New Dimensions in Agricultural Sector Extension Management

2022

Edition

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New Dimensions in Agricultural Sector Extension Management

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This e-book is a compilation of resource text obtained from various subject experts of GADVASU, Ludhiana & MANAGE, Hyderabad, on "New Dimensions in Agricultural Sector Extension Management". This e-book is designed to educate extension workers, students, research scholars, academicians related to agriculture, veterinary science, fishery science and animal husbandry about the agricultural extension dimensions. Neither the publisher nor the contributors, authors and editors assume any liability forany damage or injury to persons or property from any use of methods, instructions, orideas contained in the e-book. No part of this publication may be reproduced or transmitted without prior permission of the publisher/editors/authors. Publisher and editors do not give warranty for any error or omissions regarding the materials in this e-book.

Published for Dr. P. Chandra Shekara, Director General, National Institute of Agricultural Extension Management (MANAGE), Hyderabad, India by Dr. Srinivasacharyulu Attaluri, Program Officer, MANAGE and printed at MANAGE, Hyderabad as e-publication.

MESSAGE

National Institute of Agricultural Extension Management (MANAGE), Hyderabad is an autonomous organization under the Ministry of Agriculture & Farmers Welfare, Government of India. The policies of liberalization and globalization of the economy and the level of agricultural technology becoming more sophisticated and complex, calls for major initiatives towards reorientation and modernization of the agricultural extension system. Effective ways of managing the extension system needed to be evolved and extension organizations enabled to transform the existing set up through professional guidance and training of critical manpower. MANAGE is the response to this imperative need. Agricultural extension to be effective, demands sound technological knowledge to the extension functionaries and therefore MANAGE has focused on training program on technological aspect in collaboration with ICAR institutions and state agriculture/veterinary universities, having expertise and facilities to organize technical training program for extension functionaries of state department.

Extension services in Kenya play a critical role in disseminating knowledge, technologies, and agricultural information to farmers. In MANAGE extension and advisory services have evolved and comprise public, non-profit and private sector players who constitute an important part of the agricultural value chain. The evident goal of agricultural extension is to help farmers to overcome agriculture-related constraints by persuading them to adopt/adapt and use innovations.

It is a pleasure to note that, SAMETI, Jharkhand and MANAGE, Hyderabad, Telangana are organizing a collaborative training program on “New Dimensions in Agricultural Sector Extension Management” from 27-29 June, 2022 and coming up with a joint publication as e-book on “New Dimensions in Agricultural Sector Extension Management” as immediate outcome of the training program.

I wish the program be very purposeful and meaningful to the participants and also the e-book will be useful for stakeholders across the country. I extend my best wishes for success of the program and also I wish SAMETI, Jharkhand many more glorious years in service of Indian agriculture and allied sector ultimately benefitting the farmers. I would like to compliment the efforts of Dr. Shahaji Phand, Centre Head-EAAS, MANAGE, Hyderabad, Dr. Subhash Singh, Director, SAMETI, Jharkhand for this valuable publication.

Dr. P. Chandra Shekara
Director General, MANAGE

FORWARD

I am pleased to inform you that SAMETI Jharkhand and manage Hyderabad are organizing a Collaborative Training Programme on "New Dimensions in Agricultural Sector Extension Management" from 27 – 29 June 2022.

Agriculture and Allied Sector in India especially in Jharkhand is the backbone of the livelihood. The present Agriculture and Rural Development scenario is full of challenges and we are facing competition in our local as well as national market. Therefore, it is very important to empower our extension functionaries by management trainings.

SAMETI Jharkhand is doing a great job in providing training related to managerial, skill and communication support and fulfills the training needs of agriculture extension functionaries. This Institute is committed to provide capacity building of extension management. Human Resources Development, participatory approaches and Information Communication Technology. The present publication "New Dimensions in Agricultural Sector Extension Management "is a laudable attempt to assess the Agricultural position in the State and suggested to overcome the situation.

I hope that the book will be of immense use for agriculture planner and extension workers of the State. I extent my best wishes to Dr. Shahaji Phand, Center Head, MANAGE Hyderabad and Dr. Sushrirekha Das MANAGE Fellow, MANAGE, Hyderabad for their painstaking efforts.

Dr. Subhash Singh
Director, SAMETI,
Jharkhand, Ranchi

PREFACE

Agriculture extension system bridges the gap between research labs to a farmer's field. Agricultural research, education and extension are said to be the most critical for promoting farm productivity and enhancing farmer's income. The public sector is major extension service provider and the reach of the public extension is limited in India and in addition it is burdened with non-extension responsibilities such as the distribution of subsidies and inputs, with little time left to attend to core extension activities. The objective of the article is to review the agricultural extension system in India to suggest pathways for better extension system in India. The topics have been carefully selected to offer possible solutions to common problems/ issues encountered in agriculture. This book was made possible by the sincere efforts of the contributing authors.

This e-book is an outcome of collaborative online training program on "New Dimensions in Agricultural Sector Extension Management" conducted from 25-27 June, 2022. This book will be highly useful to field functionaries as well as extension workers who are working at the ground level. A myriad of topics for achieving doubling of farmer's income by 2022 without the successful delivery of agricultural extension to rural smallholder farmers is a daunting task.

The editors express sincere thanks to Dr. Subhash Singh, Director, SAMETI, Jharkhand, for encouragement in publishing this e-book. The financial aid provided by MANAGE, Hyderabad for this training program is duly acknowledged. We hope and believe that the suggestions made in this e-book will help to improve the ability of all the agricultural extension officers.

June, 2022

Dr. Shahaji Phand
Dr. Sushrirekha Das
Mr. Abhishek Tirkey
Dr. Subhash Singh

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Chapter-1

New Dimensions of Agricultural Extension

B.K. Jha
Birsa Agricultural University, Ranchi

The word dimension has different meaning to different person. To commoner, dimension is a measurement of something in particular direction, especially its height, length, or width. It also denotes a part or feature or way of considering something. In physics and mathematics, the dimension of a mathematical space (or object) is informally defined as the minimum number of coordinates needed to specify any point within it. It shows that dimension does not reflect only physical attributes, but it also shows abstract attributes. We often use the word in different context to describe the scope and boundaries of something like social dimensions, cultural dimensions, psychological dimensions, political dimensions etc. The word extension is derived from the Latin roots 'ex' - meaning 'out' and 'tensio' meaning 'stretching'. Stretching out is the meaning of extension. The word extension signifies an out of school system of education. Extension is primarily an educational process and education aims at changing the behavior of individuals. It is, therefore, imperative that entire efforts of extension should hover around behavioral aspect. Mishra (1990) analyzed about 40 dimensions over a period of 1953 to 1989 and extracted the following 10 dimensions of extension.

1. Altruistic Dimension
2. Educational Dimension
3. Communication Dimension
4. Behavioral Dimension
5. Technology Dimension
6. Research Dimension
7. Inputs Dimension
8. Professional Dimension
9. Income Dimension
10. Management Dimension

The above dimensions connote activities and scope of extension. Kelsey and Hearne (1967) identified nine areas of programme emphasis, which indicate the scope of agricultural extension *viz.* 1. Efficiency in agricultural production. 2. Efficiency in marketing, distribution and utilization. 3. Conservation, development and use of natural resources. 4. Management on the farm and in the home. 5. Family living. 6. Youth development. 7. Leadership development. 8. Community development and rural area development. 9. Public affairs.

Doubling Farmer Income Committee has further expanded the role of extension, which are: Providing information on going schemes and programs in agriculture & allied sectors, Capacity building, Skilling in emerging areas, Advocacy on farmers' interests, Counselling for farmers' well-being ,Credit facilitation ,Critical assistance in risk management including climate change, crop insurance etc, Documentation and Reporting roles, Enforcement of Farmers' Charters, Issuing Advisories on soil health management, water conservation, pest management etc., Facilitating access to production and postproduction inputs & data, Facilitation & feedback, Friend, philosopher and guide to farmers, Engaging in research planning, Promoting projectized mode of extension delivery, ICT enabled services, Intermediation, Linking farmers to markets, Building managerial competence, Linking various support & service networks, Organizing user/producer groups, Planning, Monitoring and Evaluation, PPP Promotion, Promoter of farmer led innovations, Redressal of grievances, Technology selection, etc, and Feedback to research system.

