

## Extension Approaches and Methods Adopted by the Agri-Allied Sector Departments of Maharashtra State

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### Abstract

Allied sector officers in Maharashtra were aware of Agricultural Technology Management Agency and attended its meetings. Even though the officers had recommended the farmers to take combination of two or three enterprises, many of them were not aware of Farming System Approach and had no knowledge about its key features. The officers were also not aware of the Participatory Rural Appraisal techniques, Focused Group Discussion for carrying out departmental activities. Awareness of about Information and Communication Technology was 91.7 percent among the allied sector officers, but its use by the officers found limited in all department. It was also noted that, Commodity Approach (0.8 percent) and Project Approach (1.7 percent) were the least popular. Education, work experience, designation, frequency of visit and jurisdiction of working in Sericulture, Fisheries and Animal Husbandry officers had a positive and significant relationship with their knowledge. It can be concluded from the above research that, recruitment of the officers in agri-allied sector having specialisation in the relevant subject i.e. post-graduation, capacity building through induction and refresher training program on extension management aspects and well defined job chart inclusive of frequent field visits is the need of the hour for development of agri-allied sector in Maharashtra.

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### 1. Introduction

World Economic Forum, forecasted India to be the 7<sup>th</sup> largest economy of the world. The International Monetary Fund (IMF) has predicted that, the Indian economy will be the fastest growing economy in the world and expected to grow at the rate of 7.4% in the FY 2018. Although agriculture sector is showing a declining trend in the GDP, allied sectors have emerged as face-saving for the rural image of India.

Animal Husbandry is the major player is the allied sectors and plays important role in Indian economy. About 20.5 million people depend upon livestock for their livelihood. Livestock sector contributes 4.11% GDP and 25.6% of total Agriculture GDP. (website1:<http://dahd.nic.in/>). Maharashtra is one of progressive Indian state, where, animal husbandry plays very important role in rural economy. (website 2:<http://ahd.maharashtra.gov.in>). Among the agri-allied

sector, livestock extension is the activity paid least attention by majority of the states in terms of programs, infrastructure, budgetary, allocations and deployment of staff. (Chander and Rathod, 2013). Poor productivity and quality of production and products remains a cause of concern in Indian livestock sector (Chander *et al.*, 2010). In an attempt to increase livestock productivity and improve food security at both national and household level, efforts are underway to generate and disseminate improved livestock technologies among smallholder farmers. Although various innovations are generated with heavy investments from public and private sources (Nienke M *et al.*, 2008; Dev, 2012; Moreddu, 2013), most of the research results and recommended innovations concerning livestock sector have not found way to farmer's field production, while neglecting other commodities such as meat, and other animals, such as small ruminants.

India is the second largest producer of fish in the world. Fisheries provide livelihood opportunities to millions of people directly and through a number of subsidiary industries.

Maharashtra state has 720 km of coastline and there are as many as 32 varieties of fish harvested/produced in Maharashtra. Fish Production in state is 5.50 Lakhs Metric Tons Per Annum and it contributes about Rs.1500.00 crores foreign exchange. (website3:<http://fisheries.maharashtra.gov.in>). The major constraints are inadequate extension staff for training of fishers and fisheries personnel (DAC 2013). It is also to be noted that the extension needs of inland and marine fisheries are quite different in terms of approaches and scale.

India is likely to record highest ever production of horticulture produce, including fruits and vegetables, in 2016-17. The total production is estimated at 295 million tonnes which is 3.2% higher than the production in 2015-16. The estimate shows that the current year will be the fifth straight year when horticulture production in the country will outstrip the production of food-grains.

In India, the area under the horticulture production in 2016-17 was 249 lakh hectares, which resulted in 93 million tonnes fruits production and 175 million tonnes vegetables production. (website4:<https://timesofindia.indiatimes.com>). In Maharashtra, the area under various fruit crops during 2015-16 was 9.09 lakh ha, and the value output was 45646.29 crore. (website5:<http://nhb.gov.in/Default.aspx>). The major constraints of horticulture production in India are; inadequate post-harvest infrastructure and processing facilities, Poor marketing infrastructure, and weak extension support. (website6:<http://www.krishisewa.com>).

