

Reforms and Status of Agriculture-Allied Sectors in Indian Economy

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Abstract: Agri-allied sectors are considered to be the mainstay of the Indian economy because of their high share in employment and livelihood creation. National Sample Survey Office's (NSSO) 70th round survey showed that more than one-fifth (23 per cent) of agricultural households with very small land size (less than 0.01 hectare) reported livestock as their principal source of income. Farming households with some cattle head are better able to withstand distress due to extreme weather conditions. It is also an important source of raw material and demand for many industrial products. The major agri-allied sectors are livestock, horticulture, fisheries and sericulture sector. Presently, the agri-allied sector is facing several challenges, among which extension services are seen generally as weak and neglected aspects. Extension as a rural support service is needed to meet the challenges in agri-allied sector due to changes in the global food and agriculture system including the rise of supermarkets and the growing importance of standards and labels; growth in non-farm rural employment and agribusiness; constraints imposed by health challenges that affect rural livelihoods; and the deterioration of the natural resource base and climate change. The delivery of extension services is emerging as an important priority area for enhancing and optimizing production and value addition. Services include transfer of technology and strengthening of various infrastructure and support services, while building the capabilities of the stakeholders.

Key words: Agriculture, Economy, Allied, Sector, Livelihood.

INTRODUCTION

Agriculture plays a vital role in India's economy. Nearly 54.6% of the population is engaged in agriculture and allied activities (Census 2011) and the sector contributed 17.4% to the country's Gross Value Added for the year 2016-17 (at current prices). (Annual Report 2016-17, DAC & FW). The contribution of agriallied sectors viz., livestock (including dairy, sheep, goat, poultry and piggery), fisheries (marine, inland and aqua farming), horticulture (including fruits, vegetables, flowers,

spices, aromatic and medicinal plants) and sericulture sector has been significant and growing over the years. Globally, India accounts for the highest milk production, second highest fish production and second highest production of fruits and vegetables.

Livestock Sector:

Livestock sector is an important sub-sector of agriculture which provides nutrient-rich food products, draught power, organic manure and domestic as grown significantly. According to estimates of the Central Statistics Office (CSO), the value of output of livestock sector at current prices during 2015-16 was about 28.6% of the value of output from agricultural and allied sector. (28% at constant 280 gm per day per person. (Annual Report, DAHD&F, 2017-18)

The Indian dairy cooperative network consists of 1,77,314 primary milk cooperative societies at village level covering 16,282 producer members and procures 42.8 million kg milk per day. (Annual Report, NDDDB, 2016-17). Approximately, 34% of the milk is sold in the unorganized market while 46% is consumed locally. This is in contrast to most of the developed nations where almost 90% of the surplus milk passes through the organized sector. As per the Department of Animal Husbandry, Dairying and Fisheries, organized milk handling is expected to grow from 20% at present to 50% by 2022-23. (Annual Report, DAHD&F, 2017-18) Presently, the co-operatives and private dairies have access to only 20% of the milk produced. However, it is estimated that, by 2020, private corporate dairies will overtake cooperatives in handling of milk volumes, which is projected to reach 28.93 million tonnes, ahead of the 23.67 million tonnes of cooperatives. (National Action Plan for Dairy Development: Vision 2020).

The total meat production in the year 2016-17 reached 7.4 million tonnes among which the major

contribution is from poultry 47.05% followed by buffalo 19.80%, goat 14.25%, sheep 7.68%, pig 6.50 and cattle 4.72% (Annual Report, DAHD&F, 2017-18). The per capita availability of meat is around 5kg. per person per year, which is nearly half the recommended level i.e. 11kg per person per year by ICMR. India ranks third in egg production in the world after China and the USA and is the fourth-largest producer of chicken in the world after China, Brazil and the USA. In 2016-17, egg production reached 88.14 billion with annual growth rate of 6.3%. The per capita availability of eggs is around 69 eggs per person per year, which is far below the recommended level i.e. 180 per person per year by ICMR. The total value of poultry sector is about Rs.80,000 crore (2015-16) broadly divided into two sub-sectors – a highly organized commercial sector with about 80% of the total market share and the unorganized with about 20% of the total market share. (Annual Report, DAHD&F, 2017-18).