New Trends in Extension

Change is law of nature. With passage of time, changes take place in society, technology and policy. The new perceptible changes are Public-Private- Partnership (PPP), Market-led Extension, Farmer-led Research and Extension, Gender Mainstreaming in Agriculture, Information Communication Technology (ICT) and Farmer Producer Organizations (FPOs).

1. Public Private Partnership: It means an arrangement between a government / statutory entity / government owned entity on one side and a private sector entity on the other, for the provision of public assets and/or public services, through investments being made and/or management being undertaken by the private sector entity, for a

specified period of time, where there is well defined allocation of risk between the private sector and the public entity and the private entity receives performance linked payments that conform (or are benchmarked) to specified and pre-determined performance standards, measurable by the public entity or its representative.

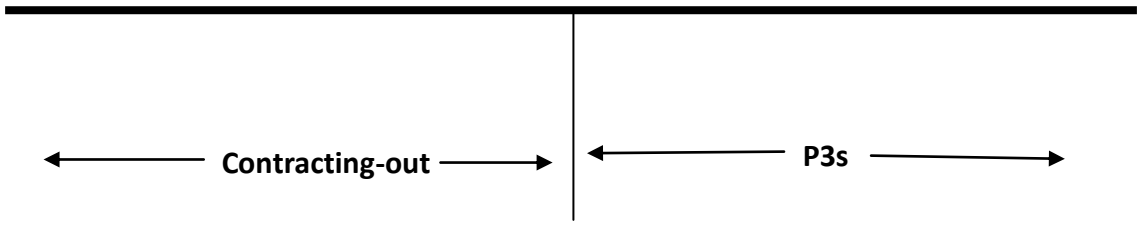


Table- 2 Paradigm shift from Production Led Extension to Market –Led Extension

Aspects	**Production-led extension**	**Market-led extension**
Purpose/objective	Transfer of production technologies	Enabling farmers to get optimum returns out of the enterprise
Expected end results	Delivery of message adoption of package of practices by most of the farmers	High returns
Farmers seen as	Progressive farmer High producer	Farmer as an entrepreneur "Agripreneur"
Focus	Production/fields "Seed to seed"	Whole process as an enterprise/High return "Rupee to Rupee"
Technology	Fixed package recommended from an agro-climatic zone covering very huge area irrespective of different farming situations	Diverse baskets of package of practices suitable to local situations/farming systems
Contact with farmers	Individual	Farmers' Interest Groups Commodity Interest Groups/SHG's
Maintenance of Records	Not much importance as the focus was on production	Very important as agriculture viewed as an enterprise to

		understand the cost benefit ratio and the profits generated
Information Technology support	Emphasis on production technologies	Market intelligence including likely price trends, demand position, current prices, market practices, communication net work, etc besides production technologies

Farmer-led research and extension:

Farmer-led research and extension (also called "participatory technology development, or PTD) combines the knowledge and research capacities of local communities and research and development organizations in an interactive learning process. It involves identifying, generating, testing and adapting new techniques and practices to help solve local problems. The ultimate aim is to strengthen the experimental and technology management capacities of local people and communities; thus, farmers play a key role in the entire process. The "P.' in PTD can also refer to "people-cantered" strategies and processes.

Gender Mainstreaming in Agriculture: Gender mainstreaming was established as a major strategy for the promotion of gender equality in the Fourth World conference of Women in 1995. Gender mainstreaming is the process of assessing the implications for women and men of any planned action, including legislation, policies and programmes, in all areas and at all levels. It is a strategy for making women as well as men's concerns and experiences, an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated. the ultimate goal is to achieve gender equality.

Information and Communication Technology: ICT (information and communications technology - or technologies) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning.

ICT Practices Adopted by Agricultural Organizations

ICT is all pervasive technology. Over the years it has entered into the activities of of all agricultural organizations.

Activities	**Organization**	**ICT**
Teaching	Agril. University/ ICAR Institutes	Website/App/social media
Research		Website
Extension Education		Website/App/social media/Radio/TV/CRS/Print Media
Extension Services (Advisory and Information services/ Training/Demonstration)	Ministry/ Department of Agriculture/NGOs/Input Companies	Website/App/social media/IVRS/Call Centre/SMS/Radio/TV/CRS/Print media
Input Management	Ministry/ Department of Agriculture/NGOs/Input Companies	Website/App
Input supply	Input Companies	Website/App

A number of initiatives has been undertaken by Government and Non-government Organizations. Based on media involved, the initiatives have been presented in following tables**.**

Video based agricultural extension		
Name of Initiative	**Country**	**Feature and achievements**
Digital Green	Ethiopia, Kenya, Ghana, India, Niger, Afghanistan	• Agricultural extension through participatory video production • Hub and spoke model • Partnership with Government and NGOs. • Produced more than 3 000 videos in more than 20 languages • Reached more than 300 000 farmers across more than 3 900 villages across India, Ethiopia and Ghana
Access Agriculture	Global	• Online Training videos in multiple languages (http://www. accessagriculture.org/)

IVR based Agricultural Extension		
GoviMithuru	Sri Lanka	• GoviMithuru is an IVR-based agriculture information service, where farmers can register with relevant information and then get periodical push information (alerts) or can dial the IVR to listen to current advisories on agriculture, nutrition and preventive health care, tailor-made to their profiles.
80-28 hotline	Ethiopia	• IVR-based agronomic advice and info hotline. • The hotline received more than 7.5 million calls since its' start mid 2014. (http://www. ata.gov.et/ highlighteddeliverables/ 8028-agriculturalhotline

Radio based Agricultural Extension		
Farm Radio International (FRI)	Global	• Radio scripts, interactive radio content related to agriculture (http://www.farmradio.org/)
The organic Farmer	Global	• Multimedia agro content (radio, online, etc) (http://theorganicfarmer.org/)

Web based Agricultural Extension		
Toto	Global	• Online dashboard • database of databases (agriculture content, weather, prices) http://www.totoagriculture.org
NeGP-A	India	• This is one of the Nission Mode Project under National e-Governance Plan (NeGP). Twelve clusters of services have been deployed down to the Block level across country.
Rural Universe Network (RuN)	Global	• Rural Universe Network (RUNetwork) started in 2000 in Uganda and is currently covering most of Sub- Saharan countries, Jamaica and Iran.
FAO-Virtual Extension and Research Communication	Global	• VERCON aims to harness the potential of the Internet and apply it to strengthening and enabling linkages among the research and extension components of the national

Network		agricultural knowledge and information system (http://km.fao.org/ vercon/).
FAO Food Price Monitoring and Analysis tool	Global	• FAO Price Tool is a database that currently includes over 1000 monthly domestic retail and/or wholesale price series of major foods consumed in 78 countries and 11 international cereal export price series, covering a total of 20 different food commodity categories. (http://www.fao.org/giews/pricetool/).
AGMarknet	India	• AGMARKNET is an agricultural marketing Information system network initiated by the Union Ministry of Agriculture in India (http://agmarknet.dac.gov.in/).

Mobile based Agricultural Extension		
Electronic Solutions against Agricultural Pests (ESAAP)	India	• Electronic Solutions against Agricultural Pests (eSaAP), developed at the University of Agricultural Sciences (UAS) Raichur in association with Tene Agricultural Solutions Pvt. Ltd., Bengaluru is a tested ICT system dedicated for crop health management.
Reuters Market Light Information Services	India	• Price, weather, news, advisory services via mobile(SMS, WAP, Android) (http://www.myrml.in/)

SMS based Agricultural Extension System		
Mobile market information service	Papua New Guinea	• To access market information, users are required to send a short message service (SMS). • After sending the SMS, users will receive a return message containing the desired information at any urban market instantly. • The service is currently providing market information for a total of 12 crops at eight urban markets.

Hello Tractor	Nigeria	• SMS-based tractor rental service – a cloud-based booking system allows farmers to request schedule and prepay for tractor services, from nearby Smart Tractor owners, through SMS messaging and mobile money (http://www.hellotractor.com/).