India is the second largest producer of raw silk after China and the biggest consumer of raw silk and silk fabrics. An analysis of trends in international silk production suggests that sericulture has better prospects for growth in the developing countries rather than in the advanced countries. Indian silk industry, which contributes nearly 28,700 tonnes (16.12 percent) of silk to the total world output. At present, India imports 6,000 to 8,000 tonnes/year of raw silk and silk fabric from China to meet the growing domestic demand. (website7:<http://www.thehindu.com/news/national>).

Maharashtra is a nontraditional sericulture state producing Mulberry and Tasar silk. The specialty of the state is that, it undertakes 98% of bivoltine sericulture and stood first among nontraditional states and one of the potential States in India for silk production. The total silk production of state reached 222 MT in 2015. The Government has assured the farmers of purchasing their yield at good prices. In

Sericulture sector there is gaps in technology transfer and extension support along with inadequate market accessibility, poor linkage among different stake holders and de-centralized nature of the industry inhibits financial institute from extending financial support to the sector. (Hiware, 2016).

The extension approaches followed by service providers mainly State Departments have resulted into wider spread of modern technologies and increase in agricultural production worldwide. However, it has been repeatedly observed by the researchers that, the extension components in allied sector are generally weak. In this context it is necessary to explore the reasons of weakness of the extension component in allied sector. Therefore, Center for Extension in Agri-Allied Sector (EAAS), MANAGE, Hyderabad, India has planned an in-depth study entitled- "Analysis of extension approaches and methods adopted by agri-allied sector departments".

## **2. Methodology**

### **2.1 Locale of the Study**

The study was conducted in four major Indian states viz., Maharashtra, Uttar Pradesh, Odisha and Karnataka. The states were selected purposively wherein; all the allied sectors viz., Animal Husbandry, Horticulture, Sericulture and Fisheries department were present and operational. A total 480 respondents (240 Government Officers and 240 Farmers) were selected randomly from the two districts of each state. The details of the sampling procedure are as follows;

In view of the immenseness of the research, it is difficult to discuss all the research finding comprehensively, in single research paper. One of the specific objectives of the research was to study the "Extension approaches and methods adopted by the allied sector departments in providing extension services to farmers". The scope of this paper have limited to discussing the extension approaches and methods adopted by the agri-allied department officers in Maharashtra state and the total sample size for present paper is 60 agri-allied department officers.

### **2.2 Data Collection Tool**

Taking into consideration of the scope and objectives of the study, a draft interview schedule was prepared after perusal of available literature and through consultation with experts in the field of agri-allied extension and other related fields. After incorporating their suggestions, a well-structured interview schedule was finalized and data was collected personally.

### **2.3 Statistical Analysis**

The data collected from the respondents were scored, tabulated and in view the objectives of the study the data were subjected to different statistical tools like frequency, percentage and correlation coefficient.

### **3. Results and Discussion**

#### **3.1 Socio-Economic and Personal Profile**

In social research socio-economic and personal profile of the respondent generally important to establish relationship between the dependent and independent variables. It is revealed from the table 2. 80 percent of the Sericulture officers and 70 percent of the Fisheries officers belong to old age group. Where as in Animal Husbandry, 50 percent of officers were in the middle age group and remaining 50 percent belong to old age group.

In the Horticulture department, 45 percent of the officers belong to old age group. Thus it can be concluded that majority of the officers in the state of Maharashtra were older than 45 years and none of the officers in the department of Sericulture, Fisheries and Animal Husbandry belong to younger age group of 35 or below. Table show that, 30 percent of the Sericulture officers had postgraduate degree, 30 percent had undergraduate degree and also 30 percent had 12<sup>th</sup> standard education. Similarly 50 percent officers of Fisheries department had post-graduation.

While, 40 percent Animal Husbandry officers and 45 percent Horticulture officers had undergraduate degree. Data shows that, 100 percent officers in Sericulture department, 60 percent officers in Fisheries Department and 40 percent officers in Horticulture department had more than 20 years of experience. Nearly 65 percent of the animal husbandry officer's had 11 to 20 years of experience. It is being observed that, majority of officers of the Sericulture, Fishery and Horticulture department were visiting field atirregular interval. However, 75 percent of the animal husbandry officers had their daily visit to the farm. Nearly 90 percent of the Sericulture officers, 40 per cent of the Fisheries officers, 45 percent of the Animal Husbandry officers and 80 percent of the Horticulture officers involved in formation of farmer groups. However, only 20 percent of the Horticulture officers involved in linking of those groups to financial institutes.