Fisheries and Aquaculture sector:

The fisheries and aquaculture sector is recognized as the sunshine sector in Indian agriculture providing nutritional security to the food basket, contributing to agricultural exports and engaging about 14 million people in different activities. There have been continuous and sustained increments in fish production in India since independence. Constituting about 6.3% of the global fish production, India stand 2nd in total fish production as well as freshwater fish production. The total fish production in 2016-17 was 11.4 million metric tonnes (3.6 million metric tonnes from marine fisheries and 7.8 million metric tonnes from inland fisheries). The per capita availability of fish is 9 kg per person per year, which is quite low as compared to other developing nations. The sector contributes 1.1% of the national GDP and 5.15% of the agricultural GDP. (Annual Report, DAHD&F, 2017-18).

In order to utilize the large untapped potential in fisheries and aquaculture in the country, the Government of India started Blue Revolution creating an enabling environment for integrated development of the full potential of fisheries in the country, along with substantial improvement in the income status of fishers and fish farmers keeping in view sustainability, bio-security and environmental concerns.

Horticulture Sector:

India has maintained leadership in the production of many commodities like mango, banana, acid lime, coconut, areca nut, cashew, ginger, turmeric and black pepper. Presently, it is the second largest producer of fruits and vegetables in the world. India is next only to China in area and production of vegetables and occupies the prime position in the production of cauliflower, second in onions and third in cabbage in the world. India has also made noticeable advancement in the production of flowers. Further, it is the largest producer, consumer and exporter of spices. India is home to a wide variety of spices like black pepper, cardamom (small and large), ginger, garlic, turmeric, chilli and a large variety of tree and seed spices. The major spice producing States are Andhra Pradesh, Tamil Nadu, Odisha and Madhya Pradesh. The North Eastern region and Andaman and Nicobar Islands also have potential areas for spices, particularly cultivated organically.

The percentage share of horticulture output in Agriculture is 30%. Over the last decade, the area under horticulture grew by about 3% per annum and annual production increased by 5.4%. During 2016-17, the production of horticulture crops was about 295.2 million tonnes from an area of 24.9 million hectares. Among the horticulture crops, vegetable crops account nearly 60%, followed by fruits (31.5%), Plantation (5.7%), Spices (2.4%) and flowers and aromatic plants. During 2016-17, the area under vegetables in India is estimated at 10.3 million hectares with a production of 175 million tonnes. India produces nearly 11% of all the world's vegetables and 15% of all fruits. Uttar Pradesh, West Bengal and Madhya Pradesh are the leading states in vegetable production for the year 2016-17. (Horticulture Statistics at a Glance, 2017)

Sericulture Sector:

Sericulture is a major sub-sector comprising the textiles sector. Sericulture emerged as an important economic activity, becoming popular in several parts of the country, because of its short gestation period and quick recycling of resources.

It suits all types of farmers and exceptionally marginal and small land holders as it offers rich opportunities for enhancement of income and creates family employment round the year. India is the second largest producer of silk in the world and has the distinction of being the only country producing all

five kinds of silk namely Mulberry, Eri, Muga, Tropical Tasar and Temperate Tasar. Karnataka, Andhra Pradesh and Assam were the top three raw silk producing states in 2016-17. In 2016-17 total raw silk production reached 30,348 metric tonnes with an annual growth of 6.4%. However, the demand for silk is more than the production. In 2016-17 a total of 3795 metric tonnes of raw silk worth Rs.1092.26 crore was imported mainly from China, to supplement the domestic production for meeting the increasing demand. (CSO, Annual Report 2016-17). India holds the monopoly in producing Muga silk. It is the only cash crop in the agriculture sector that gives returns within 30 days.