Web-based and Mobile-based Agricultural Extension		
IRRI Rice Knowledge Bank	Asia and Africa	• In 2002, IRRI's RKB project worked with national agricultural research and extension (NARES) partners to introduce good rice knowledge management. • Over the years IRRI has been upgrading technology. Rice Doctor was developed using Robohelp software (2002), open source content management system (2008) and mobile app (2014).
e-Krishok	Bangladesh	• 360-degree solutions covering preproduction, production and postproduction phases, i.e. from extension to market linkage • Information portal www.ekrishok.com • Short code-based Help Line 16250 • SMS-based advisory services
Africa Fertilizer	Africa	• The web- and mobile phone-based AMITSA system utilizes both private and public sector agro-input stakeholders to collect and process market data and information,.
Jharkhand weather	India	• The system provides village Panchayat level weather forecast on daily (14 parameters and hourly (six parameters) in Jharkhand state of India. (http://www.bau-eagriculture.com/ weather/faces /index.jsp). It is web and mobile app-based.

Farm Force of Syngenta Foundation	Ghana	• Farm force is a web /mobile application that is used to manage out grower schemes and large farmers remotely.
Agrinet	Uganda	• Agrinets products and service include agricultural market intelligence, transaction security service, product marketing, agro-processing and value addition. This is web-based and SMS based system(.http://www.agrinetug.net/)

Multiple channels based agricultural extension		
Umang	India	• UMANG service is available on multiple channels like mobile application, web, IVR and SMS which can be accessed through smartphones, feature phones, tablets and desktops. • Besides other services, it also provides agricultural services (https://web.umang.gov.in/web/#/).

Mobile and Web Application developed by BAU, Ranchi		
Sl. No.	**Name of Application**	**URL**
Web Application		
1.	Multilingual Agriculture portal	http://bau-eagriculture.com/submit/main_servdis
2.	Multilingual Livestock portal	http://bau-eagriculture.com/PlayerWEAAI/faces/weaai.jsp?form1:hyperlink2_ submittedLink=form1:hyperlink2
3.	Multilingual Forestry portal	http://bau-eagriculture.com/PlayerWEAAI/faces/weaai.jsp?form1:hyperlink3_submittedLink=form1:hyperlink3
4.	Multilingual Weather Portal	http://bau-eagriculture.com/Weather/
5.	Birsa Kisan e-Diary in Nagpuri	http://bau-eagriculture.com/birsakisandiary/
Social Media		

6.	BAU EXTENSION	https://www.youtube.com/channel/UCQCOvp-BuLr8NZeimufNKZg
Mobile Application		
7	Birsa Weather Forecast	Google Play Store

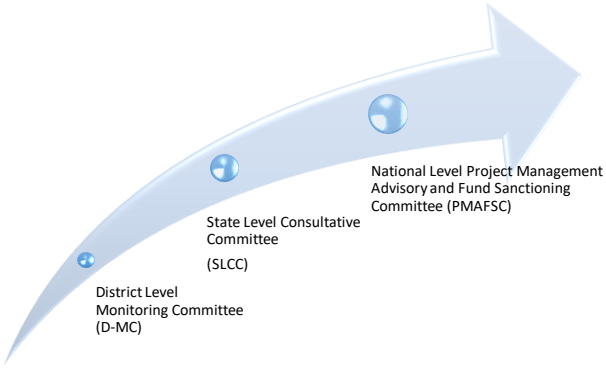
Drone in Agriculture

The potential use of drone technology has been perceived at policy level. In August 2021, Ministry of Civil Aviation, Government of India has published Drone Policy Ministry of Agriculture and Farmers Welfare, Government of India has issued Standard Operating Procedure for use of Drone. Drone is a flying robot. It can be controlled through controller or it can fly autonomously through embedded programme. Based on payload capacity drone can be classified as:

- Nano- ≤ 250 gram
- Micro- >250 gm ≤ 2 kg
- Small- > 2kg upto 25kg
- Large- > 150kg

Drone can be used for surveillance, image capturing, disease pest monitoring etc. I can also be used to spray pesticide and nutrients. Government has launched promotion policy under which institutions like ICAR institutes, State Agricultural University, Krishi Vigyan Kendras can avail subsidy to the tune of 100 % of cost with a limit of Rs. 10.00 Lakh.

Farmer Producer Organizations (FPOs): It is one type of producer organization, where the members are farmers. Small Farmers' Agribusiness Consortium (SFAC) is providing support for promotion of FPOs. PO is a generic name for an organization of producers of any produce, e.g., agricultural, non-farm products, artisan products, etc. The Government of India has approved and launched the Central Sector Scheme of "Formation and Promotion of 10,000 Farmer Producer Organizations (FPOs)" to form and promote 10,000 new FPOs till 2027-28 with a total budgetary outlay of Rs. 6865 Cr. Three implementing agencies (IAs) viz. NABARD, SFAC and NCDC have been identified by the Government of India. FPOs will be promoted by CBBOs and monitored by DMC, SLCC and PMAFSC at district, state and national level.



Conclusion:

Role and activities of agricultural extension will keep on changing to keep pace with changing client, environment, society, economy and policy. Hence, it is imperative that extension professionals should keep themselves up-to-date with the changes in policy and technology so that they could continue to remain relevant for farmers, administrators and policy makers.

Chapter-2

Public Private Partnership in Agriculture

Dr.Kiran Singh
KVK, Saraikela-Kharsawan
Birsa Agricultural University, Jharkhand

Introduction

Agriculture is still main source of livelihood. About fifty five percent of the population has been engaged in agriculture and allied activities (census 2011) and its contribution to to total gross value is very significant. (About 17.4% to the country's Gross Value (2016-17). Even after seven decades of independence our rural population mainly depends on agriculture and it but additional responsibility on agriculture to meet the demand irrespective of changing scenario. Today's our agriculture facing challenges of climate change, resurgence of pest and disease as well as huge capital need. Total cultivable land

In Jharkhand, where agriculture is the main option for about eighty percent population. Agriculture is primary livelihood option. Our agriculture is characterized by dependence on nature, low investment, low productivity, mono-cropping with paddy and small and marginal holdings. Very poor agriculture infrastructure put agriculture in transition. There is wide gap in technology adoption. Expansion and Commercialization of agricultural technology very poor as Technology is not resource neutral. So it arises a need of working together of all stockholder of farming together for mutual benefit of resource use, technology use for its upward and horizontal expansion as well as effective delivery of services.

What is Public Private Partnership?

So a public private partnership is

- a cooperative and collaborative arrangement between two or more public and private sectors,
- of long-term nature
- a contractual agreement
- between a public agency (federal, state or local) and a private sector entity

- In which, skills, risk, assets and rewards of each sector (public and private) are shared .
- The public partners in a PPP are government entities, including Ministries, departments, municipalities, or state-owned enterprises.
- The private partners could be local or international and may include businesses or investors with technical or financial expertise relevant to the project.

"PPP broadly refers to long term, contractual partnerships between public and private sector agencies, specially targeted towards financing, designing, implementing, and operating infrastructure facilities services that were traditionally provided by the public sector"

Basic Elements of Public Private Partnership in Agriculture

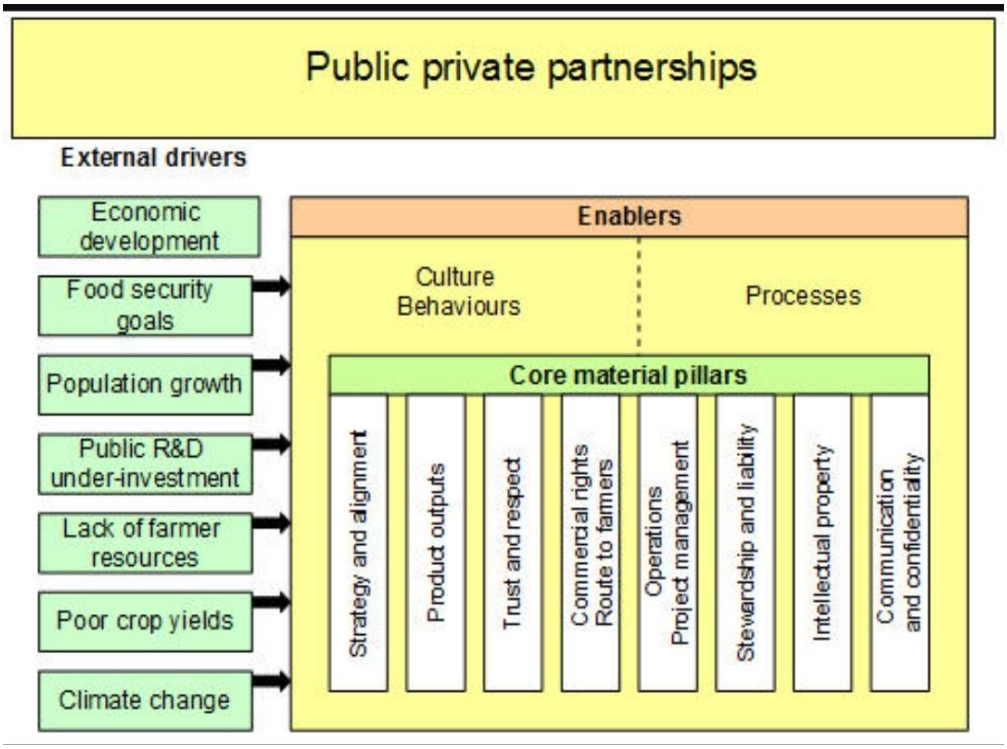
- There should be structured contract or an arrangement
- the provision of public infrastructure or services
- the transfer of risk from the public sector to the private sector i.e there should be reward system based on performance or output;
- Focus should be on efficient service delivery.

