. Seeds of Swarna Sub-I (SSI) variety (@30 kg/farmer), need based inputs like herbicides, organic pesticides,

micronutrient etc. were supplied to the participating farmers. Training programs on seed treatment were organized. Awareness programme on crop insurance for farmers of the block was done



Crop cutting programme

in convergence with the crop insurance scheme viz. Pradhan Mantri Fasal Bima Yojana (PMFBY). Besides this, soil testing program was taken up prior to kharif season under National Mission for Sustainable Agriculture (NAMSA) scheme, followed by issue of Soil Health Card to farmers before

transplanting. Some farmers were also selected for introducing SRI technique using maximum organic manure covering an area of 10 ha; Other extension activities namely, group meeting, thematic training programs, field day, regular field visit, telephonic discussion on regular basis and ICT (Information Communication and Technology) program such as “Matir-Katha” for quick suggestions to farmers on cultivation related problems were also included. A crop cutting program on the DC plot was carried out to estimate the final production.



Demonstration Field



Findings:

After the completion of this project, many local farmers' groups became aware about SRI technique. They had shown interest in varietal replacement with high yielding and short duration paddy to increase production and in adopting SRI method to reduce the problem of water scarcity. As a result they have planned for Aman Paddy cultivation from next year using modern technology like Drum Seeder and adopting SRI method.

Conclusions/Recommendations:

Convergence and synergy of different schemes has resulted in better extension service delivery as was the case in this project where BGREI scheme farmers benefited from NAMSA and PMFBY simultaneously.

Farmers engaged in paddy cultivation, can increase production by raising high yielding – short duration varieties.

By adopting SRI & usage of Drum Seeder technique in a better way, Paddy growers can reduce their problems related to irrigation and field labour respectively.

Majority of the cultivators are marginal farmers without sufficient knowledge about marketing channel, hence they are unable to realize fair prices for their produce. The Government needs to take the responsibility for better marketing of their produce.

“System of Wheat Intensification ” In Jhirniya Block of Khargone District Madhya Pradesh”

- Mr. Anil Kumar Namdev

Introduction:

The System of Wheat Intensification(SWI) is a new concept based on the principle of System of Rice Intensification(SRI) method which demands to maintain plant to plant distance at 8 cm and 20 cm between lines. It includes manipulation of soil environment with minimum external input and very low seed rate. This kind of sowing with proper plant density allows for sufficient aeration, moisture, sunlight and nutrient availability leading to proper root system development from the early stage of crop growth.

Madhya Pradesh Rural Livelihood Project in Central India started SWI trials and demonstrations in 2008-09, working with tribal households in the center of this state. Trials of SWI in Khargone district started with demonstrations sub component of Agriculture Technology Management Agency (ATMA). ATMA provided necessary training and literature along with inputs to the block team for conducting the demonstrations on SWI.

Objectives:

1. To understand the System of Wheat Intensification.
2. To promote new SWI technology in the Block.
3. To evaluate the efficiency of SWI in the Block.

Coverage and Interventions:

The Kisan Mitras and Kisan Didis were trained at the block level by the Block Technology Manager to enable them conduct SWI demonstrations by themselves and to convince other farmers of the village to practice SWI in a very small area (1/5th of a acre) of his/her holdings.

25 farmers in Katjhira, Saikheda, Mundiya, Ambadochar, Davit, Badi bujurg, Jhirniya, Nahaldari, Marugar, and Sonkhedi villages of Jhirniya Block of Khargone district were provided trainings in SWI technology by the Kisan Mitras under ATMA and the SWI technology was demonstrated in small plots of 1/5th of an acre.

Findings :

From the results of the study it was found that in cultivation of wheat using SWI method :

- There was a saving of up to 60-80 percent in seed used.
- There was 10-70 percent increase in yield , depending on the management practices adopted.
- Some farmers faced weather related production constraints i.e. heavy rain and hailstorm while few suffered damage due to birds

Conclusions :

Low adoption of SWI technology in the block could be because of large farmers having sufficient land holdings and small and marginal farmers unable to bear cultivation expenses of SWI .

Another reason for non-adoption of SWI technology by farmers in the block was abundant availability of irrigation water.

It is useful for small and marginal farmers yet suitable measures for dibbling and weeding need to be developed for reducing the cost of technology



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“Downward Knowledge Flow In Extension By Women Farmers To Motivate Themselves Through Various Channels”

- Mr. Sandip Paul

Introduction:

Over the last several decades, considerable effort has been made throughout the world to provide women farmers efficient, effective & appropriate technology, training and information. Though the positive effects are beginning to show in agricultural production statistics and in indices of family welfare, these are not sufficient at present as ever-greater demands are being placed on rural women in the face of rapid social transformation.

In the present Socio-economical situation that encourages female empowerment, ensuring female participation may be recognized as the secondary avenue of knowledge flow in the field of agriculture which in turn may bring positive change in agricultural production. The Farm Information and Advisory Centre (FIAC), Krishnaganj Block has succeeded to motivate and mobilize the women farmers towards participation in the main stream of extension system, which on the other hand, has accomplished the target of the scheme of at least 33 % female representation. FIAC has organized the following activities solely for the women sector of the farming community.

Objectives :

- To assist field extension workers in working more effectively with women farmers, particularly by providing them training materials and information that could enhance their field capabilities
- To identify needs, priorities, constraints and opportunities felt by rural women;
- To ensure that extension packages meet specific gender requirements
- To contact and communicate effectively with rural women.

Coverage and methods:

The project work was carried out through FIAC, Krishnaganj Block of Nadia district in West Bengal during 2014-15, by involving ATMA staff of a government scheme. Different tour programmes and exposure visits (within State) were organized exclusively for women farmers of the district and some training programs were conducted specifically for women farmers in thematic areas, in addition to the regular training programmes of the centre. These included the following:

A) Exposure Visit on Sericulture and Pulses cultivation:

An exclusively women farmers' team of 40 members were sent on an Inter District exposure



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visit on 29th August, 2014 to Berhampore, Murshidabad to know about technologies of Sericulture from Central Sericulture Research and Training Institute and to gather information on benefits of pulse cultivation from Training Institute and the Pulse and Oilseed Research Centre, Berhampore, Murshidabad.

B) Residential Training on organic farming:

A two day residential training exclusively for women farmers was conducted on 10th & 11th September, 2014 at Fulia Agricultural Training Centre, Fulia, Nadia, in which 30 women farmers participated and underwent training on organic agriculture.

C) Training on pulses and organic manure:

A one-day training was organized at Pabakhali, Krishnaganj, Nadia on 3rd September, 2014 in which only women farmers (50 Nos.) participated.. The training was organized on the importance of pulse crops in cropping system and also in human diet, and on importance of organic manure in soil health maintenance.

Findings/Outcome:

- o Some women have expressed their interest for mulberry plantation and consequent silkworm rearing during the next season.
- o The enthusiasm of the participants as reflected by their attendance was encouraging
- o A women farmer who was very short tempered and used to get angry over minor issues prior to joining the group had benefited from the trainings and exposure visits organized by FIAC and has become cool headed, patient, bold and self-confident. She is now very much interested in educating women.

Conclusions :

- From among the women and men who participated in the trainings and exposure visits, it was learnt that constraints in implementation of participatory gender- responsive development work continued to remain and that the greatest barrier to mainstream gender and participation in agricultural development is not in the field but in the institutions that work for them.
- Encouragement for giving downward knowledge flow for female empowerment, ensuring female participation in the field of agriculture, may bring positive change in agricultural production.
- Women farmers' access to extension services must lead to concrete improvements for rural women themselves, as well as enhance productivity of agricultural sector and national food security, through increase in the marketed output.



“Evaluation On Drudgery Aspects As Perceived By Farm Women With Existing Eight Row Direct Paddy Seeder”

- Dr. Jayshree, G.C.