#### **3.2 Knowledge Level of Officers of Agri-Allied Department of Maharashtra about Various Extension Approaches**

The knowledge level of officers working in agri-allied department has been studied with respect to different extension approaches and the results are presented below;

#### **3.3 General Extension Approach**

This approach assumes that technology and knowledge that are appropriate for local people exist but are not being used by them. The approach is usually fairly centralized and government-controlled. Success is measured in the adoption rate of recommendations and increases in national production. Table 3 shows that, all the officers of all agri-allied departments are directly involved in implementation of central and state level developmental schemes and have knowledge about the schemes. Majority of the officers of except Sericulture department feels that, farmers can adopt a new technology without subsidiary component and participate in implementation of the schemes without their (farmer) participation in planning. Majority of the officers of agri-allied department is of opinion that, selection of beneficiary for particular scheme is not a difficult task as there is no external pressure in selection process.

#### **3.4 Extension Reforms Approach**

MANAGE came out with ATMA model of extension system under the Innovation in Technology Dissemination (ITD) component of Nation Agricultural Technology Project (NATP) after successful pilot testing during 1998-2005. The focus of the ATMA model of extension system is mainly to shift away from transferring technologies for major crops to diversifying output in allied sectors (Gupta and Shinde, 2013).

The key reforms promoted under ATMA model are broad based extension system, convergence of line department on gap filling mode, group contact, use of Information and Communication Technology (ICT), gender main steaming etc. This leads to changing public extension services from narrow focus on technology transfer towards a wider focus on human and social capital formation (Leeuwis, 2003; Swanson, 2008). Results from the table 4 revealed that majority of the Horticulture (100%) and Sericulture (80%) officers are aware about ATMA, however majority of Fishery (70%) and Animal Husbandry (70%) officers are not aware of ATMA.

It is worth to mention that, except Horticulture officers, majority of the officers of Sericulture (90%) and Animal Husbandry (80%) department have no knowledge about key functions of ATMA. In department of Fishery only 40 percent officers knows the functions of ATMA. 100 percent of the Horticulture officers were attended ATMA meetings, while in other agri-allied department 50 percent of Sericulture officers, 40 percent of Fishery officers and only 20 percent of Animal Husbandry officers were attended ATMA meetings. Almost 90 percent officers of Fishery and Animal Husbandry department,

Table 1: State-wise distribution of respondents

State	Uttar Pradesh		Odisha		Maharashtra		Karnataka	
	Basti	Faizabad	Sonepur	Bargarh	Ahmednagar	Aurangabad	Kolar	Chikkaballapur
Districts	O	F	O	F	O	F	O	F
Animal Husbandry	10	10	10	10	10	10	10	10
Horticulture	5	5	5	5	5	5	5	5
Sericulture	5	5	5	5	5	5	5	5
Fisheries	10	10	10	10	10	10	10	10
Total	30	30	30	30	30	30	30	30
Gross Total	480				(30+30=60) sample size for present paper			

\*(O: Officers, F: Farmers)

Table 2: Socio-economic and personal profile characteristics of officers in the state of Maharashtra

Sl. No	Socio-personal variables	Sericulture Officers (n=10)		Fisheries Officers (n=10)		Animal Husbandry Officers (n=20)		Horticulture Officers (n=20)	
		f	%	f	%	f	%	f	%
<b>A Age</b>									
1	Young (up to 35 years)	0	0	0	0	0	0	5	25
2	Middle (36-45 years)	2	20	3	30	10	50	6	30
3	Old (> 45 years)	8	80	7	70	10	50	9	45
<b>B Education</b>									
1	10 <sup>th</sup>	0	0	1	10	0	0	1	5
2	12 <sup>th</sup>	3	30	0	0	7	35	4	20
3	Graduation	3	30	4	40	8	40	9	45
4	Post-Graduation	3	30	5	50	5	25	6	30
5	Doctorate	1	10	0	0	0	0	0	0
<b>C Experience</b>									
1	0-10 years	0	0	0	0	1	5	5	25
2	11-20 years	0	0	4	40	13	65	7	35
3	> 20 years	10	100	6	60	6	30	8	40
<b>D Frequency of visit</b>									
1	Daily	1	10	0	0	15	75	2	10
2	Once in a week	0	0	1	10	1	5	3	15
3	Once in a fortnight	2	20	1	10	0	0	1	5
4	Once in a month	0	0	1	10	0	0	0	0
5	Irregular	7	70	7	70	4	20	13	65
6	Never	0	0	0	0	0	0	1	5
<b>E Formation of groups</b>									
1	No	1	10	6	60	11	55	4	20
2	Yes	9	90	4	40	9	45	16	80
<b>Linking of group/s to a financial institute</b>									
3	Yes	0	0	0	0	0	0	2	10