Areas of Public Private Partnership in Agriculture

As rural-urban migration has increased urbanization and socio-economic developments have increased the demand for infrastructure and efficient use of resources Public Private Partnership is most preferred in developing infrastructure facilities like transportation, education and health care services. But there is some preferred area in agriculture also.

- Public Private Partnership for crop diversification
- Public Private Partnership for contract farming through producer bodies and others
- Public Private Partnership in agricultural extension
- Public Private Partnership for organic production
- Public Private Partnership for developing marketing infrastructure

- Public Private Partnership for delivery of agricultural services



Type of PPP model in agriculture

Two important models are relevant to agriculture i.e.

Concessions type:

- The Government defines and grants specific rights to an entity (usually a private company) to build and operate a facility for a fixed period of time.
- The Government may retain the ultimate ownership of the facility and/or right to supply the services. In concessions, payments can take place both ways

BOT (Build-Operate-Transfer):

- A model that entails a concession company providing the finance, design construction, operation, and maintenance of a privatized infrastructure project for a fixed period, at the end of which the project is transferred free to the host government.

Benefits of PPP in Agriculture

- It make agriculture and allied sectors more profitable,
- Equity can be ensured at rural economy.
- It provide holistic solutions at local level
- dissemination and commercialization of technology made possible

- With enhanced knowledge we can ensure sustainability in development.
- It makes research effective and practical for end user.
- Teamwork increase the quality and relevance of the results and the enhance synergic effects at field level.
- On-time delivery Maximizes the use of partners strength
- It create value to innovation
- Accountability increases so the public services
- It's a way of developing local private sector capabilities.
- It Create diversification in the economy so Supplementing the capacities
- Risk and responsibility could be shared.
- Provide platform for effective Integration of resources

Challenges in Public Private Partnership in Agriculture

- Difference in objectives of stakeholders may emerge Misperceptions between public and private sectors with regard to intentions, goals and credibility of achievements.
- There may be faulty mapping of proprietary assets and responsibilities.
- Output oriented approach may results in lack of appreciation and follow-up of best practices
- If agreement is not sound there may be lack of leadership, vision and strategy.
- It may results in risky investment.
- Legal and policy framework of agreement is a major challenge.
- Cost
- Effective and efficient monitoring and evaluation

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Chapter-3

Overview & Status of Fisheries Extension in India

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Marsco Aquaclinics, Aqua One Centre[2]
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Introduction:

The importance of fisheries in the Indian economy is well known. The development of fisheries, particularly its inland sector, significantly contributes to the country's progress and prosperity. When the planning era began in India, the priority in the development strategy resulted in the promotion of aquaculture to the status of an industry. The ultimate goal of this expanding industry is to close the gap between demand and supply of fish, eliminate malnutrition, particularly among the poorer sections of the rural population, and improve their socioeconomic status. The only way to accomplish this goal is to promote aquaculture, sustainable resource management, and fish conservation in all potential inland waters, such as ponds, tanks, wetlands reservoirs, lakes, seasonally flooded water bodies, brackish water lakes, lagoons, swamps, and so on. This necessitates coordinated and effective extension efforts.

India is the world's third largest fish producer and second largest aquaculture fish producer. India accounts for roughly 7% of global fish production. The country also contains more than 10% of the world's fish biodiversity and is one of the 17 mega biodiversity-rich countries. Andhra Pradesh is the country's largest fish producer, followed by West Bengal and Gujarat. The total fish production in 2017-18 is estimated to be 12.60 million metric tonnes, with nearly 70% coming from the inland sector and

about 50% coming from culture fisheries. Inland waters provide 70 percent of India's fish production, with aquaculture accounting for nearly 65 percent. Indian Major Carps are the most cultured freshwater fish in terms of total inland aquaculture production, followed by Exotic Carps, Minor Carps, Catfish, and Trout. In India, approximately 1300 Carp Hatcheries produce seed and supply fish farmers. The industry has had significant growth, with fish production growing by 7.53 percent, 1.24 percent of the country's Gross Value Added (GVA), and over 7.28 percent of the GVA of agriculture annually on average over the past five years. The COVID pandemic and weak international demand cast a shadow over India's recovering seafood industry, which exported 11,49,341 MT of marine products for Rs 43,717.26 crore (US$ 5.96 billion) in FY 2020–21, a 10.88% volume decline from the previous year.

About Inland Fisheries:

There are numerous finfish species in India. According to the National Bureau of Fish Genetic Resources (NBFGR) database in Lucknow, 2,508 native finfish species have been recorded, with 1,518 species from the marine environment, 113 from brackish water, and 877 from freshwater habitats. In addition, India is home to 291 exotic fish species (Table 1) (Uttam et al., 2012). Inland freshwater provides 70 percent of India's fish production, with aquaculture accounting for nearly 65 percent. Indian Major Carps are the most cultured freshwater fish in terms of total inland aquaculture production, followed by Exotic Carps, Minor Carps, Catfish, and Trout. In India, approximately 1300 Carp Hatcheries produce seed and supply fish farmers. The carps native to the Indus-Ganges River Systems/Indo-Gangetic Plains of India are known as Gangetic Carps / Indian Major Carps (IMC), which include Catla, Rohu, and Mrigal and account for 60% of total Carps production. Exotic Carps are carps that were introduced from other countries, such as Silver Carp, Grass Carp, and Common Carp.

Table.1: Fish Diversity of India

Native Fishes	Number of Species
Marine Ecosystem	1518
Brackish water Ecosystem	113
Freshwater Ecosystem	877
Exotic Fishes	291
Total	2799

Scientific brackish water aquaculture began in the 1980s, when shrimp were cultured in well-designed and managed ponds due to high demand in the export market. Shrimp farming currently covers approximately 0.16 million ha. The states of Andhra Pradesh and West Bengal produce the majority of the country's shrimp, accounting for roughly 80% of total production. However, in order to meet domestic market demand, high-value euryhaline marine fish species are being cultured in brackish water ponds and cages. Mullets, Milkfish, Seabass, Pompano, Grouper, and other species are commonly cultured.

Inland Fisheries Extension Service's founding

Ten more extension units were formed across the nation during 1962 after the extension service was raised to the rank of a distinct department under the Union Ministry of Food and Agriculture in 1956 (Chaudhury et al., 1969). The ICAR extension system, the Ministry of Agriculture/State Fisheries Departments, the Rural Development set-up of the country, and non-governmental organisations' development work are the four main organisational streams currently involved in extension work to increase inland fish production in the nation. Scientists and extension staff from these institutions perform first-line extension work using a variety of extension techniques on a small scale yet with enough force to have a catalytic effect on the extension system. Fisheries management measures need to be implemented for sustainable production. The general objectives of fisheries management are to achieve nutritional security, maintain

sustainability of the resources, and ensure gainful employment and economic benefits. Consistent with sustainable coastal fisheries development as the overall goal, management entities should attempt to: (I) enhance coastal living resources, (ii) optimize economic realization, (iii) maintain distributional equity, (iv) achieve environmental integrity and (v) emphasize institutional effectiveness.