Introduction:

Farm women from lower economic strata face harsh working conditions in farming coupled with longer working hours than their male counterparts. They also experience health problems such as back, neck and shoulder pains as a result of tasks performed, involving bends, infection of cuts and injuries on their limbs, etc. Farm women of Karnataka State are engaged for a greater part of the year in field operations like transplanting, weeding, fertilizer broadcasting, groundnut stripping, cotton stalk pulling, harvesting of vegetables, flowers, fruits, etc. The tools/equipments available for these operations have been developed mostly for use by male workers and if women workers use them whenever required, the outputs are lower and many occupational problems also crop up. Moreover, no systematic studies have been carried out on ergonomic evaluation of the equipment involving farm women. Hence, it is necessary to conduct ergonomic evaluation of these equipment with farm women in order to assess their suitability for farm women and to tailor it to suit their requirement. This study was conducted for evaluation of eight row direct paddy seeder for drudgery aspects perceived by women users.



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Objectives :

1. To measure physiological cost of women subjects while performing farming operations with selected equipment namely, manually operated eight row direct paddy seeder.
2. To classify the workload in terms of energy cost of performing these operations.
3. To assess overall discomfort and body part discomfort ratings of the subjects in operating the selected equipment.

Coverage and methods:

The study was carried out in Mandya district of Karnataka in 2017. The eight row direct paddy seeder was selected for evaluation on drudgery aspects as perceived by farm women. Ten female subjects (women participants) were selected based on age (age varied from 28 to 35 years) and were screened for normal health through medical investigations. They were equally trained in operating the eight row direct paddy seeder. The parameters included for the ergonomic evaluation were heart rate and oxygen consumption rate (VO_2), energy cost of operation, acceptable work load (AWL), work pulse, overall discomfort rating and body part discomfort score.

Findings:

- The heart rate of the subjects increased steeply since the beginning of the operation of the equipment under trial and stabilized after 6th minute of operation for all the subjects.
- For the eight row direct paddy seeder operation, the mean value of heart rate was 139.03 beats per minute and the corresponding oxygen consumption value was 0.6401 per minute.

- From the mean value of oxygen consumption, the energy expenditure for eight row paddy seeder was computed as 13.38 kilojoules per minute. The operation was graded as “very heavy”.
- The work pulse values calculated for paddy seeding operations was 47.85 beats per minute exceeded the limit of continuous performance (LCP) of 40.
- The overall discomfort rate was maximum (7.07) for seeding with eight row direct paddy seeder and confirmed the ranking of operation as “very heavy”.
- Maximum discomfort experienced by the farm women while operating eight row direct paddy seeder was in the left knee, left leg, lower back and right arm.

Conclusions :

- The energy expenditure for the sowing operations of farm women indicated that the energy cost of work was high for seeding with eight row direct paddy seeder.
- The energy cost of operation in terms of VO_2 max for eight row direct paddy seeder was 50.28 per cent and was much higher than that of the AWL limits of 35 per cent indicating that it could not be operated continuously for 8 hours without adequate rest/pause.
- The higher rate of work pulse values 47.85 beats per minute for paddy seeding operations exceeded LCP of 40, indicating that eight row direct paddy seeder cannot be operated for longer duration without rest.
- The discomfort in the left knee, left leg, lower back and right arm experienced by the women was mainly due to walking in the puddle land.
- From the results of the study it is confirmed that physiological cost is more for women operating eight row direct paddy seeder in puddle field.

Recommendations:

Efforts may be made and trials conducted for modifying the existing eight row direct paddy seeder to a four row direct paddy seeder so as to reduce the drudgery of farm women.

“A study on Precision Farming cultivation and marketing of Brinjal (var. Ellavambadimullu) in Vellore block of Tamilnadu”,

- Dr. G Mariappan

Introduction:

Precision Farming is generally defined as information and technology based farm management system to identify, analyze and manage variability within fields for optimum profitability, sustainability and protection of the land. Precision farming is helping many farmers worldwide to maximize effectiveness of crop inputs.

Brinjal or eggplant (*Solanum melongena* L.) is an important solanaceous crop of sub-tropics and tropics. India is the major producer of brinjal in the world and accounts for about 8.7 million MTs with an area of 0.53 million ha under cultivation. This project work was undertaken to study Precision farming cultivation of brinjal and its marketing.

Objectives:

1. To study precision farming in brinjal
2. To analyze marketing cost, price spread, marketing efficiency and farmer's share in consumer rupee in various supply chains
3. To identify the constraints perceived by various stakeholders; and
4. To study the factors influencing marketing cost, market margin and marketing efficiency and
5. To suggest suitable strategies to enhance the marketing efficiency for horticultural commodities.



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Success story on Precision farming in Brinjal by a farmer from Tamilnadu

“A progressive farmer can get only 60 tonnes per hectare whereas Mr. Chinnasamy has harvested about 170 tonnes in 120 cents, which is quite a feat. It is 467 per cent higher than the conventional system of cultivation,”

- Dr. Vadivel, Former Director of Extension Education, TNAU.

Precision Farmer Mr. Chinnasamy with his bumper Brinjal harvest



The project work was undertaken in Vellore block of Vellore taluk (district) of Tamilnadu. A study covered fertigation practices and adoption of precision farming of around 60 farmers growing locally popular brinjal variety Ellavambadimullu. Estimates of production functions for brinjal crops under precision and non-precision farming and the geometric means of inputs were made to compare the productivity difference between the precision and non-precision productions. Reasons for non-adoption of precision farming as ranked by the farmers were analyzed through Garrett's ranking technique. Various marketing channels of brinjal in Vellore district were surveyed to work out the producer's share in consumer's rupee. The report also included a success story on precision farming.

Findings:

Precision farming helps farmers realize various benefits such as optimal use of resource, reduced risk of pest and diseases, increased yield and better quality produce which enhances farm productivity and farmers' income compared to traditional cultivation practices. The crop duration of brinjal can also be extended up to one year i.e. 100% increase in crop duration. However the high cost of inputs and gap in technical knowledge are major setbacks for precision farming.

While 40% of the brinjal farmers included in the study had adopted fertigation, only 25% of them had practiced precision farming. The remaining followed convention furrow method of irrigation and fertilizer application. The gross margin (gross return - variable cost), was 67 % higher in precision farming than non-precision farming in brinjal cultivation. Study of impact on adoption possibility and financial impact revealed that the probability of adoption increased by 10%.The total difference recorded in output / net returns, in adopting fertigation techniques over traditional way of fertilizer application was 28%.

Market analysis revealed 70 % producers' share in the consumer rupee, when produce reached consumer through the marketing channel involving commission agents, wholesalers and retailers. The producers' share improved to 80-85% with the elimination of commission agents, wholesalers from the channel. Whereas, when the produce moved directly to consumers from producers, it fetched highest share of consumer rupee to about 90-95 percent.

Conclusion:

The report concluded with the suggestions for improvement from the stakeholders, as summarized below:

- Establishment of more number of vegetable markets in residential areas.
- Has to be balanced by providing extension support to farmers for year round vegetables production to reduce scarcity and avoid surplus production during certain periods
- Establishment of Cold storage units
- Disposal of market wastes to be channelized.
- Introduction of rotational system of enrolling farmers to sell different vegetables/ flowers/ fruits in order to accommodate more farmers in the market.
- Bulk purchases should be encouraged from farmer markets.

“Rural Marketing – A study on Marketing of Areca nut in Khasi Hills district of Meghalaya”

- Mr. Remdor Bha Dkhar

Introduction:

Areca nut is an important component of religious, social and cultural celebrations and economic life of the people in India. Areca nut production in India is concentrated in seven States, namely Karnataka, Kerala, Assam, Meghalaya, West Bengal, Mizoram and Tamil Nadu. Meghalaya has remarkable advantages of fertile and organically rich soils, ample rainfall, water resources and a high potential region for areca nut cultivation, Areca nut is a major plantation crop.

Objectives:

Keeping in view the manifold importance of areca nut, the study was conducted with the following specific objectives:

- i) To study the marketing system of areca nut and
- ii) To identify the problems in marketing of areca nut.