Agri-Allied Sectors Major challenges and issues:

Extension services are needed to meet the challenges in agri-allied sector due to changes in the global food and agricultural system including the rise of supermarkets and the growing importance of standards and labels; growth in non-farm rural employment and agribusiness; constraints imposed by health challenges that affect rural livelihoods; and the deterioration of the natural resource base and climate change. The delivery of extension services is emerging as an important priority area for enhancing and optimizing production and value addition. Services include transfer of technology and strengthening of various infrastructure and support services, while building the capabilities of the stakeholders. The Agri-Allied sectors face certain challenges and issues which are listed here. Livestock sector.

1. Low productivity: there is need to enhance the levels through genetic improvement along with practices such as; improving feed utilization efficiency, adopting better reproductive strategies and improving health coverage based on newer generation biotechnological vaccines and drugs.
2. Shortage of feed and fodder: Crop residue is used as animal feed but a large portion is burnt in the field to clear the field after harvest. Area under fodder cultivation is only about 4% of the cropping area and it has remained static over last four decades
3. Unorganized: Livestock sector particularly small ruminants; sheep, goat, piggery are highly unorganized.
4. Inadequate infrastructure for marketing, processing and value addition: Marketing of livestock and livestock products remains largely unorganized, traditional, and fragmented, with a few exceptions.

5. Livestock and environment: Climate change aggravates heat stress in dairy animals, adversely affecting their productive and reproductive performance. The estimated annual loss at present due to heat stress at the all-India level is 1.8 million tones. Livestock are itself a large source of methane emission contributing about 18% of total enteric methane budget.

6. Knowledge gap. As per National Sample Survey Organization (NSSO) survey conducted in 2003, only 5.1% of the farmer households in India were able to access any information on animal husbandry as against 40.4% on crop farming. (Chander M. et al, 2010). 60% of farmers had not accessed any source of information on modern technology to assist in their farming practices.

Extension Services:

There is increased demand for various services like animal breeding, health care, feed and fodder production, marketing, livestock extension etc. which are provided by multifarious agencies in India. Among all the services, livestock extension services play an important role in empowering farmers with appropriate technological knowledge and skills through various extension education and training programs.

However, there is lack of a livestock extension policy and dedicated administrative structure for livestock extension at center and state level-leading to unorganized, sporadic and ineffective delivery of extension services to livestock farmers. The focus of the State Department of Animal Husbandry (SDAH) is on healthcare and breeding aspects of livestock than production. Further the Livestock extension services in India are characterized by five biases that result in neglecting poor rural livestock-keepers, viz., topdown 'transfer of technology' approach; more focus on cattle and buffaloes, excluding other species; primary focus on milk production, neglecting other roles of livestock; concentration of services in high potential areas and; livestock extension is generally provided by men for men, despite key roles that women play in livestock farming. There is also a lack of institutional shift from extension to entrepreneurship in livestock extension activities (Ramkumar, 2014).

There is also need to move from Conventional dairy extension (with focus on improving production) vis-à-vis Commercial dairy extension (with focus on marketing, market rates, value addition, project

formulation, licensing, climate change, pollution control, budgeting, sources of funds, insurance, mechanization etc.). In view of the above challenges, livestock extension professionals need to have or acquire core competencies in extension as well as technical subject matter for effective service delivery. Moreover, the shortage in the number of Veterinary Assistant Surgeons (VASs), who are the middle level livestock extension professionals (Sasidhar P.V.K. and Murari Suvedi, 2016) and inadequate competencies among these extension professionals lead to further deterioration of livestock extension service delivery. Poor participation of private sector and inadequate budget for livestock extension activities resulted in a weak extension component. The SDAH-as the major stakeholders for delivery of extension services spend only 1-3% of their budget on extension activities. (Chander M. et al, 2010).

