

FARMING SYSTEMS APPROACH

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Introduction

Public sector extension in India has undergone several transformations since independence in 1947. Initially, the focus of extension was on human and community development, but during the remainder of the 20th Century there was a steady progression toward technology transfer within the policy framework of food security. The most significant development during the mid-seventies was the introduction of the Training and Visit (T&V) Extension management system.

By the 1990s, the Indian Extension system was at a crossroads. Since Extension had focused on disseminating Green Revolution technology for the major cereal crops for the past two decades, extension activities were largely carried out by state Departments of Agriculture (DOA). Other line departments, like Animal Husbandry (DAH), Horticulture (DOH) and Fisheries (DOF), had very limited extension capacity and primarily focused on the provision of subsidized inputs and services to farmers. In addition, these line departments operated largely independently, with very little collaboration between the departments and their field staff.

In the late-1990s, the Government of India (GOI) and the World Bank pilot-tested a new, decentralized, market-driven extension model under the National Agricultural Technology Project (NATP). This new approach was designed to help farmers diversify into high-value crops and livestock enterprises as a means of increasing farm incomes and rural employment (i.e. poverty alleviation). The key institution in implementing this new approach was the Agricultural Technology Management Agency (ATMA), which was to facilitate and coordinate “farmer-led” extension activities within each district.

The key elements of the ATMA model included: 1) organizing small-scale farmers, including women, into farmer interest groups (FIGs), 2) linking these groups to markets, 3) decentralizing extension decision-making down to the district and block levels; 4) taking a more **“farming systems” approach**, requiring the integration of extension activities across the different line departments. Now let us understand the farming system approach (FSA) through concept and definitions.

Concept

Farming system is an integrated set of activities that farmers perform in their farms under their resources and circumstances to maximize the productivity and net farm income on a sustainable basis. The farming system takes into account the components of soil, water, crops, livestock, labour, capital, energy and other resources, with the farm family at the centre managing agriculture and related activities.

The farming system conceptually is a set of elements or components that are interrelated which interact among themselves. At the center of the interaction is the farmer exercising control and choice regarding the types of results of interaction. The income from cropping alone from small and marginal farm is insufficient now to sustain the farmers' family. A judicious mix of any one or more of these enterprises with agronomic crops. Should complement the farm income and help in recycling the farm residues / wastes. The selection of enterprises must be based on the cardinal principles of minimizing the competition and maximizing the complementary between the enterprises. Of late, the researchers on multi disciplinary approach greatly realized and started developing the various farming systems models in accordance with the agro-eco systems zones. Since 1978, both scientists, extensionists, anthropologists, social workers, administrators have been publishing many articles on FSRE in different journals.

Simmonds in 1984 clarifies the Farming System Approach as follows: It is an academic activity comprising of theory, concepts, principles, approaches etc. It creates an opportunity for developing diversified models for different type of farmers and different

category of farmers. New farming system approach models could be developed by means of on farm research and extension. It causes consequential a complex change which demands for Government interventions for farming systems development

BIGGS (1985) explained the concept of FSA as follows: it is a problem solving approach for the farmer. Farming system approach requires commonly homogenous type of farmers. It is an inter-disciplinary approach. It is a participatory and bottom up planning. It requires on farm trials. It depends on the concept learning by doing and farming system approach needs socially desirable technologies.

Thus the concept of Farming System Approach can be summarized as it is a holistic approach, complex in nature, interrelated of components, matrix of soils, plants, animals, power, implements, labour, capital and other inputs, influenced by political, economic, institutional and social forces.

Definitions

Farming systems approach relates to the whole farm rather than individual elements; it is driven as much by the overall welfare of farming households as by goals of yield and profitability. Farming systems are closely linked to livelihoods because agriculture remains the single most important component of most rural people's living and also plays an important role in the lives of many people in semi-urban areas.

Farming systems involve a complex combination of inputs, managed by farming families but influenced by environmental, political, economic, institutional and social factors. Research and extension institutions are increasingly aware that a holistic approach, drawing on both local and external knowledge, is necessary if they are to be effective in addressing poverty and sustainability.

“ Farming System is defined as a complex inter related matrix of soil, plants, animals, implements, power, labour capital and other inputs controlled in part by farming families and influenced to varying degrees by political, economic, institutional and social forces that operate at many levels. The farming system therefore, refers to the farm as an entity of inter dependent farming enterprises carried out on the farm”.

The farm is viewed in a holistic manner. The farmers are subjected to many socio-economic; biophysical, institutional, administrative and technological constraints.

Need for Farming System Approach

The need for Farming Systems Approach in the present scenario is mainly due to high cost of farm inputs, fluctuation in the market price of farm produce, risk in crop harvest due to climatic vagaries and biotic factors. Environmental degradation, depletion in soil fertility & productivity, unstable income of the farmer, fragmentation of holdings and low standard of living add to the intensity of the problem.

What it is and What it does

It is an approach for developing farm-household systems, built on the principles of productivity, profitability, stability and sustainability. All the components are complimentary and supplementary to each other. And the development process involves the participation of rural communities. The farming system approach emphasizes understanding of farm household, community inter linkages, reviews constraints and assesses potentials. And it combines improvements desired from better technology. It needs efficient support services and requires better policies. It is continuous, dynamic and interactive learning process based on analysis, planning, testing, monitoring and evaluation.