Coverage:

The study was conducted in two market of East Khasi Hills of Meghalaya. Three major markets from East Khasi Hills - Pynursla, Sohra and Shillong were selected; Two market functionaries involved in marketing of areca nut in each selected market *i.e.* Trader/Wholesaler and Retailer were selected. Two major channels identified in three selected markets were:

- i) Channel-I:* Producer → whoselaler/trader → Retailer → Consumer (Sohra, Pynursla and Shillong markets)
- ii) Channel-II:* Producer → Retailer → Consumer (Sohra and Pynursla markets).

Data were collected using structured schedule through personal interview method (primary) and source of secondary data was Indian Horticultural database (2011), National Horticultural Board, Govt. of India. The marketing cost and margins for different channels in three selected markets were estimated. Marketing cost and margin in the selected markets under different marketing channels were studied. Marketing efficiency of the three markets were compared.

Findings:

- Since areca nut is a perishable commodity, the marketed surplus was found to be equal for all the category of areca nut grower.
- Channel-I was more popular among growers through which 58.12 per cent of the produce was disposed.
- The price spread was found to be higher (61.50 per cent of consumer’s rupee) under channel-I of all the three market as compared to channel-II, due to which the efficiency of channel-I was found to be less.



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Buying and selling at Shillong market

- Producer's share in consumer's rupee under Channel-I was highest in Sohra market (marketing efficiency 0.80) .
- The channel-II was more efficient in Pynursla (marketing efficiency 1.59).
- The drawbacks in marketing of areca nut were absence of regulated market and low price.
- Marketing of areca nut in the State is traditional and dominated by private traders.



Buying and selling at Sohra market

Conclusions / Recommendations:

Based on the findings, observations and problems identified, the following policy implications have been suggested for development of areca nut marketing in the State of Meghalaya:

- i) Primary markets can be set up at cluster level to reduce the burden of cost involved in transportation and storage for the areca nut grower.
- ii) Areca nut is a notified commodity in the regulated market of Shillong, but buying and selling is not in function. Hence, effort may be made to regulate the buying and selling of areca nut in the regulated market.

“A Study on Entrepreneurial Qualities and Adoption Behaviour of Banana Growers”

- Mr. Ashok Kumar Bennur

Introduction:

Karnataka is a progressive Indian State in the field of modern horticulture where diverse agro-ecological conditions prevail. This offers scope for growing different types of horticultural crops such as fruits, vegetables, flowers, spices, plantation crops, etc. In Dharwad, Haveri, Gadag, Gulbarga and Bidar districts of Karnataka, fruit crops like banana, mango, sapota, guava and papaya are grown. In Gulbarga, area under banana cultivation is 1666 ha with production of 46110 tonnes. The present production level could be increased if technologies are made available to farmers and utilized by them to their full advantage. Imparting training effectively to all those who need is essential for accelerating the process of adoption, which would lead to increased production. Farmers' training is a significant component in agricultural extension education which directly influences the knowledge, adoption and entrepreneurial behaviour. Hence, it is important to investigate their knowledge, adoption and entrepreneurial behaviour.

Objectives:

1. To know the extent of awareness on farming practices in banana by banana growers.
2. To document farming practices followed by banana growers
3. To study socio-economic and psychological characteristics profile and entrepreneurship qualities of banana growers
4. To study association between profile characteristics of the banana growers and their entrepreneurial qualities, awareness and adoption behavior.
5. To find out the training needs of banana growers
6. To identify the constraints and elicit suggestions to banana growers

Interventions and coverage:

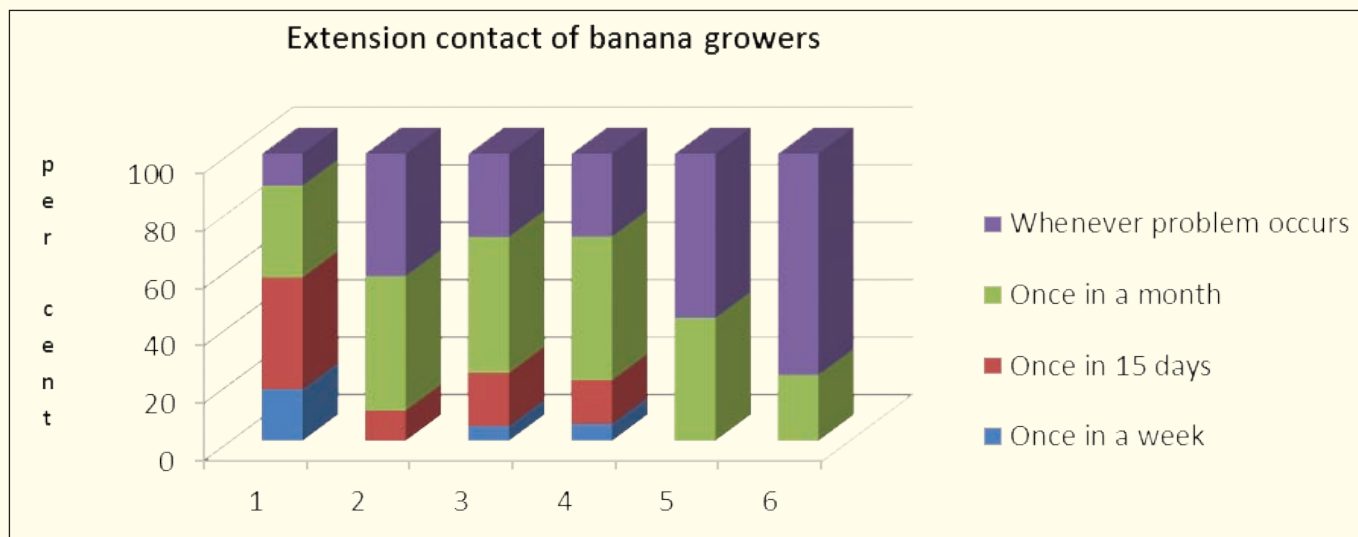
120 farmers from five villages each, from Gulbarga, Aland, Afzalpur and Chitapur taluks of Gulbarga district were selected for the study. Ex-post-facto-research design was used for the study. Data on nine variables were collected from 120 respondents and scaling method was used to rate the levels in each selected variable. Five selected components of entrepreneurial qualities viz., innovativeness, decision making ability, economic motivation, leadership ability and cosmopolitanism were also measured.

Findings:

- Majority of banana growers had medium level of awareness.
- Study revealed that, education, mass media participation, extension contact, scientific orientation, risk orientation and achievement motivation were positively and significantly associated with entrepreneurial qualities.



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Extension contact of banana growers

- | | |
|----------|--|
| 1. A.A | 4. A.H.O |
| 2. A.O | 5. A.D.H |
| 3. A.D.A | 6. Scientists of Agricultural University |

- Non-availability of inputs, financial problem and lack of knowledge were the major constraints expressed by the farmers
- Strengthening market infrastructure at district and taluk levels will ensure efficient marketing system for the banana entrepreneurs

Recommendations/Conclusions:

- A comparative study of entrepreneurial qualities of banana growers engaged in different enterprises such as commercial crop production, poultry, dairy, sericulture, fisheries *etc.* may throw new light on farm entrepreneurs.
- There is also a need to develop entrepreneurial development programme (EDP) modules to train different types of farmers under different agro- climatic conditions for economic development of farmers in the country. Hence, this field of investigation offers a broad scope for future research.

“Jack Fruit: Value Addition and Branding - An Entrepreneurship Model for Women Groups of Bangalore Rural District”

- Dr. Savita S. Manganavar

Introduction:

Jackfruit (*Artocarpus heterophyllus* Lam.) belonging to the family Moraceae, is a fairly large sized tree and bears the largest fruit among the edible fruits. Jackfruit tree is native to India and is one of the most suitable fruit crops for dryland horticulture. India stands second in production of Jackfruit in the world, producing 14.36 lakh tonnes from 1, 02,000 ha. In India, Karnataka ranks first in jackfruit production with 2.6 lakh tonnes from 11,333 ha. It is an under utilized and over produced crop which lacks processing. Raw fruit fetches low income, thereby processing of Jackfruit is promoted for enhancing income. Value added products like utilization of vegetable jack, raw jack bulbs, ripe and over ripe fruits and seed flour could be promoted with value addition for marketability and to create employment among rural women for economic empowerment

Front Line Demonstration (FLD) is a unique extension activity. It empowers farmers/farm women to learn innovative technology released from recognized institutes. It involves participation and interaction. Farmers learn by carrying out activities themselves and through constant observation.