Fisheries and Aquaculture sector:

Challenges for fisheries development in India include the following:

1. Inland fishery not treated at par with agriculture in the context of taxes, electricity tariff etc. and therefore fishery sector remained largely un-organized and traditional in most parts of the country with little proliferation of technological improvements
2. Absence of inland fishery policy at national level
3. Non-coverage of fish farming under insurance
4. Lack of a reliable database relating to aquatic and fisheries resources
5. Non-availability of suitable fish yield models for multi-species fisheries for open inland waters and marine resources
6. Weak multi-disciplinary approach in fisheries and aquaculture
7. Inadequate attention to environmental, economical, social and gender issues in fisheries and aquaculture
8. Inadequate human resource development and specialized manpower in different disciplines
9. Weak linkages between research and development machinery
10. Weak and unorganized marketing

Horticulture sector:

Challenges for horticulture development in India include the following:

1. Lack of quality inputs

2. Lack of market support
3. Paucity of post-harvest management, packing and storage, specialized transport and storage arrangements to maintain the chain from farm to fork
4. Increasing cost of production; most growers do not get reasonable returns for their produce
5. Distress sales
6. Inadequate infrastructure like transportation, cold storage, warehouses etc.
7. Price fluctuation
8. Lack of market intelligence
9. Lack of knowledge of post-harvest handling
10. Wastage and spoilage loss

Extension Services:

Horticulture extension has been an integral part of agricultural extension services. During the last few years there has been diversification of agriculture towards high value commodities such as fruits and vegetables. Considering the evolving challenges, producers currently need a wider range of support - organizational, marketing, technological, financial and entrepreneurial.

Sericulture sector:

The Indian sericulture industry, is currently facing several problems which have restricted full utilization of its potential.

1. Indian silk yarn is of poor quality, which not only affects our competitiveness in the world market, but has also resulted in a preference for imported yarn in the domestic market. The problem arises due to lack of:

Sufficient thrust on the adoption of improved technologies;

Strict disease control measures;

Quality leaf due to insufficient inputs to mulberry garden;

Grading system for cocoons and Quality-based pricing system as well as use of young age silkworms

2. Decline in area under silk food plants: This can be addressed by initiating area-specific research to improve soil fertility which will ultimately enhance soil productivity, increase mulberry and nonmulberry host plant leaf and silkworm cocoon production as well as arrest decline in area under silk food plants.

3. Insufficient production of bivoltine silk: Bivoltine yarn is sturdier and is used by the power loom

industry. But only 5% of the silk produced in India is bivoltine because its production requires more attention and resources. It also yields just two crops in a year, as against the yield of four to six crops by multi-voltine silk. Even the farmers do not have any incentive to switch to bivoltine silk yarn production because the difference between the selling price of bivoltine and multivoltine silk is not much. (CSO, Annual Report 2016-17).

FINDINGS OF THE STUDY

Knowledge level of Agri-allied department officials about extension approaches A. General Extension Approach: The approach is centralized and government-controlled. Success is measured in the adoption rate of recommendations and increase in national production. The present study shows that, more than 65% officers of agri-allied department in all four states, knew about the departmental schemes and were implementing different central and state level schemes. It is also seen that in all the four states, farmers participate in implementation of the schemes not in planning of schemes. On the issue of selection of beneficiaries for the various schemes, the officers in all four states, did not find any difficulty /external/political pressure in selection of the beneficiaries except in case of Horticulture in Maharashtra, Odisha and Karnataka; Animal Husbandry in Odisha, Karnataka and Uttar Pradesh; Sericulture in Karnataka and Fishery in Odisha and Uttar Pradesh.

A. General Extension approach in Karnataka in Sericulture The government is keen on injecting fresh reforms in the sericulture sector in Karnataka. The state is the largest producer of silk in the country and accounts for nearly 30 per cent of the country's exports. What prompted the government to act is the steady decline in the area under mulberry cultivation over the past two decades, although total silk production (8,500 tonnes) has more or less been constant, given the increase in productivity and the new reeling techniques. A recent review revealed that the area under mulberry has reduced from 1.12 lakh hectares in 2000-01 to around 80,000 acres in 2013-14, and proportionately the number of sericulturists has also reduced from 2.56 lakh to around 1.3 lakh. The primary reasons attributed are the reduction in labor availability, rapid urbanization, with people migrating to better paying vocations. The Central Silk Board is expected to extend support to the exercise in stepping up area under sericulture. The

Commissioner for Sericulture said subsidy would be extended to all farmers seeking to newly engage in mulberry cultivation. For those wanting to start a mulberry nursery, the subsidy of Rs. 1.7 lakh per hectare is being given and for cultivation it will be Rs. 30,000 per hectare. The primary focus will be on bivoltine cocoon production in preference to multivoltine, since the yield under the former is far higher. Mulberry is an important cash crop in the districts of Mandya, Ramanagaram, Chickballapur, Bangalore, Tumkur and Kolar. The proposal is to extend area under its cultivation by another 15,000 acres, of which 10,000 acres will be in the traditional sericulture regions and the remaining in the adjoining districts of Mysore, Bellary and Chitradurga.