Present Status of fishery and aquaculture in India

Over the past 20 years, Indian aquaculture has increased by more than six times, with freshwater aquaculture accounting for more than 95% of all aquaculture output. Culture practices have significantly improved and intensified over time, with the potential to achieve high levels of output. Small-scale aquaculture is common in some parts of Andhra Pradesh and West Bengal, as well as to a much lesser extent in Haryana and Punjab in India. Commercial aquaculture involves rather intense production with significant outside inputs for managing feed and water. On the other hand, small holders typically engage in small-scale aquaculture, typically in residential un-drainable ponds. With this aquaculture approach, feed is simply needed as a supplement, maximising the pond's natural productivity. In India, carp cultivation is linked with fresh water aquaculture. Despite being recommended as a normal practice, polyculture of three Indian major carps or a combination of three Indian major carps and three exotic carps is still carried out with a number of variations depending on the resource availability and market demand in various places.

Status of Fishery Extension Education

Mumbai, India's Central Institute of Fisheries Education Out of the thirty fisheries colleges, eleven only offer the four-year UG programme leading to the B.F.Sc., and sixteen offer both the UG (B.F.Sc.) and PG (M.F.Sc.) programmes, with M.F.Sc. and

Ph.D. being offered at the ICAR-Central Institute of Fisheries Education in Mumbai and the IFPGS in Vaniyanchavadi, Chennai, but not at PGIFER in addition to the ICAR-CIFE (Deemed University), Mumbai, seventeen other colleges offer three-year Ph.D. programmes with one year of coursework. All of these colleges use the semester system of instruction. The College of Fisheries in Kochi, which was formerly a part of the Kerala Agricultural University, is now a part of the Kerala University of Fisheries and Ocean Studies (KUFOS), which was founded in 2011, and the Tamil Nadu Dr. J. Jayalalithaa Fisheries University, which was founded on June 19, 2012, with its headquarters in Nagapattinam (TNJFU). A constituent college of TNJFU located in Nagapattinam along the Bay of Bengal is the College of Fisheries Engineering. The college is the first of its kind in India and was founded with the primary purpose of training engineers for fishing firms.

Specific Areas of Training

The fishing industry requires professional workers at all levels, from research scientists to field supervisors and operational staff. State agricultural universities and colleges for fisheries, as well as ICAR Institutes, offer some higher categories of training. But the state level supervisory officials and those farmers and fishermen who need to improve their operational skills must receive in-service training. To gain the necessary exposure, training in aqua farms, hatcheries, feed mills, boatyards, and net repair shops is vital. The fisheries sector needs a sizable human resource for a variety of tasks, including production, consumption, and export. There would be a significant demand for HRD in the nation to increase aquaculture and other associated practices in order to accomplish the government's primary aim. The important aspects for specific training and skill development may be planned in following aspects:

- Disease diagnostic laboratories
- Fish and shrimp hatcheries
- Aqua feed industry
- Aquaculture
- Culture based fisheries in wetland and reservoirs
- Enclosure culture in large and medium reservoir
- Cold water fisheries and aquaculture
- Fish processing
- Development and extension
- Research and Academic
- Mariculture
- Retail fish outlet
- Financial Institutions

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Chapter-4

Changing Agricultural Scenario in Jharkhand

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Introduction

Jharkhand is a young state carved out of Bihar in the year 2000. It is spread over 7.97 million ha with a population of around 35 million. Nearly 70 per cent of the population is dependent on agriculture, out of which 76 per cent is rural and 26 per cent is tribal. Out of total geographical area 47.67 per cent is cultivable and net sown area is 25.75 lakh ha (32%). The state falls under the agro-climatic zone VII i.e. Eastern Plateau and Hilly region. Undulating top of sequences of the State and rainfed agriculture have led to massive degradation of soil, diverse agricultural practices and low productivity. About 82 per cent of annual rain fall occurs within the monsoon period (June to September).

In general soils of Jharkhand are low to very low in available phosphorus and sulphur, medium in available nitrogen and potassium and deficient in available boron. About 19 % of total geographical area is acidic. Out of the total cultivated area about 80% is rainfed as only 15 per cent cropped area is under irrigation with the cropping intensity of 125 per cent. The productivity of all the crops, except pulses are below national average. The State has the uniqueness of having excellent climatic conditions for cultivation of wide range of horticultural crops with the total area of 0.5 million ha having a total production of around 5 million tonnes.

The productivity of existing livestock and poultry in the State is very poor. Annual per capita availability of milk, meat, poultry and egg is 47.45 kg, 1.42 kg and 13 respectively. Annual per capita fish availability is 2.44 kg only due to poor productivity of freshwater area (0.489t/ha). The State lags behind the national level of fish production in spite of quite suitable agro-climatic conditions. The average annual productivity of fish is nearly 1600 kg / ha / year against the national average of 2150 kg / ha / year with annual target of 4500 kg/ha by 2030.

Paper prepared for presentation in collaborative online training programme of MANAGE, Hyderabad & SAMETI, Jharkhand on "New Dimensions in Agricultural Sector Extension Management (27-29 June 2022).

Changing Agricultural Scenario

Like any other region the climatic conditions are changing drastically which have direct bearing on agricultural production and productivity. During the first decade after bifurcation of Jharkhand from Bihar (2000 – 2010) the agricultural growth rate remained almost stagnant. But during the second decade (2011-2020) a phenomenal growth was recorded in almost all sectors, viz, crop, horticulture, livestock, fisheries, forest-based enterprises, etc. This happened due to proper implementation of the developmental programmes of the State Government as well as the national flagship schemes, namely, Rashtriya Krishi Vikas Yojna (RKVY), National Food Security Mission (NFSM), National Horticulture Mission (NHM), Bringing Green Revolution in Eastern India (BGREI), National Mission on Sustainable Agriculture (NMSA) and the like.

Educational and Research Infrastructure

Earlier there was only one agricultural university (Birsa Agricultural University) with one each of agriculture, veterinary science & animal husbandry and forestry colleges. Now three more agriculture colleges have been established at Deoghar, Garhwa and Godda and one college each of agricultural engineering, dairy technology, horticulture and fisheries have been established at Ranchi, Dumka, Chaibasa and Gumla respectively. Apart from these the Central Government has established new institutes i.e. ICAR - IIAB at Ranchi and ICAR-IARI at Hazaribag besides the existing ICAR - IINRG ICAR-RCER, ICAR-CRURRS, CTRTI, RSRS, NBPGR Base Centre and 24 Krishi Vigayan Kendras (KVKs) in each district of the State.

Agricultural Extension Services

During this period the Agricultural Technology Management Agency (ATMA) in each district of the State has been strengthened under the revised Extension Reforms and agricultural extension services have been revamped. The National Agricultural Extension Management Institute (MANAGE) is providing necessary support and

guidance through SAMETI, Jharkhand for capacity building of ATMA functionaries in carrying out the extension advisory services in close association of KVK scientists.

State Investment in Agricultural sector

Though the share of agriculture and animal husbandry in Gross Domestic Product (GSDP) declined from 20.17% in 2001-02 to 8.66% in 2008-09, there has been an increase in fisheries sector from 0.26% to 0.44% in the corresponding period. The development investment in agricultural sector has now been growing impressively which includes centre-assisted schemes.

Effects on Productivity of Agricultural Enterprises

Rice production and productivity in Jharkhand gradually increased during the previous decade but the State is presently witnessing unprecedented drought which has adverse impact. The total production of horticultural crops increased by 18.8% as compared to 21.7% at national level. During this period the State has witnessed diversification into other sectors of horticulture like plantation crops, floriculture and medicinal and aromatic plants. Nearly 30 per cent increase in total area under horticultural crops was recorded in the State as compared to 15 per cent at national level.

In Jharkhand milk productivity of cow is 1.59 kg (0.5-3.0kg) per day against national average of 3.0 kg per day. Sheep, goat, pig and poultry are integral components of the tribal agriculture. The tribal population depends on these livestock for their livelihood and nutrition, especially during the non-cropping seasons. No significant growth has been observed in respect of these species. In comparison to the livestock sector, the fisheries sector has registered a satisfactory growth. However, the requirement is to triple the productivity to bridge the gap between demand and supply by harnessing the amenable water resources such as ponds and reservoirs.