Objectives:

A study on value addition to Jackfruit was undertaken by Krishi Vigyan Kendra, Bangalore Rural, through a Front Line Demonstration (FLD) on “Preparation of Jackfruit products: Branding and Market linkage” among the members of two Self Help Groups of Bangalore Rural District with the following specific objectives:

1. To introduce the concept of value addition of jackfruit among SHGs
2. To give hands on training on preparation of value added products
3. To expose the trainees to marketing opportunities
4. To conduct sensory evaluation and consumer acceptability for marketable products
5. To develop brands and link them to market

Coverage and Interventions:

Two Self Help groups (SHGs) namely – Shri Divya Jyothi Mahila SHG of Melekote cross village and Divya Jyothi Sthri Shakthi SHG of Kachalli Doddaballapur taluk, Bangalore Rural District were selected to study the impact of developing entrepreneurial skills through Front Line Demonstration (FLD) on “Preparation of Jackfruit products: Branding and Market linkage”

The members underwent hands on training on preparation of Jackfruit products namely- Chips, Papad, Halwa, Jam, RTS beverage and Mixture through vocational training. The SHGs were sensitized on nutrient composition of Jackfruit, Cost economics, importance of hygiene and sanitation in production unit, marketing channels, Food Safety and Standards Authority of India (FSSAI) licensing and registration. They were exposed to marketing avenues of Jack products through an Exposure Visit to Mango and Jack Mela - held at Lalbaugh,



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Bangalore. Production units were established by SHGs and supported by KVK through critical inputs such as weighing balance, sealing machine, foil sealer, labeling and packing materials.

The experience of this FLD model was shared among other farmers in the locality through Field day. KVK guided the SHGs in getting market linkages such as local bakeries, exhibitions, Krishi Mela etc.

Outcome :

The groups had a turnover of Rs. 75,000/- in six months by selling the products under the brand name “SIRI PRODUCTS” and “NISARGA PRODUCTS” registered under FSSAI. Thus, the SHGs realized a considerable income through processing of jack fruit.

Conclusions :

Marketing of nutritious Jack fruit products as an income generating activity by SHG for the health conscious community when promoted will help in economic empowerment of members of SHG for sustainable growth.

The entrepreneurial orientation of youth can be enhanced through appropriate training interventions using FLD approach.

Farmers' feedback :

- Difficulty in cutting jackfruit
- Good income earned in free time
- Good enterprise during summer.



“Effect of Nutrition Counseling on Knowledge, Attitude and Practices Regarding Nutritional Status of Women”

- Dr. Shamshad Begum, S.

Introduction:

Nutrition is a process of providing or obtaining the food necessary for health and growth. It includes food intake, absorption, assimilation, biosynthesis, catabolism and excretion. Good nutrition is fundamental for optimal health and growth. A healthy diet includes preparation of food and storage methods that preserve nutrients from oxidation, heat or leaching and that reduce risk of food borne illness. A poor diet may cause health problems, causing deficiency diseases, health-threatening conditions like obesity and common chronic systemic diseases such as cardiovascular disease, diabetes, and osteoporosis.

Women’s health is an important concern throughout the globe. Women need less calories but more nutrients than men to be at their best. That means women have to wisely choose what they eat. Global Strategy for Women’s, Children’s and Adolescents’ Health launched in September 2015 by UNO called for a strengthened focus on nutrition, with special attention to the first 1000 days of life (from pregnancy to the child’s second birthday), pregnant and lactating women, women of reproductive age and adolescent girls.

Nutrition counseling is an ongoing process in which a health professional works with an individual to assess his or her usual dietary intake and identify areas where change is needed. The nutrition counselor provides information, educational materials, support and follow-up to help the individual make and maintain the needed dietary changes. Therefore an investigation was planned to evaluate the effect of nutrition counseling on knowledge, attitude and practices regarding nutritional status of women’.

Objectives :

- 1) To assess the dietary intake and food consumption pattern
- 2) To evaluate anthropometric measurements
- 3) To conduct Nutrition counseling
- 4) To conduct Knowledge, Attitude and Practices (KAP) test before and after nutrition counseling.

Scope:

Technological developments have changed the lifestyle pattern and elevated social status of women, yet prevalence of nutritional problems is a common phenomena for majority of women and girls due to differences in their pattern of eating, dietary practices and poverty. These issues can be addressed through simple techniques like nutrition counseling that can have an impact on knowledge, attitude and practices regarding nutritional status of women.

Coverage and methods:

The study was conducted at Byadrahalli village, Shantigrama post, Hassan Taluq and district with the involvement of final year B.Sc. (Ag.) students of Agricultural College, Hassan during the Rural Agricultural Work Experience Programme (RAWEP) as part of the rural work experience for the students. A total of 61 women subjects who were residing in Byadrahalli village were selected by purposive sampling. A pre-tested schedule developed to elicit the information on food consumption pattern, dietary pattern and details of anthropometric measurements to know the nutritional status of the respondents was administered.



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Prior to nutrition counseling, **Knowledge, attitude and practices (KAP) test** using simple questions was done to assess the knowledge of the subjects pertaining to general diet, nutrition, practices related to daily dietary pattern through interview method.

Nutrition counseling was planned based on the results of KAP test. Nutrition counseling on weekly basis was imparted to subjects on good dietary and nutritional practices for one month (30 days). The counseling included lectures, posters, presentations, demonstration and personal discussion carried out with the involvement of medical doctors and professionals. To have long term impact, method demonstrations were conducted on low cost nutritious recipes for products like soya-based composite flour, ragi malt, ragi Hurihittu (Roasted finger millet flour) and tomato jam. Post-test of knowledge, attitude and practices was also conducted.

Findings:

- The average age of the subjects was found to be 39.2 years; The family income ranged between Rs.2,000 – 50,000 per year with an average of Rs. 12,680 per year. Out of the 61 subjects surveyed, 35 (57%) subjects volunteered and enrolled for Nutrition counseling and all 35 of them continued till the completion of the intervention programme.
- Before counseling, limited number of subjects had awareness/knowledge on nutritional deficiencies, influence of nutrients on anemia, impact of lifestyle changes on nutrition and benefits of sunlight as Vitamin D source for bone health. However, after nutrition counseling the subjects gained awareness on nutritional deficiencies (100%), influence of nutrients on anemia (85%), knowledge regarding impact of lifestyle changes on nutrition (34%) and benefits of sunlight as Vitamin D source for bone health (71%).
- In the pre- testing, most of the subjects lacked awareness regarding nutritional supplements, beneficial effect of fenugreek and its products, benefits of consumption of milk, exercise to relieve stress, balanced diet for weight control and influence of stressful life on obesity. After counseling, awareness regarding nutritional supplements, beneficial effect of fenugreek and its products, benefits of consumption of milk, exercise to relieve stress, balanced diet for weight control and influence of stressful life on obesity was gained by 86%, 91%,100%,100%,80%, 100% and 94% of the subjects, respectively.
- After counseling, 97% of the subjects gained awareness regarding nutritional importance of soybean and became eager and keen to include soybean in their diet. They came to know that iron is present in jaggery and about the practice of sprouting grains to increase the nutritive value of the diet. 87 percent of the subjects were sensitized to include vitamin B complex from their dietary sources and discontinue the practices of straining rice gruel during cooking of rice. To retain the nutrient value of their food, they were ready to discontinue practices like washing vegetables after cutting and boiling milk for longer time.
- After counseling, the frequency of consumption of tea and coffee per day was reduced to just two times (from 4 to 5 times a day) as the respondents learnt about the ill effects of excess consumption of beverages.

Conclusions :

It could be concluded from the study that, “Nutrition counseling” had beneficial effect on Knowledge, Attitude and Practices with regard to improvement in the nutrition , food consumption pattern and dietary pattern of the subjects.

