



Paradigm Shift in Agricultural Extension System in India

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Agricultural extension systems play an important role in global agricultural development. These systems bridge the gap among agricultural research and farming methods, allowing farmers to implement new techniques, technology, and best practices for enhanced productivity, sustainability, and livelihoods. (Ravi and Nedumaran, 2019). Agricultural extension services attempt to share knowledge, information, and innovations with farmers and other agriculture stakeholders. The major goal is to share agricultural information, findings from research, and technological expertise with farmers and rural communities. The goal is to provide farmers with current information and skills to make educated decisions regarding their agricultural methods. It is offered by a variety of entities and agencies, including government departments, research institutions, non-governmental organizations (NGOs), universities, and private sector companies.

Extension has reinvented itself in several ways when compared to its original land grant college model of teaching and top-down approach to technology transfer. Extension education and methodologies have evolved significantly in order to compete with scientific knowledge and technology production. It has shifted its focus from production and productivity to income and economic efficiency (doubling farmers' income, market-led extension), pedagogic education to on-the-job vocational training, fully centralized funding to a decentralized bottom-up approach (e.g., ATMA), and resource extraction to the promotion of sustainable agricultural practices (e.g., LEISA, FFS for IPM, and so on).

Significant shift in the extension paradigm

With the advancement of science and technology, the extension system has undergone major changes. The shift in the extension paradigm is classified into the following broad categories:

- ✚ **Colonial Agriculture and Extension:** Colonial electricity was used to create experimental stations. They arranged agriculture by concentrating on planting cash crops like tea, rubber, and cotton, rather than traditional crops, in order to maximize earnings. Technical help was provided to larger farmers and plantation managers, whereas subsistence crop growers were overlooked.
- ✚ **Broad-based or Multipurpose Extension:** In India, Community Development Programmes (CDP) were launched in 1952, followed by the National extension Service (NES) in 1953, accelerating the multifunctional expansion. It was a broad-based notion that included agriculture, health, education, industry, roads, and the welfare of women and children. Under NES, blocks were established, and village level workers (VLWs) were assigned to rural areas. Agricultural production increased modestly.
- ✚ **Area-specific and Target group Extension:** Following independence, the country experienced severe food shortages. The High Yielding Variety Programme (HYVP) was

launched in 1966, and it had a huge impact on agriculture during the green revolution. The government focused on five primary crops: wheat, rice, jowar, bajra, and maize.

- ✚ **Top-down Extension:** The release and success of high-yielding cultivars shifted the agricultural extension system's primary focus to technology diffusion in the 1970s. Agricultural extension used a supply-driven top-down approach to distribute technology using demonstrations, visits to fields, and farmer meetings held in research stations. This approach increased farming area, crop intensity, and employed family labor.
- ✚ **Decentralized Bottom-up Extension:** Bottom-up planning was used to develop a decentralized decision-making system with stakeholders, farmers, and the private sector engaging in the development and execution of extension programs at the district and block levels. In 1998, the World Bank-assisted National Agricultural Technology Project (NATP) methodology was put to the test. Under NATP, the Agricultural Technology Management Agency (ATMA) operates a district-level market-driven extension system.
- ✚ **E-Extension and E-Agriculture:** In the twenty-first century, e-extension evolved alongside the continuous IT transformation and technological devices knowledge dissemination mechanisms. E-extension (cyber extension) uses ICT techniques like Decision Support Systems (DSS), Geographical Information Systems (GIS), mobile apps, and web portals. Cyber extension provides timely information to the proper people who live in geographically separated places.

Agricultural extension approaches in India

For a long time after gaining independence, extension services were mostly provided by the public sector. Currently, the public sector is a key provider of extension services through a two-tier system. The Indian Council of Agriculture Research (ICAR) is the nodal institute for agricultural research and extension; at the state level, agriculture extension is facilitated by the State Agricultural Universities (SAU) through the Krishi Vigyan Kendras (KVKs) and the Agriculture Technology Management Agency (ATMA) in the districts. However, public extension is heavily focused towards agricultural husbandry, ignoring allied sectors.