Constraints, Opportunities and Challenges

Despite good rainfall in the State, the cropped area and cropping intensity are low. The level of technology adoption is also poor leading to lower productivity. Major constraints are five-fold: edaphic, climatic, biotic, technological and developmental. The edaphic and climatic constraints include poor soil conditions, erratic distribution of rainfall, poor fertility of soil and acidity. High incidence of insect-pests and diseases are

the major biotic stresses. The major technological and developmental constraints include; lack of need-based and location-specific production, protection and post-harvest technologies and their poor adoption.

The opportunities include; scope of bringing about 3.5 million ha of land under net sown area, rainwater harvesting and utilization, large scale quality seed production, initiating food processing industries, unique climatic condition for cultivation of both tropical and sub-tropical crops, organic farming and strategic location for harnessing export potential of vegetables, fruits and flowers to South – East Asian countries.

The major challenges before agricultural development in Jharkhand include monocropping, low water productivity, and low per capita availability of food grains, fish, meat, milk and egg compared to national averages. The farmers, especially the tribals lead a conservative life style and do not readily accept and adopt new technologies.

Strategic Framework for key Sectors

Because of prevalence of complex, diverse and risk-prone agricultural production systems in Jharkhand, large amounts of the resources (particularly the family labour) are typically applied to rice production, traditional fruit and vegetable production, rearing of small livestock, backyard poultry and capturing fishes. Despite the predominance of agricultural employment, non-agricultural income plays an important role in its contribution to household income. The importance of non- agricultural income suggests that technological interventions in farming need to account the opportunity costs of labour in non-agricultural activities. The farmers migrate as they perceive the potential returns from agricultural production to be very low given their present bio-physical and socio-economic conditions. Thus, there is a need to focus on technological innovations that increase productivity, income and employment opportunities in all the sectors of farming. The key sector – wise planks of proposed strategy are as follows:

Crop Production

- Diversification of upland rice systems
- Direct seeded rice in bunded uplands and rainfed shallow low lands
- Short duration hybrids in medium lands

- Intensification of rainfed low lands
- Rice – fallow management with sequence crops like pulses and oilseeds.
- Seed Replacement Rate and pace of mechanization.
- Addressing location specificity with concerns of environment and natural resources.

Horticultural Production

- Harnessing high orchard productivity with appropriate mix of crop enterprises
- Promotion of vegetable and fruit cultivation as an income generating activities.
- Promotion of hi-tech floriculture and production of medicinal and aromatic plants spices.
- Large scale investment for creation of facilities like micro-irrigation, improved packaging and quick transport system, cold chain, processing and value addition, pack house, cold storage, refrigerated vans, etc. for post-harvest handling of horticultural produce.

Livestock Production

- Establishment of nucleus herds/flocks of improved breeds to ensure availability of quality germplasm
- Formulation of low cost concentrates and green folder production
- Disease surveillance and monitoring and establishment of advanced disease diagnostic centres
- Establishment of milk and meat processing units under PPP mode

Fish Production

- Intensive and semi-intensive fish culture in reservoirs through cages and pens
- Increasing quality fish seed production
- Developing nutritionally balanced feed from locally available ingredients
- Promotion of integrated fish – livestock – crop farming

Apart from the above key sectors, other sectors like agro-forestry including lac and tasar, bee-keeping, mushroom production, organic farming and secondary agriculture require special attention and focus to boost up the farm production in Jharkhand.

Enhancing Technology Adoption

The interface between technology institutions and the farmers in Jharkhand at present is relatively weak in comparison to the agriculturally developed States. The following points need immediate attention to strengthen the extension advisory services in the State:

- Strengthening pluralistic extension mechanism through multi-stakeholder participation
- Strengthening institutional mechanism for quick transfer of innovative appropriate technologies.
- Addressing gender issues in farming and popularizing relevant ITKs.
- Capacity building of emerging farmers' groups / associations / organisations
- Skill development particularly of rural youth
- Mainstreaming ICT and associated other techniques like AI, robotics, etc. in popularizing climate resilient technologies as well as providing weather and market – related information

Conclusion

Recently transformational changes have been witnessed in Jharkhand agriculture. However, much has to be done to improve the farm economy of the State. For this the farmers require both profit and prestige. This requires change in behavior of all the stakeholders and change in technology, practice, market and institution. Therefore, there is urgent need for convergence of schemes and programmes of different sector research and extension systems.

Chapter-5

Farmer Producer Organization: A boon to small scale farmers

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Abstract

The contribution of agriculture in GDP has declining recent past from 50 per cent in 1950 to 16.5 per cent in 2019-20. In current Covid-19 pandemic, this is the only sector which is contributed positively with 3.4 per cent growth in both the first quarter of the financial year 2020-21. Small and marginal farmers in India have been vulnerable to risks in agricultural production. Several organizational prototypes are emerging to integrate them into the value chain with the objectives of enhancing incomes and reduction in transaction costs. One such alternative is Farmer Producer Organizations (FPOs). We explore the potential of FPOs as collective institutions through a case study of Avirat, one of the first FPOs in Gujarat. Our analysis suggests that FPOs have the potential to provide benefits through effective collective action. The main challenge, however, is to raise sufficient capital that can maximize these benefits. Farmers face different challenges such as scarcity of land and water sources, impassable roads, unavailability of better financial services and new technologies. Government wants to double the farmers' income in 2022-23 by addressing the challenges of farm sector. The government affirmed that farmer producer organizations (FPO) are the most appropriate institutional form around which farmers can mobilize and build their capacity to collectively leverage their production and marketing strength. The members of FPOs are smallholder farmers who organize themselves with the objective of improving farm income through improved production, marketing, and local processing activities. New technologies and marketing practices have not been practiced by most of the FPOs in India. The government should promote the FPOs at the policy intervention for sustenance of their members.

Key Word: FPO – Framers Producers Organisation

Introduction:

As we know that India is a developing country where agriculture play an important role in day-to-day life of each and every individual, as agriculture is known as the back bone of Indian GDP, agriculture is the main source of livelihood for more than 50 per cent of Indian population and one the main income generating source. During the pandemic of Covid-19 the growth of the agriculture is positive in both the starting quarters of financial year 2020-21 whereas the other sectors show the negative growth (The Hindu, 2020). The wave of globalization and market liberalization that began in the 1980s has exposed small-scale farmers to many challenges and opportunities. Small-scale farmers are subject to the vagaries of weak and volatile markets; and state support against risks is limited. Farmers – especially smallholders, forced to produce without access to reliable and affordable inputs, credit, transport facilities or markets – find themselves competing against large commercial companies. Even if they can access markets, their weak bargaining position leaves them constrained in negotiations with big buyers (Penrose-Buckley 2007).

Most of farmers rely on agricultural activities for their food and income, but they often lack the resources necessary to their success. In many areas there are limits to achievable increase in productivity, unless appropriate institutions that can help farmers to access information, inputs and services are strengthened, and joint action for natural resources management, marketing and processing are promoted. Farmers are committing suicides in recent years due to failure of agricultural enterprises or crash in market prices. Farmers are the most direct and primary victims who face the consequences of agriculture risks. In India, agriculture is dominated by smallholders; marginal and small farmers own nearly 86.2% of all operational landholdings and operate 47.3% of the total area (Agriculture Census 2015-16). This paper focuses on Bihar, where about 97% of the landholdings and 76% of the area is operated by marginal and small farmers. Small land sizes are associated with small marketable surpluses and limited access to critical agricultural inputs.

Collective action is an acclaimed strategy to deal with these challenges that small-scale producers face. Specifically, farmer organizations – such as cooperatives; associations; unions, groups; and federations with different organizational structures –

have been identified to play a key role in enhancing farmers' access to markets (Chirwa et al. 2005; Hellin et al. 2007; Stockbridge et al. 2003.

Farmers of India are good producers but they fail to efficiently market their farm produce because of unavailability of markets in rural areas and poor marketing skills of farmers. One of the potential alternatives for efficient marketing is mobilizing farmers for group action, for arranging inputs and collective marketing so as to benefit from economies of scale (Sahu, 2014). Producer organisations (POs) are widely heralded as leading contributors to poverty reduction and achievement of food security (FAO, 2010). FICCI (2020) recognized that FPOs have a big role to play in not only building socio-economic resilience of farmers but also in achieving several sustainable development goals.