Recommendations:

- 1) The study can be further conducted in a cluster of villages so as to facilitate the beneficial effects of nutrition counseling to women with respect to the food consumption pattern and dietary pattern.
- 2) Nutrition counseling can be adopted as a mandatory programme by the line departments like Department of Women and Child Welfare (ICDS), in each and every district for paving way towards better nutritional status.
- 3) Organizing various method demonstrations on low cost nutritious foods pertaining to specific local area to be included in daily diet, will have good impact on Knowledge, Attitude and Practices related to nutritional status of women.

“Supply Chain Management In Dairy Sector, Opportunities & Possibilities With Special Reference To Sitajakhala Dugdha Utpadak Samabay Samitee, Jagiroad, Morigaon”

- Mr. Ajit Sharma

Introduction:

The Indian dairy industry is chiefly constituted of 22 State Milk Federations, 1,10,000 dairy agreeable social orders including more than 12 million milk makers including some real private players. Sitajakhala Dugdha Utpadak Samabay Samitee Ltd (SJDUSS), Amlighat was started way back in 1958 and is the oldest Dairy Cooperative Society in Assam. In its more than 60 years of existence, the Society has become matured with vast experience and learning. This is a unique example of successful dairy cooperative society in North East India, which has been nationally recognized by awarding NCDC award in the year 2006. This project is a case study on supply chain management in dairy sector with special reference to SJDUSS.

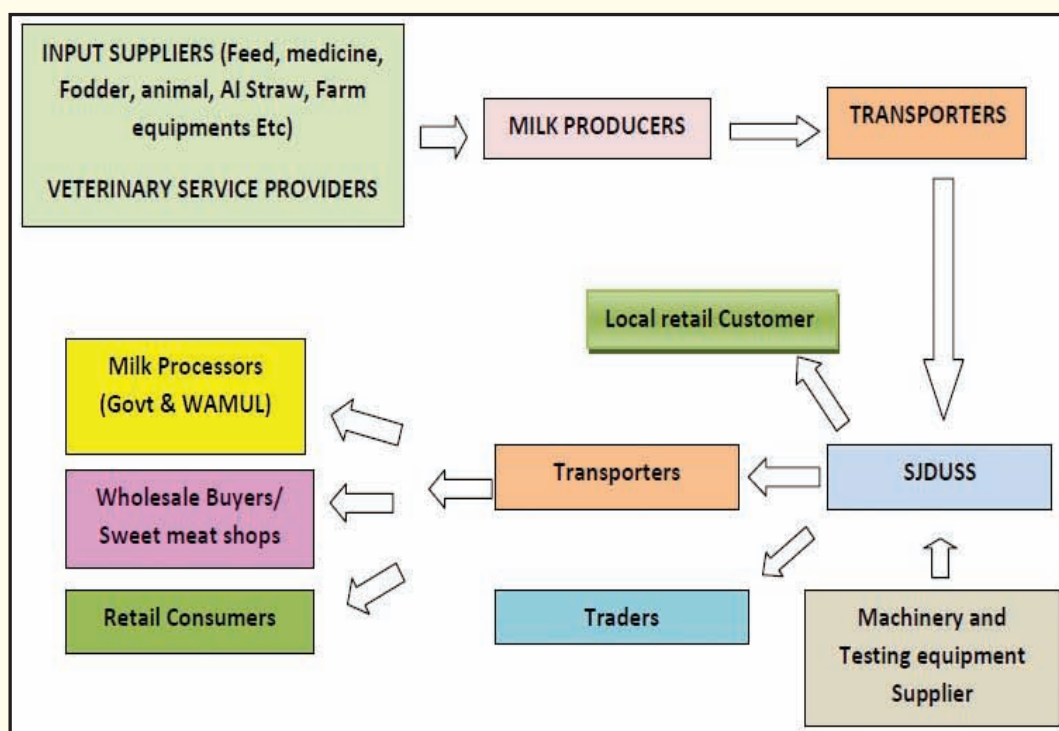
Coverage:

Sitajakhala Dugdha Utpadak Samabay Samitee Ltd. (SJDUSS), a Dairy Cooperative Society in Assam. Amlighat is located nearly 8 kms away from Jagiroad beside NH 37 leading to Jorhat, with more than 550 farmer



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MILK SUPPLY CHAIN OF SJDUSS



members. There are 10 (ten) milk collection points of SJDUSS Ltd. Milk procurement is 9000-10000 L/day in lean season and up to 15000 L/day in flush season while the milk production in the area is 17000 L/day and entire milk is not procured due to lack of infra structure. The issues at producer level and collection level, in transportation, processing and marketing were studied and supply chain interventions were analyzed in terms of benefits from product manufacturing, after value addition, milk use pattern, product portfolio, profitability of various products, etc.

Findings:

Some Supply Chain Interventions that produced positive results are:

A. At Input supply level:

- Establishment of Feed Mixing and grinding mill
- Procuring good quality certified semen from accredited semen collection units
- Establishment of Veterinary Hospital at Amlighat
- Finance from Nationalized Bank
- Improvement of cattle shed
- Additional income from vermi-compost and banana cultivation:
- Gobar gas units at farm

B. At collection level:

- Introduction of electronic milko analyzer machines and policy of 0% water
- Setting up milk collection center with water and electricity

C. At transportation level:

- Induction of Refrigerated milk van
- Milk route wise distribution policy

D. Processing /Value Addition:

- Establishment of Primary processing unit with Bulk Milk Cooler of 2000 L capacity and facilities to produce value added indigenous products like Dahi, paneer, cream, khowa, Rosogulla etc.

E. At marketing level:

- Adoption of Brand name and Logo
- Establishment of own sale outlet at vantage points in Guwahati city
- Establishment of wayside outlet at Amlighat and own outlet at Jagiroa:
- Promotion of the brand
- Reducing milk supplied in bulk to unprofitable customers

Conclusion:

Sitajkhala Dugdha Utpadak Samabai Samitee (SJDUSS) is managing their supply chain appreciably well. The major strength of the organization lies in its:

1. Strong producer base who are hard working.
2. Location with respect to proximity to important townships/cities and the National highway.
3. Organizational leadership which is dedicated and committed.

Various government and non-government agencies are involved directly (Department of Animal Husbandry & Veterinary, Dairy Development of Assam, Department of Cooperation, Department of Agriculture) or indirectly but very crucial (the institutional banking sector and insurance sector) towards development of dairy development of Assam.

Recommendations:

Strengthening and promotion of the 3 Tier cooperative model would remove the shortcomings of production, processing and marketing. This will make the system of input supply and marketing run on auto pilot, while the government should only provide the enabling services in a coordinated manner.

“Epidemiological Investigation of The ‘Peste Des Petitis Ruminants’ Outbreaks in Karnataka, India”

- Dr. Amitha Reena Gomes

Introduction:

Peste des petits ruminants (PPR) is a highly contagious, fatal and economically important disease of both domestic and wild small ruminants and camels. It is included in the OIE (*Office International des Epizooties*) list of notifiable terrestrial and aquatic animal diseases. Currently, the disease is spreading rapidly in most countries of the sub-Saharan region, North Africa, Middle East and Indian sub-continent including Tibet and China. Realizing the gravity of PPR disease, Government of India has launched a National Control Programme (NCP-PPR) that would run in three phases during 11th (2007-12) and 12th (2012-17) five-year plan periods with an aim to control and eradicate this disease from India. The second phase was taken up in the 12th five year plan (2012-17), by the end of which the disease is expected to be fully controlled. The Ministry of Agriculture is also supporting the research institutions for undertaking surveillance and monitoring under this programme. Karnataka became the first state to implement the programme successfully. Thereafter every year around 80 to 90 per cent of the population of small ruminants is covered under mass vaccination.