Table 3: General Extension Approaches followed by the agri-allied department officers in Maharashtra

Sl No.	General Approach	Extension	Sericulture Officers (n=10)		Fisheries Officers (n=10)		Animal Husbandry Officers (n=20)		Horticulture Officers (n=20)		Total (N=60)	
			Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1	Central and State level implementation	State schemes	10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	0 (0)	20 (100)	0 (0)	60 (100)	0 (0)
2	Knowledge about different schemes		10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	0 (0)	20 (100)	0 (0)	60 (100)	0 (0)
3	Farmers adopt a new technology without subsidiary component?		2 (20)	8 (80)	10 (100)	0 (0)	19 (95)	1 (5)	20 (100)	0 (0)	51 (85)	9 (15)
4	Farmers participate in implementation of the schemes without their participation in planning?		10 (100)	0 (0)	10 (100)	0 (0)	17 (85)	3 (15)	20 (100)	0 (0)	57 (95)	3 (5)
5	Beneficiary selection is a difficult task in the prevailing political situations in the villages?		0 (0)	10 (100)	1 (10)	9 (90)	2 (10)	18 (90)	3 (15)	17 (85)	6 (10)	56 (90)
Total average of agri-allied department											78	22

\*Figures in the parenthesis indicate percentage to the total

expressed opinion that, convergence with other line departments is not helping them in carrying out your own department works and also they were not involved in preparation of block and district action plan.

The fisheries officers are also have same opinion regarding involment. However, majority of Horticulture officers said that, convergence with other line departments is helping them in carrying out your own department works and also they were involved in preparation of block and district action plan. Almost 90 percent officers of Sericulture, Fishery and Animal Husbandry expressed that, while making action plan farmer's advice is not taken. It was observed that majority of the officers of agri-allied department said that, they don't feel any extra burden while working in ATMA or convergent mode and also not facing any problem in adjustment of the expenditure bills with BTT convener/P.D. ATMA, but majority of them not getting funds as proposed in the BAP/DAP from ATMA.

It can be concluded from above data that, involment of the officers of agri-allied department of Maharashtra state in Extension Reforms Approach i.e ATMA approach is not up to the level and awareness

and capacity building of the officers is necessary for their optimum involment.

The Information and Communication Technology (ICT) is the most powerful tool emerged to address the information need of the farming community and effective delivery of advisory services worldwide. In Extension Reform model i.e. ATMA has considered ICT as powerful tool to reach the far flung farming community.

Table 5 shows that, all the officers working in the department of Sericulture, Fishery, Animal Husbandry and Horticulture were aware of ICT tools and most of them were using telephonic calls and mobile messaging for their day today work. However use of internet for e-mail was found very limited in all departments. It is worth to mention here that, none of the officers in all four agri-allied department is using any other mode of ICT viz, Video calling, Radio, Television talk, use of Kisan Call Center. Similarly, none of them were heard about community radio stations.

### 3.5 Farming System Approach (FSA)

It is systems or holistic approach at the local level. Close ties with research are required and -

Table 4: Extension Reforms Approach i.e. ATMA followed by the agri-allied department officers in Maharashtra