Farming system approach: The farming system strategy is an academic activity that includes theory, concepts, principles, and methodologies. It provided an opportunity to design diverse models for various kinds of farmers and categories of farmers. In the 1970s, Farming System Research and Extension (FSR&E) was created as an alternative to the traditional top-down extension strategy, addressing its shortcomings. It attempts to disseminate technology that addresses the needs of local farmers. The FSR&E approach involves specialized field stations connecting research, extension, and farmers to share technologies from several scientific disciplines. The FSR&E strategy has several significant advantages, including need-based, extension-research-linked extension activities. It focuses on the profitability, stability, and sustainability of the recommended technology. Some of successful FSRE models include the 'Rural demonstration and training center' of village Padhri Kalan, Amritsar, Punjab, the 'Bio-resource complex' of the University of Agricultural Science, Bengaluru, the 'Roopa farm' of Mohinder Singh Grewal of Punjab, etc.

Participatory extension approach: This technique is built on the notion of self-mobilization, in which farmers identify and assess their major challenges and find solutions based on their own needs. This technique emphasizes prudent land cultivation by farmers. Farming communities benefit from increased access to knowledge through various associations and organizations. Important participatory methodologies include Rapid Rural Appraisal (RRA), Participatory Rural Appraisal (PRA), and Participatory Action and Learning Method (PALM).

Project approach: This strategy aimed to increase rural people's output and living standards through area and time-specific programs. Without external support, the programme's effect and continuity are predicted to increase. The project approach's primary advantages include easy evaluation and speedy project results, as well as innovative approaches and procedures within a

minimal budget. However, the project takes less time and costs more per unit area than alternative approaches. Agricultural development programs such as the Intensive Agricultural District Programme (1960), Operational Research Project (1974), Lab to Land Programme (1979), and IARI-Post Office Linkage Extension Model (2009) are excellent examples of project-based extension initiatives.

Educational institution approach: The method primarily focuses on extension activities at agricultural universities and colleges. Extension education has been partially integrated into Indian universities' agricultural knowledge and information systems in order to increase the institution's practical utility and teaching and research responsibilities. Agricultural university faculty's technical knowledge has a considerable impact on farmers' understanding of scientific agriculture. The success of this method is determined by farmers' attendance and involvement in agricultural extension activities.

Commodity based extension approach: Various crops contribute significantly to income production, poverty alleviation, job creation, and livelihood security in rural communities, yet they are not included in extension projects. This technique focuses on commercially exportable cash crops such as tea, coffee, sugar, and spices. The commodity-based extension advisory system includes statutory commodity boards such as tea, coffee, spices, tobacco, and rubber, as well as profit-oriented corporations, farmer producer organizations, or individual entrepreneurs. The approach has numerous advantages, including a high adoption rate, appropriate technology for the agroecological zone, timely dissemination of need-oriented messages, a strong connection between input suppliers and marketing agents, a low farmer-agent ratio, as well as access to supplementary extension services such as credit training, inputs, etc.

Pluralistic extension system approach: Pluralism in agricultural extension refers to the availability of a number of agencies, service providers, models, and institutional arrangements (public, commercial, community-based, NGOs, etc.) that cater to farmers' information, advisory, and support service needs in India. Pluralistic extension acknowledges the intrinsic diversity between farmers and farming systems, as well as the necessity to handle agricultural development difficulties using diverse techniques.

Conclusion

Over time, understaffed extension departments have been tasked with non-extension activity such as subsidy and input distribution while ignoring fundamental extension efforts. Given the limited number of extension professionals, the government must provide an enabling environment for private and civil society extension service providers to promote diverse channels, as state extension alone cannot meet the expanding service needs of farmers. Currently, extension service providers such as public, private, and civil society organizations work independently and without functional coordination at the field level. As a result, the best practices developed by each actor are not accessible to the larger application. Following independence, the national and state governments launched a variety of rural development projects. The paradigm of extension goes through several stages. Furthermore, many methodologies are used in the country's extension system.

References

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