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Scope:

For effective control of PPR, there is a need for base line epidemiological data on the prevalence of disease in population, accurate diagnostic methods and effective and timely vaccination of the susceptible population. This study conducted for obtaining base line epidemiological data, on the prevalence of disease in population would ascertain the current status of PPR in Karnataka by recording the PPR outbreaks in the State and facilitate in effective control of PPR

Objectives:

Thus the current study was undertaken:

1. To investigate, the efficiency of vaccine and/or outbreak status in the state and
2. To describe the epidemiological and virological investigations of the confirmed sporadic PPR outbreaks reported in different parts of Karnataka State during 2014-15

Coverage:

Clinical samples were collected/received through confirmed sporadic PPR outbreaks reported in twelve different parts of Karnataka during 2014-15 viz. Devamachahalli, Tavarekere Hobli, Bangalore South Taluk; Dyavasandra, Hoskote Taluk, Kolar District; Agasavalli-Hosur Village, Shimoga taluk, Shimoga District; ; Kolnadu, Bantwal Taluk, Dakshin Kannada; Gubbi, Gubbi Taluk, Brammasandra, Sira Taluk, Sira taluk and

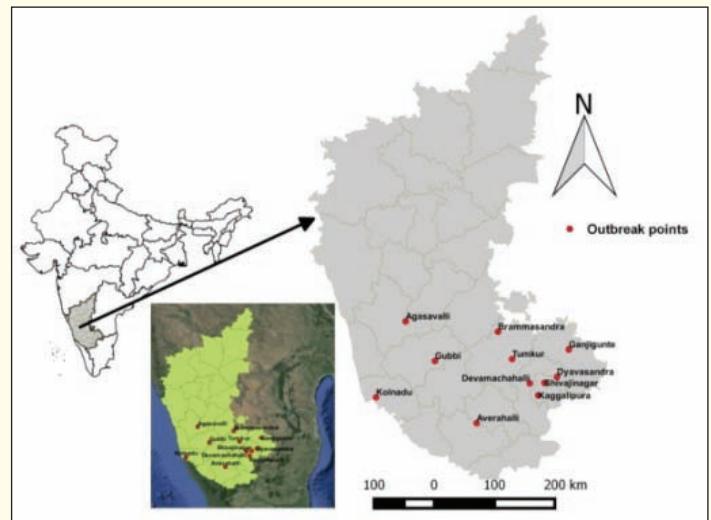


Flock consisting of PPR affected animals

Tumkur in Tumkur district; Avverahalli village, Mandya Taluk, Mandya District; Ganjigunte village, Sidlaghatta taluk in Chikballapur District ; Shivajinagar and Kaggalipura village, Bangalore South Taluk, Bangalore Urban district. Clinical investigations of samples were carried out followed by analysis of data.

Findings:

- The outbreaks of PPR occurred in different villages of the State in local breeds of goats and sheep, aged between three months to three years
- Clinical signs, post mortem findings and epidemiological observations of the outbreak under study clearly indicated the presence of PPR virus.
- Many of these outbreaks were attributed to movement or introduction of animals purchased from the live market without proper vaccination details, history and failure to implement strict quarantine measures.
- The study also revealed that the animals were not vaccinated against the disease due to lack of awareness among the farmers and subsequent contact of infected animals under transport stress might be the key factor leading to an outbreak.



Google Earth map showing the location of outbreaks with geo coordinates by using QGIS 4.12 version software

Recommendations:

- Due to the importance of PPR and high productivity losses in small ruminants, outbreaks need to be monitored carefully in spite of vaccination under NCP-PPR.
- Farmers and other livestock handlers need to be educated on prevention and control measures such as vaccination of animals at appropriate time, good hygienic practices, restriction on movement of infected animals, quarantine measures and bio-security levels within and between flocks/villages.
- Effective implementation of these practices will definitely help in limiting the spread of severity of PPR outbreaks in Karnataka and in minimizing the economic losses due to PPR

“A Case Study on Vanaraja: A Dual Purpose Variety Developed Exclusively For Free Range Poultry Farming in Rural and Tribal Areas”

- Dr. Sanjaykumar Vithalrao Udharwar

Introduction:

In rural areas, poultry products are limited in availability whereas their per capita consumption ranges between 5-20 and 750 grams for eggs and meat, respectively. Many rural families follow low protein diets and so protein malnutrition is prevalent, particularly among pregnant women, nursing mothers and growing children. Rearing improved chicken varieties in rural backyards will increase availability of eggs and meat thereby aiding in alleviation of protein malnutrition, besides providing subsidiary income.

In the State of Goa, backyards in rural areas are a rich source of fallen grains, earthworms, kitchen waste, fish waste, green grass etc and ideally suited for backyard poultry rearing.

The ICAR-Directorate of Poultry Research, Hyderabad has developed a dual purpose chicken variety, ‘Vanaraja’ which gives eggs and meat and is suitable for rearing in the backyards.

Objectives:

1. To study knowledge of the farmers regarding improved breeds of poultry other than the ‘Desi’ (country breed) poultry birds.
2. To study survivability of the ‘Vanaraja’ birds in local conditions of Goa.
3. To study farmers’ opinion/ response on rearing of ‘Vanaraja’ birds in their backyard with regard to ease in handling.
4. To know production of ‘Vanaraja’ birds in local conditions
5. To know the body weight of ‘Vanaraja’ birds at different age
6. To know the economic benefits to the farmers by maintaining ‘Vanaraja’ birds

Scope of the study:

There is high demand for meat and eggs in Goa where people and tourists are pre-dominantly non-vegetarian. Besides, the meat and eggs of ‘Vanaraja’ birds in taste and appearance wise are similar to ‘Desi (country)’ birds and more preferred than those of commercial broiler/layer birds.

Multi-coloured improved birds like ‘Vanaraja’ can be maintained as a source of attraction in Agro-cafes and agro eco-tourism spots that are becoming more popular in Goa, in recent times.

Coverage and Methods:

The study was conducted in Old Goa. Fifty farmers who were Beneficiaries of Tribal sub-plan of ICAR-CCARI, Goa were supplied with 10 (8 female+2male) two month old ‘Vanaraja’ chicks and selected randomly as respondents for the survey. Prior to distribution of the birds, these farmers were trained in backyard poultry by experts. Questionnaire on performance of ‘Vanaraja’ birds was used and information was gathered from 50 selected farmers after 18 months of receiving the birds. Data was collected on the following aspects of ‘Vanaraja’



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‘Vanaraja’ flock with other ‘Desi’ birds in farmer’s yard

birds viz. farmers' knowledge regarding improved poultry breeds (previous and present); survival rate in local conditions; overall opinion of farmers regarding ease of handling the birds; body weight at different ages; egg yield; days to first laying; overall economic benefits, etc.

Findings:

94% of the respondents agreed that management of 'Vanaraja' birds was easy and comparable with that of 'Desi' birds.

Egg production of 'Vanaraja' birds @108 eggs /hen/year was higher than 'Desi' hens' egg production @58 eggs/hen/year.

99% of the farm women were satisfied with the taste of meat and eggs of 'Vanaraja' birds.

Cost of rearing 'Vanaraja' birds was same as that of 'Desi' birds.

Net returns from 'Vanaraja' birds was Rs.864/bird/year (at prevailing market price for brown coloured 'Vanaraja' eggs of Rs.8/egg).

68% of respondent families opined that 'Vanaraja' birds played important role and was useful in uplifting their social status, while 32% of them opined that rearing of 'Vanaraja' birds was very useful.

Conclusion :

'Vanaraja' -a dual purpose variety developed by ICAR-DPR, Hyderabad, exclusively for free range poultry farming performs well, has high resistance power and gives both nutritional security and subsidiary income to rural/tribal families of Goa.