Sl No.	Extension Approach (ATMA)	Reforms	Sericulture Officers (n=10)		Fisheries Officers (n=10)		Animal Husbandry Officers (n=20)		Horticulture Officers (n=20)		Total (N=60)	
			Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1	Awareness about ATMA		8 (80)	2 (20)	7 (70)	3 (30)	13 (65)	7 (35)	20 (100)	0 (0)	48 (80)	12 (20)
2	Key functions of ATMA		1 (10)	9 (90)	4 (40)	6 (60)	4 (20)	16 (80)	19 (95)	1 (5)	28 (47)	32 (53)
3	Attending meetings	ATMA	5 (50)	5 (50)	4 (40)	6 (60)	4 (20)	16 (80)	20 (100)	0 (0)	33 (55)	27 (45)
4	Other department's attend the meetings	line officers the ATMA	5 (50)	5 (50)	4 (40)	6 (60)	4 (20)	16 (80)	20 (100)	0 (0)	33 (55)	27 (45)
5	Convergence with other line departments helps in carrying out your own department works		5 (50)	5 (50)	1 (10)	9 (90)	2 (10)	18 (90)	18 (90)	2 (10)	26 (43)	34 (57)
6	Involved in preparation of block action plan		1 (10)	9 (90)	0 (0)	10 (100)	2 (10)	18 (90)	11 (55)	9 (45)	14 (23)	46 (77)
7	Involved in preparation of district action plan		0 (0)	10 (100)	1 (10)	9 (90)	1 (5)	19 (95)	0 (0)	20 (100)	2 (3)	58 (97)
8	Prepared the action plan, by taking the Farmer's advice		1 (10)	9 (90)	1 (10)	9 (90)	2 (10)	18 (90)	11 (55)	9 (45)	15 (25)	45 (75)
9	Refer SREP prepared for the district to prepare the actions plans		0 (0)	10 (100)	1 (10)	9 (90)	3 (15)	17 (85)	10 (50)	10 (50)	14 (23)	46 (77)
10	Feel extra burden working in ATMA or convergent mode		1 (10)	9 (90)	0 (0)	10 (100)	0 (0)	20 (100)	3 (15)	17 (85)	4 (7)	56 (93)
11	Get the funds as proposed in the BAP/DAP from ATMA		3 (30)	7 (70)	0 (0)	10 (100)	1 (5)	19 (95)	1 (5)	19 (95)	5 (8)	55 (92)
12	Face problem in adjustment of the expenditure bills with BTT convener/ P.D. ATMA		2 (20)	8 (80)	0 (0)	10 (100)	0 (0)	20 (100)	0 (0)	20 (100)	2 (3)	58 (97)
Total average of agri-allied department											31	69

\*Figures in the parenthesis indicate percentage to the total

technology for local needs is developed locally through an iterative process involving local people. Success is measured by the extent to which local people adopt and continue to use technologies developed by the program.

It is evident from the table6 that, 80 per cent of the Sericulture officers, 70 percent of the Animal Husbandry officers and 60 percent of the Fisheries officers were not aware of Farming Systems Approach and that they had no knowledge about its key features.

Table 5: Use of ICT by the agri-allied department officers in Maharashtra

SI No.	Use of ICT	Sericulture Officers (n=10)		Fisheries Officers (n=10)		Animal Husbandry Officers (n=20)		Horticulture Officers (n=20)		Total (N=60)	
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1	Awareness about ICT tools	10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	0 (0)	20 (100)	0 (0)	60 (100)	0 (0)
2	ICT tools used										
a.	Telephonic calls	10 (100)	0 (0)	8 (80)	2 (20)	20 (100)	0 (0)	18 (90)	2 (10)	56 (93)	4 (7)
b.	Mobile messages	2 (20)	8 (80)	1 (10)	9 (90)	10 (50)	10 (50)	15 (75)	5 (25)	28 (47)	32 (53)
c.	Internet (Email)	1 (10)	9 (90)	1 (10)	9 (90)	3 (30)	17 (70)	2 (20)	18 (80)	7 (12)	53 (88)
d.	Video calling	0 (0)	10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	0 (0)	20 (100)	0 (0)	60 (100)
e.	Radio talk	0 (0)	10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	0 (0)	20 (100)	0 (0)	60 (100)
f.	Television talk	0 (0)	10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	0 (0)	20 (100)	0 (0)	60 (100)
g.	Kisan Call Center	0 (0)	10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	0 (0)	20 (100)	0 (0)	60 (100)
3	Community radio	0 (0)	10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	0 (0)	20 (100)	0 (0)	60 (100)
Total average of agri-allied department										28	72

\*Figures in the parenthesis indicate percentage to the total

Table 6: Farming System Approach (FSA) followed by the agri-allied department officers in Maharashtra