Why Farming Systems Approach

To develop farm – house hold systems and rural communities on a sustainable basis

To improve efficiency in farm production

To raise farm and family income

To increase welfare of farm families and satisfy basic needs.

An intensive integrated farming system addresses two issues, reduction in risk with the monoculture activities and promoting enterprise diversification, value addition and development of alternative income sources with efficient utilization of farm resources. And it brings about enterprise diversification for sustainability and additional benefits, better management of important farm resources like land, labor and capital etc. Provides an opportunity for effective recycling of the product and by-products, helps to generate flow of cash to the farmers round the year by way of disposal of milk, fruits, fuel, manure etc., beside other agricultural output.

Farming Systems Strategy

In view of serious limitations on horizontal expansion of land and agriculture, only alternative left is for vertical expansion through various farm enterprises required less space and time but giving high productivity and ensuring periodic income specially for the small and marginal farmers located in rainfed areas, dry lands, arid zone, hilly areas, tribal belts and problem soils.

The following farm enterprises could be combined:

Agriculture alone with different crop combinations

Agriculture + Livestock

Agriculture + Livestock + poultry

Agriculture + Horticulture + Sericulture

Agro-forestry + Silviculture

Agriculture (Rice) + Fish culture

Agriculture (Rice) + Fish + Mushroom cultivation

Floriculture + Apiary (beekeeping)

Fishery + Duckery + poultry

For meaningful execution of integrated farm-enterprises, the following activities should be undertaken by a multi-disciplinary team of extension professionals with farmer's participation and involvement at all stages.

- Thorough understanding of existing farming systems and their components
- Assessment of resource availability in the farm environment and identification of bio-physical, socio-economic, institutional, administrative and technological constraints
- Developments of economic viable and efficient integrated farming systems suitable for various domains
- Diffusion of improved technology and receiving 'feed back' for further improvement of the system as a whole.
- Continuous improvement in components technology to fit into a given farming system
- Improvement in quality of farming system
- Research Extension linkage through "On farm Adaptive Research"
- Development of National and International linkages
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Methodology adopted for grounding the concept of FSA

I. Identification of major socio-economic situations

- Understanding dominant enterprises and most common existing farming system
- Analysis of economic viability of existing farming systems
- Understanding relationship between different enterprises
- Analysis of linkages between different farming systems

II. Understanding the modifications made in existing farming system by innovative farmers

- Understanding the changing scenario in rural areas and its impact on existing farming system
- Identification of new market opportunities and its impact and relevance to socio- economic situation
- Suitable modification made by innovative farm families in existing farming system

- Type of modification made (diversification or intensification of the enterprises)

III. New options recommended by the Researchers/ Extensionists

- Identification of new suggested options by researchers/extensionists around each dominant enterprise
- Understanding the technological details about new options

IV. Economic analysis of recommended options and working out alternatives:

- Analysis of relative profitability of recommended options as compared to existing farming system
- Understanding of implications of each options with regard to reallocation of resource

v. In the absence of any recommendations, work out an alternate model by fine tuning the existing model (without major changes) considering the resources, market, profitability and sustainability

- Propose an alternate model by fine-tuning the existing farming system by working out the possibilities of diversification or intensification of an enterprise.
- Work out the economic analysis and benefits of alternate model compare to existing and identify the gaps in knowledge and skill so as to adopt the new model
- Develop strategies and activities to over come the gaps in knowledge and skills
- Testing the effectiveness of recommended options over a period of time

Carryout SWOT analysis in respect of different Farming Systems. SWOT analysis is very useful tool in developing strategies as it helps in identification of -

- Current strengths within existing farming systems and success stories,
- Weaknesses within the existing farming systems,
- Opportunities, which are advantageous for optimal exploitation of the existing farming systems in terms of providing, scope for new market opportunities, new technologies, services etc.

- Real potential threats to the natural resource base, existing farming systems and markets etc.

The identified issues and also the findings of SWOT analysis are to be shared with the farmers to prioritize the issues with commonality of understanding.

Summary

Due to ever increasing population and decreasing in per capita availability of land in India, there is little scope for horizontal expansion of land for food, feed, fuel and fibre production. Only vertical expansion is possible by integrating various farm enterprises requiring less space and time and ensuring periodic income to the farmer. The farming system approach, therefore, assumes great importance for sound management of farm resources to enhance farm productivity, reduce the degradation of environmental quality and improve the quality of life of farmers and above all to maintain sustainability in farm production and productivity.

Key Words

Farming : A piece of land on which crops / animals are raised

System: Different components of a farm working as whole

Enterprise: Business – profit and loss rupee to rupee

Intervention: Bringing a change

Diversification: Bring a change on enterprise

Intensification: Bringing changes in production practices of an enterprise

Supplementary: One enterprise adopting something else to improve production of other

Complimentary: Performance of one enterprise depends on another

Trends: Changing scenario

Extension strategy: Activities to bridge the gaps

Horizontal expansion: Expansion in area

Vertical expansion: Increasing productivity

Suggested Books for Further Reading

Agarwal, A. & Narain, S. (1989). **Towards Green Villages: A strategy for Environmentally, Sound and Participatory Rural Development**, Center for Science and Environment, New Delhi, India.

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