Recommendations:

- Majority of the respondent farmers expressed the need for multiplication and promotion of 'Vanaraja' variety in other parts of Goa. There is a need for awareness about such good dual purpose backyard poultry breeds among farmers.
- Farmers need to be trained on feeding and health care management of poultry birds
- There is a need of government schemes to promote this dual purpose bird variety for nutritional security, subsidiary income and production of poultry manure.
- Government should declare special prices for eggs and chicken of backyard poultry by developing special markets in each Tehsil.
- Extension functionaries and grass root level workers need to be given hands on training on poultry farming.
- Based on the demand for brown coloured eggs in big cities, government initiatives are needed for procurement of these eggs from farmers at competitive rates in all seasons.
- Farmers need training on attractive packaging for sale of these eggs in supermarkets

“Fish cum Duck Integration”

- Dr. Yumnam Bedajit Singh

Introduction:

Integrated fish farming is a system where fish culture is undertaken in combination with crop, live stock, horticulture, sericulture etc. in a single resource by recycling of their waste/bye-products in fish pond to minimize the operational expenses on fertilizers and feeds. Integration of aquaculture practice with duck has gained momentum maintaining a balanced sustainable ecosystem. Fish pond being a semi-closed biological system with several aquatic animals and plants, provides an excellent disease-free environment for ducks. In return, ducks consume insects and pests from the water body, making a safe environment for fish. Droppings of ducks acts as substitute to fish feed & pond fertilizer, which account for 60% of total input cost in fish culture. Organic wastes of 40-50 kg can produce one kilogram of fish. In addition to fish, this system can provide meat and eggs.

Manipur has a water area of about one lakh hectare with a culture potential for “Fish cum Duck integration”. With these views, the project work was taken up with the following objectives :

Objectives:

- i. To study the economics of fish cum duck integration
- ii. To find out the benefit cost ratio of fish cum duck integration

Coverage and interventions:

Ten numbers of perennial ponds of size 0.5 ha were taken for the study. The water level was maintained at 1.2 to 1.5 m and bleaching powder was applied @ 100 ppm. Lime is applied @ 500kg/ha. No fertilization and feeding except excreta of duck and remains of duck feeds. **Fish stocking** in the ponds @ 5000 advanced fingerlings (>10cm) per 0.5 hectare with six species combination of Indian major carps and exotic carps were done in the ratio of 2:2:2:1:1:2 (catla: rohu: mrigal: silver carp: grass carp: common carp).

Construction of duck house/ low cost night shelter using split with 10 cm gap to fall the excreta in the pond and maintaining some husk or hay in the corners of the duck house for egg laying. **Duck stocking** was done by releasing three weeks old ducklings of Khaki Campbell in the pond @100 numbers/0.5 ha. Ducks were raised on natural feed viz. aquatic weeds, grasses, insect/ larvae and benthic fauna available at the pond bottom, which was supplemented by kitchen leftover and rice bran given @ 75g/ bird/day. Average data for ten number of ponds were taken for calculation of Economics for fish cum duck farming.



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Duck stocking



Findings:

Economics of Fish cum Duck farming for 0.5 ha pond

I. Total cost: A+B+C

A. Fixed cost: Duck house Katcha type + **B. Variable Cost:** Pond lease value; Bleaching powder; Fish fingerlings; Ducklings; feed for duck ; labour and miscellaneous + **C. Depreciation on fixed capital and interest on fixed capital**
 = **Rs.141616.50**

II. Gross Income/ 0.5 ha:

Fish (3730 kg) + duck egg 7350 nos. + duck meat 210 kg = **Rs.355600.00.**

III. Net Income i.e. Gross Income – Total Cost (355600 – 141616.50) : = **Rs.213983.50**

IV. Benefit cost ratio: **2.51**

Conclusion:

Fish cum duck farming has lots of potential, as an alternative source of affordable protein and socio economic development of poor rural people of Manipur. Thus, it can be brought into large scale farming to improve the livelihood status of poor rural farmers.



“Present Status and Awareness about Catfish Culture in rain fed area of West Bengal”

- Mr. Sudipta Sarkar

Introduction:

Fisheries and aquaculture are an important source of food, nutrition, income and livelihood for millions of people across the globe. India is presently the second largest producer of fish and playing an important role in global fisheries. About one third of the fish production of the country comes from fresh water aquaculture production. Although, Indian major carps (Rohu, Catla and Mrigal) are the major contributors of fresh water aquaculture, of late the Govt. of India has identified Catfish farming as a national priority and has emphasized on diversion of cultural practices.

Purulia is one of the most backward districts with second highest population of Scheduled Tribes in West Bengal. It has high potential to expand its fisheries through proper management in rainfed areas.

Objectives:

1. To study the present status of catfish culture in a block under rainfed area in West Bengal and
2. To ascertain awareness level of fish farmers for catfish culture in rainfed conditions.

Coverage:

The study area was Raghunathpur II Block in Purulia district. Primary data was collected from 30 respondents (5 from each Gram panchayat) selected using multi stage random sampling technique by a structured questionnaire and data were analyzed using percentages and frequency distribution.

Findings:

Male fishermen belonging to “Dhibar and Khoibarta” communities are usually involved in fishery activities. Common ponds are leased by a group of fishermen in a village. Less than 50% of the respondents are interested in Catfish culture because of the following reasons :

1. Non-availability of seed (spawn) of indigenous catfish/govt. hatchery within the district.
2. Lack of knowledge on breeding techniques and management practices; lack of technical knowledge
3. Non-availability of Govt. subsidy and credit facilities.

Recommendations:

The study recommends provision of effective extension service to generate awareness among fish farmers and timely information on technology.



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“Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and Tribal Livelihoods: A Case Study in Khandwa District of Madhya Pradesh”

- Mr. Yogesh Birla

Introduction:

Government of India (GOI) enacted National Rural Employment Guarantee Act (NREGA) in 2005. This Act now renamed as Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is considered as a “Silver Bullet” for eradicating rural poverty and unemployment, by way of generating demand for productive labour force in villages. It provides an alternative source of livelihood which will have an impact on reducing migration, restricting child labor, alleviating poverty and making villages self sustaining through productive assets creation such as road construction, cleaning up of water tanks, soil and water conservation work, etc. Hence it has regarded as the largest anti-poverty programme in the world.

The present study attempts to critically examine the implementation process of this programme and its impact on tribal livelihoods i.e. to what extent MGNREGA has been effective in sustaining livelihoods of poor tribal communities in a tribal dominated Panchayat of Khandwa district, Madhya Pradesh.



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Objectives:

1. to understand the implementation procedures of MGNREGA and its impact on tribal livelihoods in a tribal dominated Panchayat of Khandwa district, M.P.
2. to understand and examine institutional mechanisms under which the entire programme is being implemented.

Coverage:

The study was carried out in Kundia Gram Panchayat of Baldi (Killod) Block in Khandwa District, Madhya Pradesh. The village Kundia consists of three hamlets i.e Korku, Banjara, Gawali. A total of 150 households including job card holders and non-job card holders were selected through purposive sampling and random sampling methods, respectively. Primary data was collected from selected households through semi-structured informal interviews and from stakeholders involved in MGNREGA scheme through questionnaire survey. Transect walk into the MGNREGS worksites were conducted to have better understanding on the MGNREGS works at the community level. Secondary data was obtained from official records, policy documents, published reports on MGNREGA. The quantitative and qualitative data were analyzed.

Findings:

- There was an increase in income level (28.52%) and increase in spending level (47.42%) of the MGNREGA beneficiaries, with a shift in expenditure pattern from food to non-food items i.e. from essential to luxury items. However impact of program on their livelihoods was less or insignificant.

- An increase in spending on alcohol and its consumption was found, however there was no asset creation from the earnings of this scheme by the beneficiaries.
- Women in the study area have become pro-active learners and participants in the schemes
- 45% households were non-job card holders with lack of interest to work under MGNREGA as they had greater mobility for seeking alternative job opportunities elsewhere.
- The reasons for non-issuance of job cards may be due to the factors such as relative socio-political and economic strength of the households, awareness level, proximity to the Panchayati Raj Institution (PRI) functionaries etc.
- Some biases based on religion, locality and favouritism; acceptance of bribe for issue of job cards and other malpractices such as fake entries, card manipulation were also observed.

Recommendations:

- There is a massive demand for MGNREGA work and administration should respond to it by increasing the scale of employment.
- Due care should be taken for effective implementation of the scheme.