SI No.	Farming Approach	System	Sericulture Officers (n=10)		Fisheries Officers (n=10)		Animal Husbandry Officers (n=20)		Horticulture Officers (n=20)		Total (N=60)	
			Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1	Aware of Farming systems approach		2 (20)	8 (80)	4 (40)	6 (60)	6 (30)	14 (70)	16 (80)	4 (20)	28 (47)	32 (53)
2	Aware of key features of FSA		2 (20)	8 (80)	4 (40)	6 (60)	6 (30)	14 (70)	14 (70)	6 (30)	26 (43)	34 (57)
3	Recommended the farmers to take combination of two/three enterprises		0 (0)	10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	1 (5)	19 (95)	1 (2)	59 (98)
4	Work out the economic viability of the individual enterprises and total system		0 (0)	10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	0 (0)	20 (100)	0 (0)	60 (100)
5	Recommended intensification or diversification of enterprises		0 (0)	10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	0 (0)	20 (100)	0 (0)	60 (100)
6	Extension services are system based, converged with the other line departments		0 (0)	10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	0 (0)	20 (100)	0 (0)	60 (100)
7	Recommended farming systems		0 (0)	10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	1 (5)	19 (95)	1 (2)	59 (98)
Total average of agri-allied department										13	87	

\*Figures in the parenthesis indicate percentage to the total

Even though 80 percent of the officers of department of Horticulture were aware of FSA and 70 percent of them had knowledge about its key features, only 5 per cent of them had recommended the farmers to take combination of two or three enterprises. While none of the officers of Sericulture, Fisheries and Animal Husbandry departments had advised farmers to take combination of two or three enterprises. It is worth to note that, none of the officers of all four agri-allied department has worked out the economic viability of the individual enterprises and total system, none of them recommended intensification or diversification of enterprises and similarly none of them were perceiving extension services should be system based and converged with the other line departments.

It clearly indicates that the Farming System Approach was not adopted by the department staff.

### **3.6 Participatory Approach**

This approach often focuses on the expressed needs of farmers' groups and its goal is increased production and an improved quality of rural life. Implementation is often decentralized and flexible. Success is measured by the numbers of farmers actively participating and the sustainability of local extension organizations. There are several techniques are being used in participatory approaches, however for the present study Participatory Rural Appraisal (PRA) and Focused Group Discussion techniques are considered.

Table 7 revealed that 100 percent officers of Sericulture and fisheries were not aware of the Participatory Rural Appraisal (PRA) techniques, had no knowledge of PRA tools, village map, focused group discussion etc. Similarly, 100 percent officers of both the department had not used participatory tools and had not prepared village plan using participatory tools. Around 60 percent of the animal husbandry officers were not aware of PRA, 75 percent had no knowledge of PRA tools and none of the officer used participatory tools for carrying out departmental activities as well as conducted focused group discussion. Around 70 percent of the officers were not aware of village maps, 85 percent were not aware of social map, resource map, transect walk and Venn diagram. Around 25 percent of the officers found these tools were useful for micro level planning. A few officers (15 %) earlier developed village plans using PRA tools (these officers earlier used PRA while working in an NGO i.e., before joining to the department). As much as 85 percent officers in the department of horticulture were aware of PRA, 80 percent knew about PRA tools, 70 percent of them used and found that these tools were useful for micro level planning. Around 75 percent of them were aware of

village maps and transect walks, 65 percent were aware of resource maps and 50 percent were aware of social maps. Nearly 55 percent were heard of Venn diagram, 80 percent were not aware of matrix ranking and 70 percent were not aware of seasonality ranking. As a part of an ongoing project in the department of agriculture, majority of the officers (65 %) used PRA tools to develop village plans in order to identify the suitable land for watershed preparation in the farmer's field. Because in the state of Maharashtra, all the Agriculture officers should take care of the work related to Agriculture as well as Horticulture, as there is no separate department for horticulture. It is worth to note that, none of the officers Sericulture, Fisheries and Animal Husbandry departments had used Focused Group Discussion techniques.

It can be concluded that the department of Sericulture, Fisheries and Animal Husbandry was not adopting this approach. Even though the Horticulture officers knew and practice PRA, they were using seldomly.

### **3.7 Commodity Approach**

The key characteristic of this approach groups all the functions for increased production - extension, research, input supply, marketing and prices - under one administration. Extension is fairly centralized and is oriented towards one commodity or crop.