B. Extension Reforms Approach: Extension Reforms focuses on operationalizing agricultural reforms across the country through new institutional arrangements with restructured autonomous bodies in the form of Agriculture Technology Management Agency (ATMA) at the District level, Block Technology Team (BTT) at Block level, which are flexible, bottom-up, farmer-driven and promote public-private partnership. The study shows that, more than 65% officers of agri-allied departments in all four states had heard about ATMA but less than 50% of them had knowledge about ATMA functions and had not attended ATMA meetings except for the officers of Department of Horticulture in Maharashtra and Fishery officers in Odisha.

C. Farming Systems Approach (FSA): A key characteristic of the Farming Systems development approach is its systems or holistic approach at the local level. Close ties with research are required and technology for local needs is developed locally through a 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 was found that, on an average more than 40% of the officers of agri-allied departments in all four states were aware of Farming System Approach (FSA) and its key features, however, only few of them recommended to the farmers to take up a combination of two or three enterprises. None of the officers of agri-allied sector in all four states had worked out the economic viability of the individual enterprises and the total system. These officers also stated that, extension services are not system based and not converged with the other line departments. Therefore, convergence and orientation to farming system approach is needed as a policy implication. Extension

officers working in agri-allied departments need to be trained in FSA, so that they can disseminate FSA to the end users and thereby help in reducing yield losses.

D. Participatory Approach: The Participatory Approach focuses on the expressed needs of farmers' groups to achieve increased production and improved quality of rural life. Implementation is often decentralized and flexible. Success is measured by the number of farmers actively participating and the sustainability of local extension organizations.

It was found that, Participatory Approach was well adopted by the Department of Animal Husbandry (61%) in Karnataka, as there was a notification by the State Government that, the veterinary officers at the village level must prepare village maps to better tackle the vaccination of livestock and therefore they were involved in the preparation of village maps. Similarly, it is also seen that, this approach was followed to some extent (16%) by the department of Animal Husbandry in Maharashtra and department of Horticulture in Karnataka.

E. ICT Approach: This approach encourages the use of Information and Communication Technology in extension. The study revealed that, all the officers working in agri-allied departments in all four states were aware of ICT tools and were using telephonic calls routinely for the advisory services. The use of mobile message was found more popular in department of Fishery in Karnataka, department of Animal Husbandry in Uttar Pradesh and department of Horticulture in Maharashtra. It was also seen that, ICT tools like Internet (Email)/use of tablets, Video calling, Radio talk and Television shows were not so popular for dissemination of advisory services. Majority of the agri-allied officers in all four states had not heard of community radio stations, moreover none of the officers participated in any of the radio/television shows.

F. Project Approach: The project 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. The findings of the study show that, very few officers (15%) of department of sericulture in all three states except Uttar Pradesh and

department of Horticulture in Maharashtra were aware and had knowledge about the project approach. However, none of the officers of agri-allied departments in all four states have undertaken any Project Approach while working in the departments.

G. Commodity Approach: The commodity specialized 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 and the agent has many functions. It was found that, none of the agri-allied departments in Uttar Pradesh; Department of Fisheries in Odisha; Department of Sericulture, Fisheries and Animal Husbandry in Maharashtra were aware about this approach. Only few officers of the Department of Horticulture in Maharashtra; Sericulture, Animal Husbandry and Horticulture in Odisha; and all agri-allied departments in Karnataka except Department of Animal Husbandry were aware about Commodity Approach. However, the Agri-allied department officers in all four states have not implemented any commodity based program and also not linked commodity groups to markets.

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