Producer organization

The producer organizations (POs) are formal rural organizations whose members are smallholder farmers who organize themselves with the objective of improving farm income through improved production, marketing, and local processing activities (Randot 2001).

- Producer Organizations (POs) are successfully strengthening the economic position of their members by providing agricultural inputs, credit, processing and marketing services (Narayanan and Gulati, 2002). The Government has identified farmer producer organization as the most appropriate institutional form around which to mobilize farmers and build their capacity to collectively leverage their production and marketing strength (GoI, 2013).
- POs implement different activities depending on their objectives, investment opportunities, situations of the members and external conditions. Activities include organizing farmers to receive external support, bulk purchase and distribution of inputs, aggregation and joint sale (or buying) of farmer products, handling and storage, processing, transportation, mechanization services for farmers, and creating access to finance from banks and microfinance institutes.

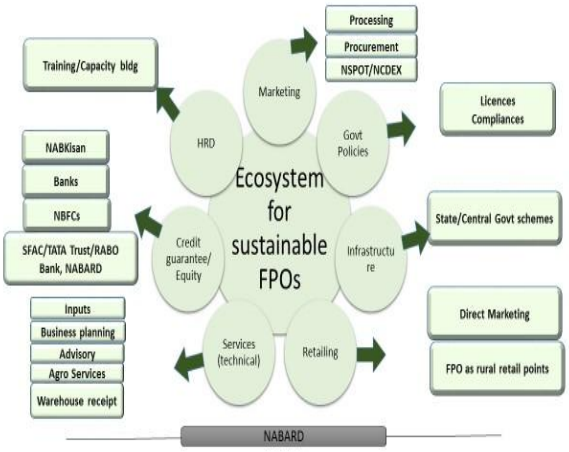
Farmers Producer Organization

Farmers Producer Organization (FPO) is one type of PO where the members are farmers. During the 12th Plan period (2012-2017), Small Farmers' Agribusiness Consortium (SFAC) is providing support for promotion of FPOs (GOI, 2013). PO is a generic name for an organization of producers of any produce, e.g., agricultural, non-farm products, artisan products, etc. The Government hopes that this will foster technology penetration, improve productivity, enable improved access to inputs and services and increase farmer incomes (Chander, 2019). Farmers' Organizations (FOs) are essential institutions for the empowerment, poverty alleviation and advancement of farmers and the rural poor (FAO, 2006). Farmers' organizations should be promoted to combine the advantages of decentralized production and centralized services, post-harvest management, value addition and marketing (National Commission on Farmers (NCF), 2004). A PO for non-farmers can also established if the producers produce a non-farm item (for example, handloom or handicraft), then the PO will be that of non-farmers.

Current Status of FPO

FPOs are farmers' collectives, with membership mainly comprising small/marginal farmers (around 70 to 80%). Presently, around 5000 FPOs (including FPCs) are in existence in the country, which were formed under various initiatives of the Govt. of India (including SFAC), State Governments, NABARD and other organizations over the last 8-10 years. Of these, around 3200 FPOs are registered as Producer Companies and the remaining as Cooperatives/ Societies, etc. Majority of these FPOs are in the nascent stage of their operations with shareholder membership ranging from 100 to over 1000 farmers and require not only technical handholding support but also adequate capital and infrastructure facilities including market linkages for sustaining their business operations.

Critical Ecosystem for FPOs



NABARD's Support to Farmer Producers' Organizations

NABARD created Producers Organization Development Fund (PODF) with initial corpus of Rs. 50 crores out of its operating surplus during 2011-12, for supporting the existing POs including PACS to create innovative financing models for mainstream banking. The broad objective of the fund is to provide financial/ non-financial support to Producers' Organizations for facilitating improved credit access, ensure adequate capacity building, market linkages and need based handholding services to meet their 'end to end' requirements and thereby ensuring sustainability and economic viability. Considering the success of financing to POs/PACS in terms of improved access to inputs, affordable credit, better price realization by members by building scale and enhanced skill development of farmers, NABARD created its own subsidiary (NABKISAN Finance Ltd.) for meeting the credit requirements of FPOs by adopting a flexible approach based on life cycle needs, while it continues to provide promotional support towards capacity building, market linkages and other incubation services to FPOs out of grant fund. The scope of this fund has been further enhanced during 2017-18 to provide need-based grant assistance to those FPOs also, which are financed by the Commercial Banks, Cooperative Banks and Regional Rural Banks.

Important Measures initiated by NABARD

In order to oversee the promotional efforts and provide policy inputs for creating appropriate ecosystem for FPOs to sustain their business operations, NABARD has constituted a National Advisory Committee headed by its chairman and members from

the concerned Ministries of the Govt. of India, SFAC, Academic Institutions, Professional agencies, Agri Corporates, leading FPOs, etc. Similarly, State level Consultative Committees have been formed under its Regional Offices to provide necessary guidance to the implementation of the scheme and ensuring desired synergy between the efforts of various stakeholders for building sustainable FPO.

Considering the need for a centralized data base on FPOs, NABARD has launched a dedicated web portal and digitized the data in respect of all its FPOs including profile of the shareholder members and uploaded on its website for use by the stakeholders.

A Performance Measurement (grading) Tool (copy enclosed as Annexure) has been developed in consultation with key stakeholders, for the assessment and monitoring of overall performance of FPOs. The tool serves as an aid in designing. A National Seminar on "Linking Farmer Producers' Organizations (FPOs) with Commodity Exchanges" was organized in association with SEBI and Commodity Exchanges and road map for increasing farmers' participation on trading platform was suggested. As a follow-up of the seminar, series of district/state level training programmes are being organized in association with commodity exchanges for the benefit of farmers, besides initiating certain policy/procedural modifications by the commodity exchanges particularly for reducing the lot sizes, streamlining account opening procedure and creating adequate number of delivery centres, etc.

Schemes of Govt. of India/ SFAC for FPOs

The Union Finance Minister, in the Budget Speech for 2013-14, announced two major initiatives to support Farmer Producer Companies (FPCs) viz., support to the equity base of FPCs by providing matching equity grants and Credit Guarantee support for facilitating collateral free lending to FPCs.

Equity Grant Fund Scheme

The main objectives of Equity Grant Fund are as under:

(i) Enhancing viability and sustainability of FPCs;

(ii) Increasing credit worthiness of FPCs;

(iii) Enhancing the shareholding of members to increase their ownership and participation in their FPC.

Credit Guarantee Fund Scheme

The main objective of the Credit Guarantee Fund scheme is to provide a Credit Guarantee Cover to Eligible Lending Institutions to enable them to provide collateral free credit to FPCs by minimizing their lending risks in respect of loans not exceeding Rs. 100.00 lakhs. Under the schemes, only Farmer Producer Companies having minimum 500 individual shareholders are eligible for Credit Guarantee cover. Further, the Bank should have extended/ sanctioned within six months of the date of application for the Guarantee or /in principle agreed in writing/ has expressed willingness in writing to sanction term loan/ working capital/ composite credit facility without any collateral security or third-party guarantee including personal guarantee of Board Members. Maximum guarantee cover is restricted to the extent of 85% of the eligible sanctioned credit facility, or to Rs. 85 lakhs, whichever is lower.

Scheme for Creation of Backward and Forward Linkages

The Ministry of Food Processing Industries, Govt. of India is implementing a scheme to provide effective and seamless backward and forward integration for processed food industry by plugging the gaps in supply chain in terms of availability of raw material and linkages with the market. Under the scheme, financial assistance is provided for setting up of primary processing centres/ collection centres at farm gate and modern retail outlets at the front end along with connectivity through insulated/ refrigerated transport. The Scheme is applicable to perishable horticulture and non-horticulture produce such as fruits, vegetables, dairy products, meat, poultry, fish, Ready to Cook Food Products, Honey, Coconut, Spices, Mushroom, Retails Shops for Perishable Food Products, etc. The Scheme would enable linking of farmers to processors and the market for ensuring remunerative prices for agri produce. The scheme is implemented by agencies/ organizations such as Govt./ PSUs/ Joint Ventures/ NGOs/ Cooperatives/ SHGs / FPOs / Private Sector / individuals, etc.