Table 8 revealed that, majority of the officers in all four departments were not aware of Commodity Approach and had no knowledge about it. 100 percent officers of all four department stated that, there was no commodity based departmental programmes and they had not linked any commodity groups to markets. Therefore, it is observed that, Commodity Approach was not adopted by the agri-allied department.

### **3.8 Project Approach**

This approach concentrates efforts on a particular location, for a specific time period, often with outside resources. Part of its purpose is often to demonstrate techniques and methods that could be extended and sustained after the project period. Change in the short term is often a measure of success.

Table 9 shows that, majority of the officers in Sericulture, Fisheries and Animal Husbandry departments were not aware about Project Approach and had no knowledge about it. Only 5 percent of officers in Horticulture department were aware of Project Approach but 100 percent of them had no knowledge about it. Not even a single officer in the study area had undertaken Project Approach in allied sector. Hence, it can be concluded that, this approach was not adopted by the allied sector department.



Table 7: Participatory Approach followed by the agri-allied department officers in Maharashtra

Sl No.	Participatory Approach	Sericulture Officers (n=10)		Fisheries Officers (n=10)		Animal Husbandry Officers (n=20)		Horticulture Officers (n=20)		Total (N=60)	
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1	Awareness about PRA	0 (0)	10 (100)	0 (0)	10 (100)	8 (40)	12 (60)	17 (85)	3 (15)	25 (42)	35 (58)
2	Knowledge about PRA tools	0 (0)	10 (100)	0 (0)	10 (100)	5 (25)	15 (75)	16 (80)	4 (20)	21 (35)	39 (65)
3	Use of participatory tools for carrying out departmental activities	0 (0)	10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	14 (70)	6 (30)	14 (23)	46 (77)
4	Participatory tools useful for micro level planning?	0 (0)	10 (100)	0 (0)	10 (100)	5 (25)	15 (75)	14 (70)	6 (30)	19 (32)	41 (68)
5	Conducted focused group discussion with the farmers	0 (0)	10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	8 (40)	12 (60)	8 (13)	52 (87)
6	Merit in use of PRA tools	0 (0)	10 (100)	0 (0)	10 (100)	5 (25)	15 (75)	15 (75)	5 (25)	20 (33)	40 (67)
7	Awareness about Village map	0 (0)	10 (100)	0 (0)	10 (100)	6 (30)	14 (70)	15 (75)	5 (25)	21 (35)	39 (65)
8	Awareness about social map	0 (0)	10 (100)	0 (0)	10 (100)	3 (15)	17 (85)	10 (50)	10 (50)	13 (22)	47 (78)
9	Awareness about resource map	0 (0)	10 (100)	0 (0)	10 (100)	3 (15)	17 (85)	13 (65)	7 (35)	16 (27)	44 (73)
10	Involved in the preparation of above maps	0 (0)	10 (100)	0 (0)	10 (100)	2 (10)	18 (90)	13 (65)	7 (35)	15 (25)	45 (75)
11	Awareness about Transect Walk	0 (0)	10 (100)	0 (0)	10 (100)	3 (15)	17 (85)	15 (75)	5 (25)	18 (30)	42 (70)
12	Performed Transect walk	0 (0)	10 (100)	0 (0)	10 (100)	2 (10)	18 (90)	14 (70)	6 (30)	16 (27)	44 (73)
13	Awareness about Seasonality ranking	0 (0)	10 (100)	0 (0)	10 (100)	2 (10)	18 (90)	6 (30)	14 (70)	8 (13)	52 (87)
14	Awareness about Matrix ranking	0 (0)	10 (100)	0 (0)	10 (100)	2 (10)	18 (90)	4 (20)	16 (80)	6 (10)	54 (90)
15	Awareness about Venn diagram	0 (0)	10 (100)	0 (0)	10 (100)	3 (15)	17 (85)	11 (55)	9 (45)	14 (23)	46 (77)
16	Developed a village plan based on participatory tools	0 (0)	10 (100)	0 (0)	10 (100)	3 (15)	17 (85)	13 (65)	7 (35)	16 (27)	44 (73)
Total average of agri-allied department										26	74