“Studies on Performance and Progress of Kisan Credit Card (KCC)”

- Ms. Diasri Mondal

Introduction:

In order to sustain growth of agricultural sector, credit plays a major role. In this context, Kisan Credit Card (KCC) scheme introduced in the year 1998-99 by the Government of India was a step towards facilitating access to Short-Term (ST) credit for the borrowers from financial institutions. The scheme was conceived as a unique credit delivery mechanism, which aimed at provision of adequate and timely supply of ST credit to farmers to meet their crop production requirements.

This study was mainly concerned with the farmers' problems and suggestions in order to improve the progress of Kisan Credit Card (KCC).

Objectives:

1. To study awareness about Kisan Credit Card among its holders and their attitude towards KCC
2. To study the extent of utilization of KCC
3. To study the problems faced by KCC holders



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Coverage :

Primary data was collected from 60 KCC beneficiary farmers of Serampore, Uttarapara Block, Hooghly district and 60 non-beneficiary farmers in the same block for comparison, using structured schedule on aspects of farm business, perception of farmers about KCC scheme.

Collection of secondary data on total number of KCC issued by various institutions and regions was obtained from publications of NABARD, RBI and GOI. The data was used to study the flow of credit to the farmers through KCC from three types of financial institutions viz . Co-operative banks, regional rural banks and Commercial banks.

Findings:

- The performance of KCC scheme in the block under study was good as revealed from the growth rate in the number of cards issued, advance sanctioned per KCC account.
- The number of cards issued varied across Gram Panchayats of the Block.
- The Cost Benefit analysis of KCC beneficiary and non-beneficiary farmers revealed that the cost of cultivation and gross return per hectare for the major crops in the block namely Paddy was higher for KCC beneficiary than the non – beneficiary.
- The growth rate in the amount sanctioned per account under KCC was better for commercial banks than Rural banks and co-operative banks.

Conclusions/Recommendations:

- The co-operative institutions need to be strengthened so that they could serve rural population better because of their reach and wide presence.
- There is also a need to understand the problems affecting performance of KCC scheme.
- To bring more beneficiaries under the scheme, the process of opening bank account should be simplified.

“Agricultural Technology Management Agency (ATMA): A study of critical evaluation of its implementation in Nagaland with special reference to Tuensang District”

- Ms. Thongkoi

Introduction:

In India, existence of wide variety of agro-climatic regions and existence of different socio-economic conditions in the rural population, calls for agricultural extension approaches that are context-specific and situation-specific. To realize the benefit of higher prices, farmers need to access a wide range of information, related not only to production technologies but also to post-harvest processes, access to remunerative markets, price information and business development. The centrally sponsored scheme “Support to State Extension Programme for Extension Reforms”, seeks to make extension system farmer driven and farmer accountable by way of new institutional arrangements for technology dissemination in the form of ATMA.

Objectives:

- i. To assess the extent of success achieved in adoption of broad based extension delivery mechanism.
- ii. To assess efficacy and effectiveness of the institutional mechanism created under ATMA.
- iii. To take steps to ensure that problems/ constraints and needs of the farming system based agriculture development are identified and diagnosed periodically.
- iv. To ensure capacity building of manpower engaged in overall agricultural development for the benefit of the farmers.

Coverage and Interventions:

Project study was carried out in the Tuensang district of Nagaland in 8 existing blocks under ATMA Tuensang viz, Sangsangyu, Longkhim, Chare, Noksen, Chessore, Thonokhyu, Noklak, and Shamator. The blocks included 119 villages with 61 farmer friends. Impact assessment study was done by primary and secondary data collection, analysis and through case studies. Primary data was obtained during field survey, directly from farmer beneficiaries in village, Information obtained from the members of Farm Advisory Committee(FAC) as well as Block Technology Team to ascertain whether FAC held separate meetings to discuss Block Action Plan amongst the farmers.

Activity-wise comparison of male and female beneficiaries under ATMA and study of Farm Schools established in various blocks was also done. Rewards and incentives were given to farmers/FIGs/SHGs convergence of extension activities.



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Findings:

- The extension approach envisaged under ATMA programme was initially slow in remote locations, some hilly terrain and international border areas due to the mobility and conveyance constraints, but it was gradually picking up.
- Interventions undertaken by ATMA have resulted in multi-farious outcomes, ultimately leading to greater impact even during a short span of time.
- Technology dissemination through various institutional arrangements show improvement over the pre-ATMA position
- ATMA has expanded the range of extension activities (field technology demonstrations, farmer trainings, study tours, farm schools, exhibitions and farmer-scientist interaction) at the district and block levels.
- BTT and FAC have started playing significant role in planning & execution of developmental schemes. Some of the blocks under Tuensang district have made reasonable progress.
- ATMA have also developed a pool of Farmer Resource Persons who are by and large FIG/WIG leaders, extending technical know-how to farmers/ farm women in their area of expertise.
- FIGs/CIGs/SHGs have initiated some activities.
- A large number of success stories have been witnessed with community approaches in various areas namely vegetable farming, fishery, horticultural crops, mushroom cultivation, integrated farming etc.



Recommendations/conclusions:

- Agricultural extension should also support and address relevant areas beyond the farm, such as storage, processing, market access and trade, agribusiness management and entrepreneurship, natural resource management and issues related to women.
- It is important to provide farmers the tool for observation and to train them to monitor the situation on their own farms.
- More focus is needed for strengthening women beneficiaries and CIGs for linking the technology delivery and capacity building programme, input supply and subsidy provision.
- The research, extension and farmers linkage through meetings and scientist interactions needs to be enhanced during each rabi and kharif season.

Role of Information Communication Technology (ICT) in Agriculture Innovations

- Mr. Imlisunep Ajem

Introduction:

Over the past 10 years, there has been a remarkable progress in the use of ICT in agriculture, especially in areas of farmers access to market information. Various projects have been developed that integrate ICTs for dissemination of agricultural information to the farmers. Farmers Information Services at the national and regional level are a promising new field of research and application in the emerging field of e- agriculture. This paper discusses several innovative projects using ICTs to deliver information to farmers, focusing its analysis largely on mobile telephony, which has become more widespread recently as a means of disseminating agricultural information to farmer and offers various means of providing agricultural information in areas where internet infrastructure is limited and unreliable.

The purpose of this study was to examine the impact of an innovative mobile phone technology assisted agricultural service delivery system, for poor and marginalized farmers in Tuensang of India.



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Coverage:

Eight existing blocks in Tuensang district were covered under the study viz, Sangsangyu, Longkhim, Chare, Noksen, Chessore, Thonokhyu, Noklak and Shamator. The blocks included 119 villages with 61 farmer friends in Nagaland.

Objectives:

1. To understand the concept and components of ICT.
2. To connect and develop an understanding of the role of ICT to villages and communities.
3. To appreciate the need and benefits of ICT.
4. To understand critical success factors of ICT.



Findings :

1. Farmers gained knowledge and awareness after being exposed to the innovative mobile phone technology.
2. More than 75% of the farmers viewed mobile phone assisted services useful.
3. More than 96% of the farmers were using more agricultural advice after they were exposed to the innovation.
4. The experience of using this mobile phone technology assisted extension services has made farmers feel more at ease with new technology and adapting to new things in life in future.
5. The disadvantaged farmers and poorer communities gained more from this ICT-assisted intervention than those who were better off.

Conclusions and recommendations:

- ICT-assisted intervention can generate significant developmental effects for the poor.
- Future research should focus to identify improvement in farm practices, efficiency and competitiveness to direct innovation towards supporting, efficient and competitive farm practices by small and marginalized farmers.
- Appropriate policy to target the factors that influence the strength of the impact of ICT on the final outcome of intervention such as welfare, to ensure better access of the resources by disadvantaged groups.





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(An Organization of Ministry of Agriculture & Farmers Welfare, Govt. of India)

Rajendranagar, Hyderabad – 500030, T.S.,INDIA.

www.manage.gov.in

Printed at:

Balaji Scan Private Limited

11-2-1145, Beside Matas Temple,

Nampally, Hyderabad, Telangana – 500 001, INDIA.

Tel: 23303424/25, 9248007736/37