The Ministry has engaged Technical Agencies (TAs) for assisting farmer/ producer groups including Farmer Producer Companies, Farmer Producer Organization and Self-Help Groups to facilitate their participation under the Scheme. The TAs are responsible for preparation of Business Plan, Detail Project Report, Capacity Building, Trainee and other related support services.

National Rural Livelihoods Mission (NLRM)

The Ministry of Rural Development, Govt. of India under its Deendayal Antyodaya Yojana-NRLM, has taken initiatives towards building value chain development interventions with focus on sustainable agriculture, livestock and NTFP to enable small and marginal farmers to gain better price realization, access to markets, improved technologies for value addition and technical support. Under this initiative, large number of Producers' Groups are being promoted and graduated into sustainable, member-owned and member-governed Producers' Enterprises (PEs). Besides issuing operational guidelines, the Ministry has initiated a number of measures to strengthen the ecosystem around these collectives so as to facilitate them become a true business enterprise of small producers.

Union Budget, 2018-19: Focus on FPOs

The Govt. of India in the Union budget 2018-19, announced the following measures to promote FPOs for a prosperous and sustainable agriculture sector that enable farmers to enhance productivity through efficient, cost-effective and sustainable resource use and realize higher returns of the produce;

- Launching of "Operation Greens" for onion, potato and tomato crops on the lines of Operation Flood with an allocation of Rs. 500 crores. The initiative aims to address price fluctuation in vegetables for the benefit of farmers and consumers. It will promote FPOs, agri-logistics, processing facilities and professional management.
- With a view to encouraging enabling environment for aggregation of farmers into FPOs and take advantage of economies of scale, the Govt. announced 100% tax deduction for FPOs with annual turnover of up to Rs. 100 crores.

Challenges and Issues in Building Robust FPOs

Some of the studies commissioned by NABARD, have clearly established the positive role of FPOs in terms of increased net income of farmers through informed decision making, improved access to inputs and agro-services, institutional credit, marketing facilities and enhanced efficiency in the farming operations. However, there are challenges and policy gaps in the ecosystem. The important challenges and confronting issues in building sustainable FPOs are as under:

Lack of/ Inadequate Professional Management

Farmers' Organizations are required to be efficiently managed by experienced, trained and professionally qualified CEO and other personnel under the supervision and control of democratically-elected Boards of Directors. However, such trained manpower is presently not available in the rural space to manage FPO business professionally.

Weak Financials

FPOs are mostly represented by SF/MF with poor resource base and hence, initially they are not financially strong enough to deliver vibrant products and services to their members and build confidence.

Inadequate Access to credit

Lack of access to affordable credit for want of collaterals and credit history is one of the major constraints, the FPOs are facing today. Further, the credit guarantee cover being offered by SFAC for collateral free lending is available only to Producer Companies (other forms of FPOs are not covered) having minimum 500 shareholder membership. Due to this, large number of FPOs particularly those, which are registered under other legal statutes as also small size FPOs are not able to access the benefits of credit guarantee scheme.

Lack of Risk Mitigation Mechanism

Presently, while the risks related to production at farmers' level are partly covered under the existing crop / livestock / other insurance schemes, there is no provision to cover business risks of FPOs.

Inadequate Access to Market

Marketing of produce at remunerative prices is the most critical requirement for the success of FPOs. The input prices are largely fixed by corporate producers. The cultivators loose through the complex gamut of market processes in the input and output prices. There are more market opportunities; if FPOs can identify local market needs of the consumers and have tie-up for sale of its produce. The linkage with Industry/ other market players, large retailers, etc. is necessary for long term sustainability of FPOs.

Inadequate Access to Infrastructure

The producers' collectives have inadequate access to basic infrastructure required for aggregation like transport facilities, storage, value addition (cleaning, grading, sorting,

etc.) and processing, brand building and marketing. Further, in most of the commercial farming models, the primary producers are generally excluded from the value chain.

Lack of technical Skills/ Awareness

Inadequate awareness among the farmers about the potential benefits of collectivization & non availability of competent agency for providing handholding support. Further, lack of legal and technical knowledge about various Acts and Regulations related to formation of FPOs and statutory compliances thereafter.

Needed Policy Support/ Suggested Measures for Scaling up and Strengthening of the FPOs

Some of the critical important policy reforms and other suggested measures to be initiated by the Govt. of India/ other stakeholders for scaling up and further strengthening the FPO movement in the country could be as under:

Suitable amendments in the APMC Act to treat the country as a single, unified market for agri produce with no restrictions on commodity movement as also to enable FPOs market their produce directly to the consumers/ bulk-buyers, without payment of mandi fee. Buyers may be encouraged to set up collection centres near to farmers' field/ production centre. Provision may also be made in the amended Act to provide direct market access to FPOs, treating the FPO as a place of Gramin Agri Market (GRAM) and building up of required marketing infrastructure to be owned and managed by FPO under the Govt. scheme.

- Convergence of resources for creation of farm level infrastructure at FPO level for cleaning, grading, sorting, assaying, processing, branding & transportation of agri commodities up to delivery/ market centres as also for establishment of custom hiring centres for the benefit of shareholder members. Specific funds may be earmarked under the recent schemes of the Govt. of India for this purpose.
- Appropriate provision in the Food Grain Procurement policy of the Government of India requiring procurement of agricultural commodities directly through FPOs under MSP scheme.
- Suitable amendments in the Producer Companies Act, 2013 may be introduced to make provision for private equity participation/ refundable long-term capital infusion by the private investors so as to strengthen the financials of FPOs and create more sustainable business model for commercial sustainability. Also, Angel/ Venture capital support to FPOs on the lines of Start-ups may be extended.

- The benefits of Equity Grant & Credit Guarantee Fund schemes of SFAC may be extended to all forms of FPOs as also to smaller FPOs having shareholder membership of less than the existing limit of 500 farmers.
- The concerned Ministries/ departments may be mandated to implement all "Farmer centric Schemes" through the FPOs for efficient delivery of services and improved outcomes.
- Suitable relief to FPOs from various statutory compliances may be provided at least during initial 10 years so as to help them adjust with the regulatory business environments and stabilize business operations under "ease of doing business".
- Private Institutions/ Agricultural Universities may introduce special courses on FPO promotion and agribusiness management, with focus on rural youths including women so as to create large pool of professionals in rural areas for managing FPO activities. Further, the existing scheme like Agri clinics/agribusiness Centre, may be redesigned to create and professionals for not only promoting FPOs but also acting as CEO of the FPOs in their local areas.
- The system of issuing various licenses required for undertaking business activities by FPOs, may be simplified to make it a single window state-wide license.
- In line with the focus/ policy framework of the Govt. of India, the State Governments may introduce appropriate flexible policy to scale up FPO promotion and to strengthen them so as to become a self-sustaining commercially viable business enterprise of the farmers' particularly small producers.
- Since the FPO has been considered to be the way forward for enhancing farmers' income and boosting agricultural growth, future strategies for scaling up of FPO promotion by various stakeholders may focus on the following broad areas of critical support/ effective interventions

Initiative by Zenesis Agro

We are involved in collective farming from last one decade as we are in close touch with the farmers of Haldukhaal region of Kumauni district of Uttarakhand where we are working on the commercial production of black turmeric (Kaali Haldi) and we got a positive response as the production and processing of kali haldi have a good return to the farmers investment as about more than 250 farmers are involved production and processing of kaali haldi where we just get educate them and provide funds to the

farmers for the better outcome. As in processing of kaali haldi we innovated a product called Haldi Vita, where the black turmeric is washed and boiled after harvesting at a temperature of 100 degree Celsius and then grinded finely and value addition is done in to that grinded haldi which boosts the nutritional and medicinal quality. We are providing a platform to a group of farmers and and providing then a better platform to sell their product with a good return.

Conclusion

As the majority of marginal and small farmers face significant price and income suppression from middlemen/commission agents, FPO could be the ultimate solution to the problem. More support from promoting institutions is critical for education, business planning, and market linkage with various national and international companies. The farming community will benefit greatly from policymakers' assistance in running the FPO. Farmers must encourage their children to become more involved in agriculture in order to instil a loving spirit and a passion for agriculture.

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