\*Figures in the parenthesis indicate percentage to the total

Results from the above table 10 revealed that, education, work experience, designation and jurisdiction of Sericulture officers had a positive relationship with their knowledge. Therefore, while imparting literacy and undertaking programmes related to extension approaches these variables need to be taken into consideration. However, age and frequency of visit of Sericulture officers did not showed positive

correlation with officer's knowledge about extension approaches. Education, Designation and frequency of visit of Fisheries officers in the state of Maharashtra had a positive relationship with their knowledge. Similarly, Education, Designation and frequency of visit of Animal Husbandry officers had a positive relationship with their knowledge level. Whereas, in case of Horticulture officers none of the independent-

Table 8: Commodity Approach followed by the agri-allied department officers in Maharashtra

Sl No.	Commodity Approach	Sericulture Officers (n=10)		Fisheries Officers (n=10)		Animal Husbandry Officers (n=20)		Horticulture Officers (n=20)		Total (N=60)	
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1	Awareness about Commodity Approach	0 (0)	10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	1 (5)	19 (95)	1 (2)	59 (98)
2	Knowledge about Commodity Approach	0 (0)	10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	1 (5)	19 (95)	1 (2)	59 (98)
3	Commodity based programmes	0 (0)	10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	0 (0)	20 (100)	0 (0)	60 (100)
4	Link of commodity groups to markets	0 (0)	10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	0 (0)	20 (100)	0 (0)	60 (100)
Total average of agri-allied department										1	99

\*Figures in the parenthesis indicate percentage to the total

Table 9: Project Approach followed by the agri-allied department officers in Maharashtra

Sl No.	Project Approach	Sericulture Officers (n=10)		Fisheries Officers (n=10)		Animal Husbandry Officers (n=20)		Horticulture Officers (n=20)		Total (N=60)	
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1	Awareness about Project Approach	1 (10)	9 (90)	0 (0)	10 (100)	0 (0)	20 (100)	1 (5)	19 (95)	2 (3)	58 (97)
2	Knowledge about Project Approach	1 (10)	9 (90)	0 (0)	10 (100)	0 (0)	20 (100)	0 (0)	20 (100)	1 (2)	59 (98)
3	Undertaken Project Approach	0 (0)	10 (100)	0 (0)	10 (100)	0 (0)	20 (100)	0 (0)	20 (100)	0 (0)	60 (100)
Total average of agri-allied department										2	98

\*Figures in the parenthesis indicate percentage to the total

Table 10: Correlation of agri-allied department officers' knowledge about extension approaches in Maharashtra

Sr. No.	Independent Variables	Sericulture Officers	Fisheries Officers	Animal Husbandry Officers	Horticulture Officers
		r	r	r	r
1	Age	-0.184	0.071	-.185	0.110
2	Education	0.678*	0.609*	.721**	0.248
3	Work experience	0.628*	0.050	-.099	0.112
4	Designation	0.560*	0.620*	.447*	0.301
5	Frequency of visit	0.283	0.638*	.578**	0.181
6	Jurisdiction	0.535*	0.261	.256	0.150

r = Correlation coefficient value

\*Significant at the 0.05 level (2-tailed)

\*\* Significant at the 0.01 level (2-tailed)

variables showed any relationship with the level of knowledge.

#### 4. Conclusion

The extension approaches and methods followed by different extension organization have resulted into wider spread of modern technologies and increase in agricultural production, but with time, rate of agricultural production has slowed down due to several reasons. Moreover, there is increasing inability of line departments in carrying out extension activities (Sulaiman and Van den Ban, 2003). The present study was conducted to explore extension service approaches and methods adopted by the agri-allied sector departments of Indian state- Maharashtra. The study has focused following extension approaches; General Extension Approach, Extension Reforms Approach, Farming System Approach Participatory Approach, Commodity Approach, Project Approach. It has been

observed that, except General Extension Approach all other extension approaches is almost unknown to the officers of agri-allied sector in Maharashtra. General Extension Approach is being used by the agri-allied department since its establishment in order to stimulate development of sectors; this particular approach is most popular extension approach because it involves the subsidy to beneficiary under various central and state level schemes. It can be concluded from the present research that, to promote adoption of other approaches among the officers of agri-allied department-recruitment of the officers having specialization in the relevant subject i.e. post-graduation, capacity building through induction and refresher training program on extension management aspects and well defined job chart inclusive of frequent field visits is the need of the hour for development of agri-allied sector in Maharashtra.

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